

Building Services Engineering Service and Maintenance Engineer – End Point Assessment

Introduction

Building Services Engineering makes buildings work. Service and Maintenance Engineers play a key role in planning and completing a range of maintenance work encompassing industrial and commercial building services engineering systems, such as ventilating, heating, water supply, waste (effluent discharge) and drainage. This includes related electrical isolation, disconnection, reconnection and reactivation. They also complete planned preventative maintenance and undertake any required remedial repairs. In addition, they monitor and manage the operation of plant and equipment through building and energy management systems.

This Assessment Plan has been designed to inform those involved in the delivery and assessment of the apprenticeship:

- **What** will be assessed
- **How** the apprentice will be assessed
- **Who** will carry out the assessment
- **Internal and External Quality Assurance** arrangements to make sure that end-point assessments are reliable and consistent across different locations and assessment organisations.

Summary of Assessment

The main objective of the building services engineering Service and Maintenance Engineer end point assessment is to provide a high quality cost effective means of measuring the apprentice's competence in the final three months of their apprenticeship.

The assessment plan design is driven by the following principles:

- The apprentice demonstrating competence as far as practical through workplace performance
- The apprentice's ability to meet the apprenticeship standard of competent performance
- The apprentice's ability to demonstrate the requisite knowledge and behaviours that support workplace performance
- Identification of the apprentice's potential for progression

Service and Maintenance Engineer apprentice end point assessment will contain four components:

- Knowledge Test
- Written Scenario Based Project
- Practical Observation
- Professional Discussion supported by the apprentice's record of achievement

The following diagram provides a summary of the End Point Assessment process

On Programme

- Structured programme of learning and assessment
- Compilation of a Record of Achievement which forms the basis of the End Point Assessment Professional Discussion

Assessment Gateway

- Confirmation from Employer and Training Provider that the learner is ready to access the End Point Assessment, with the employer taking the final decision
- Level 2 English and Maths qualifications achieved
- Record of Achievement

End Point Assessment

Assessments must be accessed in the order given – the apprentice must pass each assessment component and will be notified of the result before moving onto the next one.

The Independent Assessment Organisation must be registered on the Register of Apprentice Assessment Organisations. It has overall responsibility for co-ordinating the End Point Assessment and for the final sign off of the apprenticeship as having been satisfactorily completed.

1. Knowledge Test

- Synoptic knowledge assessment, delivered as an on-demand multiple choice examination.
- Administered in an examination venue which is recognised by the Independent Assessment Organisation
- Designed, maintained and marked by Independent Assessment Organisation

2. Written Scenario Based Project

- Timed synoptic Written Scenario Based Project
- Administered in an examination venue which is recognised by the Independent Assessment Organisation
- Marked and scored by an Independent Assessor on behalf of the Independent Assessment Organisation
- Must cover specified knowledge, skills and behaviours

3. Practical Observation

- Timed synoptic Practical Observation and assessment of the apprentice in the workplace
- Administered in the workplace
- Observed, marked and scored by an Independent Assessor on behalf of the Independent Assessment Organisation
- Must cover specified knowledge, skills and behaviours

4. Professional Discussion

- A Record of Achievement will be made available to the Independent Assessor prior to the interview taking place
- The Professional Discussion is conducted by the Independent Assessor on behalf of the Independent Assessment Organisation
- The Independent Assessor will formulate questions around the evidence provided in the Record of Achievement and the relevant sections of the standard identified in Annex A, using the Independent Assessment Organisation brief
- The Independent Assessor will provide a report on the Professional Discussion and grading outcomes to the Independent Assessment Organisation, who will issue the result to the apprentice, their employer and training provider

	Assessment Overview			
Assessment	Knowledge Test	Written Scenario Based Project	Practical Observation	Professional Discussion
Assessment Method	On demand multiple choice test centrally set	On demand Written Scenario Based Project centrally set	Observation of practical activities	Interview
Area assessed	Underpinning and applied knowledge and behaviours as shown in Annex A	Applied knowledge and behaviours as shown in Annex A	Application of knowledge, skills and behaviours as shown in Annex A	Application of knowledge, skills and behaviours as shown in Annex A
Assessed by	Independent Assessor on behalf of the Independent Assessment Organisation	Independent Assessor on behalf of the Independent Assessment Organisation	Independent Assessor on behalf of the Independent Assessment Organisation	Independent Assessor on behalf of the Independent Assessment Organisation
Grading	Pass/Distinction/Fail	Pass/Distinction/Fail	Pass/Distinction/Fail	Pass/Distinction/Fail

On-programme activities
<ul style="list-style-type: none"> • It is recommended that the apprentice receives basic health and safety induction prior to attending a work site • It is recommended that the apprentice completes a portfolio of work during the On Programme phase of the apprenticeship. This will allow the apprentice's progress to be monitored and inform the employers decision on the apprentices readiness for end point assessment • All apprentices must produce evidence within a Record of Achievement to demonstrate the knowledge, skills and behaviours identified in Annex A. The Record of Achievement will form the basis of the Professional Discussion • The Record of Achievement must not include any evidence previously assessed within the on programme part of the apprenticeship • It is recommended that the apprentice's progress is assessed regularly by: <ul style="list-style-type: none"> - the training provider using knowledge tests and practical assignments that provide a similar experience to the end-point assessment - The employer (supported by the training provider) reviewing the apprentice's work activities • All apprentices must achieve the following qualifications during the on programme assessment: <ul style="list-style-type: none"> - English Level 2 - Mathematics Level 2
Assessment Gateway
<ul style="list-style-type: none"> • The assessment gateway allows the apprentice to access the End Point Assessment. This can only be accessed within the final three months of the apprenticeship • End Point Assessment is triggered by the employer, in conjunction with the training provider, who will decide if the learner has demonstrated the necessary knowledge, skills and behaviours during the on-

programme learning so that they are ready to access the End Point Assessment, with the employer taking the final decision

End Point Assessment

What

- The apprentice will be assessed on their ability to demonstrate the higher level skills, knowledge and behaviours detailed in the [Building Services Engineering Service and Maintenance Engineer Apprenticeship Standard](#) through four assessment opportunities. Annex A provides an overview of what an apprentice can expect to be covered in each assessment method

How and Who

- The assessment will be undertaken in the following sequence:
 - Knowledge Test
 - Written Scenario Based Project
 - Practical Observation
 - Professional Discussion
- Total aggregated duration of End Point Assessment is a maximum of 9.5 hours
- The Knowledge Test and Written Scenario Based Project should be undertaken on the same day
- The apprentice must achieve a minimum of a pass against the knowledge test, Written Scenario Based Project and Practical Observation, in this sequence, before accessing the Professional Discussion. The apprentice must achieve a minimum of a pass against all components of the End Point Assessment to complete the apprenticeship successfully.
- The apprentice will be advised of the results for each assessment method before moving on to the next

Knowledge Test

Duration: 90 minute test (60 questions)

- This knowledge will be tested by the Independent Assessment Organisation, through centrally set assessor marked multiple choice on demand examination
- The assessment will be synoptic of all areas identified in Annex A of this Assessment Plan to be tested by this method, which comprise:
 - Working Safely
 - Working Sustainably
 - Planning and Preparing
 - Undertaking Planned and Reactive Maintenance
 - Communicating Effectively
- The knowledge test will use multiple choice questions to assess underpinning and applied knowledge and behaviours in these areas. The underpinning questions will cover the “how” and “why” elements of the content. Applied knowledge will use scenario type questions to assess the apprentice’s judgement, decision making and behaviours. The distribution of these types of questions will be detailed by the Independent Assessment Organisation in a test specification
- The examination venue must have been approved by the Independent Assessment Organisation prior to the examination taking place. The examination venue must have access to appropriate resources to conduct the assessment such as appropriately trained independent invigilation staff. Alternatively, the examination may be administered by the Independent Assessor
- Grading for this assessment will be as follows Fail/Pass/Distinction. If the apprentice has to resit/retake this assessment they will only be able to achieve Pass/Fail grading, unless the

Independent Assessment Organisation determines there are exceptional circumstances accounting for the fail.

- Apprentices will be able to access distinction grades by being able to reach a particular grade boundary which is determined below:

Written Scenario Based Project

Duration: Three hours

- This assessment will be used to confirm the apprentice is able to identify, diagnose and rectify faults, which is critical to this occupation. The Written Scenario Based Project ensures apprentices meet a minimum standard of fault identification and diagnosis
- The written project will be scenario based requiring apprentices to work through the process:
 - planning and preparing the work
 - executing the work
 - fault identification and diagnosis
 - determining possible solutions then selecting and costing the most appropriate one
 - producing a report
 - customer interaction
- The project will be undertaken at a venue which has to be approved by the Independent Assessment Organisation prior to the assessment taking place. This may be a training provider's or employer's facilities. The assessment will be invigilated; this must be carried out by an independent Invigilator, appropriately trained to carry out the role
- The project will be set centrally by the Independent Assessment Organisation and assessed by the independent assessor. The assessment will be synoptic of all the areas identified in Annex A of this Assessment Plan, to be tested by this method which comprise:
 - Planning, Preparing and Working Sustainably
 - Undertaking and Finishing Planned and Preventative and Reactive Maintenance
 - Communicating Effectively
 - Working Effectively and Efficiently
 - Taking Responsibility
 - Managing Tasks
 - Working with Others
- The Independent Assessor will be appointed by the Independent Assessment Organisation
- The Independent Assessor will provide a report on the Written Scenario Based Project result and grading outcomes to the Independent Assessment Organisation, who will issue the result
- Grading for this assessment will be as follows - Fail/Pass/Distinction. If the apprentice has to resit/retake this assessment they will only be able to achieve Pass/Fail grading, unless the Independent Assessment Organisation determines there are exceptional circumstances accounting for the fail.
- Apprentices need to demonstrate the following characteristics in order to meet the stated grades. Distinction includes and builds on demonstration of the Pass characteristics
- Apprentices who do not achieve a total of 60 or more marks will fail this assessment

KEY FACTORS	Grading Characteristics	Marks availab	Grading boundaries
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	Fail	PASS	DISTINCTION	le	Pass (marks between)		Distinction (marks above)
Planning and preparing the work	Fails to demonstrate the specified knowledge, skills and behaviour characteristics sufficiently to achieve the minimum pass mark	Outlines correct PPE, components, possible faults and documentation required	As pass plus offers alternative solutions, identifies possible problems whilst minimising impact on the customer	15	9	12	Above 12
Executing the work		Identifies the correct tasks and sequences to execute them whilst working safely and in line with contract conditions	As pass plus demonstrating taking account of the consequences and timings while also showing an awareness of different contract requirements	10	6	8	Above 8
Fault identification and diagnosis		Identifies correctly the faults and corrective actions required	As pass plus demonstrates the thought process to identify the cause of the fault	25	15	20	Above 20
Determining possible solutions		Identifies the correct solution and costs correctly	As pass plus looks at a range of solutions and offers alternatives to improve performance and prevent further faults	25	15	20	Above 20
Producing a report		Produces a legible correct report that accurately reflects work carried out	Report contains a comprehensive record of technical detail and recommendations	15	9	12	Above 12
Customer Interaction		Communicates the minimum information required to satisfy the customer	As pass but provides regular detailed and comprehensive updates to the customer including possible impacts on the customer	10	6	8	Above 8
Totals				100	60	80	Above 80
<p>Practical Observation Duration: A minimum of 2 hours and maximum of 3 hours This is a practical observation of the apprentice undertaking a planned maintenance task. The task should be of sufficient complexity to last at least 2 hours and no more than 3 hours to accommodate workplace opportunities covering the listed activities (a-f below).</p>							

- This assessment is a practical observation of the apprentice in a real work environment. It brings together all the areas identified in Annex A, to be tested by this method which comprise:
 - Working Safely
 - Planning, Preparing and Working Sustainably
 - Undertaking and Finishing Planned Maintenance
 - Communicating Effectively
 - Working Effectively and Efficiently
 - Taking Responsibility
 - Managing Tasks
 - Working with Others
 - Working Ethically
- During the observation there will be interaction between the assessor and apprentice to allow all areas being tested to be checked and any gaps to be addressed.
- The Practical Observation must cover the following activities from receiving the maintenance task:
 - planning and preparing the work
 - executing the work
 - fault identification and diagnosis
 - determining possible solutions then selecting and costing the most appropriate one
 - producing a report
 - customer interaction
- The practical observation provides the opportunity for substantial synoptic assessment against the identified areas. The observation should be scheduled when the apprentice will be working in their nominated place of work and will also:
 - be conducted at a time which reflects typical working conditions
 - take a synoptic approach to observing the overall competence
- The Professional Discussion, supported by the Record of Achievement will also ensure the apprentice can demonstrate full coverage of the Knowledge, Skills and Behaviours, if not demonstrated during the observation.
- Alternatively, where the apprentice does not have the opportunity to demonstrate the listed activities (a-f above) in their place of work, the Practical Observation assessment may take place in a simulated working environment under simulated working conditions, such as an employer's premises, or at a venue that provides the assessment facilities
- The assessment location in all cases, must be approved by the Assessment Organisation prior to the assessment taking place
- The independent assessor will plan the observation in conjunction with the apprentice and employer, following the detailed specification produced by the Independent Assessment Organisation
- The observation should be carried out in one session
- The Independent Assessor will be appointed by the Independent Assessment Organisation
- The Independent Assessor will provide a report on the Practical Observation result and grading outcomes to the Independent Assessment Organisation, who will issue the result
- Grading for this assessment will be as follows - Fail/Pass/Distinction. If the apprentice has to resit/retake this assessment they will only be able to achieve Pass/Fail grading, unless the

<p>Independent Assessment Organisation determines there are exceptional circumstances accounting for the fail.</p> <ul style="list-style-type: none"> Apprentices need to demonstrate the following characteristics in order to meet the stated grades. Distinction includes and builds on demonstration of the Pass characteristics Apprentices who do not achieve a total of 60 or more marks will fail this assessment 							
KEY FACTORS	Grading Characteristics			Marks available	Grading boundaries		
	Fail	PASS	DISTINCTION		Pass (marks between)		Distinction (marks above)
Planning and preparing the work	Fails to demonstrate the specified knowledge, skills and behaviour characteristics sufficiently to achieve the minimum pass mark	Outlines correct PPE, components, possible faults and documentation required	As pass plus offers alternative solutions, identifies possible problems whilst minimising impact on the customer	15	9	12	Above 12
Executing the work		Identifies the correct tasks and sequences to execute them whilst working safely and in line with contract conditions	As pass plus demonstrating taking account of the consequences and timings while also showing an awareness of different contract requirements	20	12	16	Above 16
Fault identification and diagnosis		Identifies correctly the faults and corrective actions required	As pass plus demonstrates the thought process to identify the cause of the fault	20	12	16	Above 16
Determining possible solutions		Identifies the correct solution and costs correctly	As pass plus looks at a range of solutions and offers alternatives to improve performance and prevent further faults	20	12	16	Above 16
Producing a report		Produces a legible correct report that accurately reflects work carried out	Report contains a comprehensive record of technical detail and recommendations	15	9	12	Above 12
Customer Interaction		Communicates the minimum information	As pass but provides regular detailed and	10	6	8	Above 8

		required to satisfy the customer	comprehensive updates to the customer including an possible impacts on the customer				
Totals				100	60	80	Above 80

Professional Discussion

Duration: 1 hour

- The Professional Discussion will be conducted by the Independent Assessor who is appointed by the Independent Assessment Organisation. It will explore how the apprentice applied the knowledge, skills and behaviours in the workplace, using evidence from the apprentice's Record of Achievement as the basis. It will allow the apprentice to demonstrate they understand what they have done, how they approached it, what problems they faced and how they dealt with them and in particular how they communicated and applied their initiative
- The Professional Discussion will be conducted by the Independent Assessor at a mutually convenient venue. It may be conducted remotely using an internet video link by agreement with the Independent Assessor and the Apprentice
- The Record of Achievement presents a wide range of evidence allowing the apprentice to demonstrate they are able to meet the standard consistently.
- The Assessment Organisation will provide guidance on Record of Achievement content and structure
- The completed Record of Achievement must be supplied to the Independent Assessor one week prior to the Professional Discussion
- The Record of Achievement must not include any evidence previously assessed within the on programme part of the apprenticeship
- The Independent Assessor will confirm the currency, validity and coverage of the evidence presented in the apprentice's Record of Achievement and use it to formulate their questions exploring how the apprentice applied the skills, knowledge and behaviours of the Apprenticeship standard, as identified in Annex A, which comprise:
 - Working Safely
 - Planning, Preparing and Working Sustainably
 - Undertaking and Finishing Planned and Reactive Maintenance
 - Communicating Effectively
 - Working Effectively and Efficiently
 - Taking Responsibility
 - Managing Tasks
 - Working with Others
 - Continuing Personal Development
 - Working Ethically
- The Independent Assessment Organisation will provide Independent Assessors with an interview brief to ensure standardisation. This brief will:
 - outline the main areas to be covered by the discussion as summarised above and identified in detail in annex A
 - explain that the discussion will assess the apprentices application of the identified knowledge, skills and behaviours by exploring their understanding the tasks they have completed, how they approached them, what problems they faced, how they dealt with

<p>them and in particular how they communicated and applied their initiative</p> <ul style="list-style-type: none"> ○ emphasise the importance of confirming the currency, validity and coverage of the evidence presented in the apprentice's Record of Achievement and how it should be used to formulate their questions ○ provide and use standard professional discussion reporting templates <p>Grading</p> <ul style="list-style-type: none"> ● This assessment will be graded Fail/Pass/Distinction. If an apprentice has to resit/retake this component, the maximum grade they will achieve is a Pass, unless the Independent Assessment Organisation determines there are exceptional circumstances accounting for the fail. <p>Professional Discussion Grading Characteristics</p> <ul style="list-style-type: none"> ● Apprentices will need to demonstrate the following characteristics in order to meet the stated grades. Distinction builds on demonstration of the Pass characteristics 		
Fail	Pass	Distinction
<p>The apprentice is unable to provide documented evidence to meet the knowledge, skills and behaviours identified in Annex A</p>	<ul style="list-style-type: none"> ● The apprentice provides documented evidence examples and explains them, demonstrating technical knowledge and ability to apply the skills and behaviours shown in Annex A, to a range of mechanical and electrical faults, with particular emphasis on: <ul style="list-style-type: none"> - health and safety - compliance with company procedures - task management - promoting business image (personal presentation, punctuality, diligent and methodical approach to work aligned with company and industry values (i.e. working ethically) - communication and working with others ● is able to answer questions comprehensively, and provide supporting explanations within the scope of the standard ● is able to draw on a wide range of examples and experience to answer questions ● consistently shows attention to detail 	<ul style="list-style-type: none"> ● The apprentice has demonstrated all Pass characteristics. In addition the apprentice provides documented evidence examples and explains them in detail, demonstrating knowledge and ability to apply skills and behaviours shown in Annex A, to a broad range of complex mechanical and electrical faults, with particular emphasis on: <ul style="list-style-type: none"> - working independently and taking responsibility - problem solving - time management and prioritising ● is able to provide expansive detailed answers to the questions ● responses are considered and use an extensive range of examples and experiences from the workplace. Responses show in-depth understanding of the knowledge, skills and behaviours detailed in Annex A
Delivery Requirements		
Minimum requirements for Independent Assessors		

- Independent Assessors must be occupationally competent and competent to assess. The requirements for these are as follows:
 - occupational competence – is recognised within the industry as a Service and Maintenance Engineer holding an NVQ or SVQ level 3, Gold Engineering Services SKILLcard or equivalent
 - competence to assess – must be working towards or have achieved a relevant recognised assessor qualification such as a Level 3 Certificate in Assessing Vocational Achievement and continue to practice to that standard. Assessors who hold earlier qualifications (D32 or D33 or A1 or TQFE/TQSE) should have CPD evidence to the most current standards
 - Independent Assessors will be recruited, trained, standardised and contracted by the Independent Assessment Organisation

End Point – final judgement

- The Independent Assessment Organisation, informed by the Independent Assessor, makes the judgement on whether the apprentice has passed the End Point Assessment or not, this decision is based on results of the Knowledge Test, Practical Observation, Written Scenario Based Project and Professional Discussion
- The Independent Assessment Organisation will also provide the overall apprenticeship grading based on the apprentice's combined results from the Knowledge Test, Written Scenario Based Project, Practical Observation and Professional Discussion
- The Independent Assessor will provide a report on the Professional Discussion and grading outcomes to the Independent Assessment Organisation, who will issue the result to the apprentice, their employer and training provider
- The Independent Assessment Organisation is responsible for allocating the overall apprenticeship grading and making the final decision on apprenticeship completion

End Point – Grading

- The apprentice must achieve a Pass in all of the End Point Assessment components in the prescribed order - Knowledge Test, Written Scenario Based Project, Practical Observation and Professional Discussion before the apprenticeship can be achieved
- The Distinction grade will be awarded only if the apprentice achieves a Distinction grade in all of the assessment components. Any other combination of pass and distinction grades will achieve a Pass

Resit/retakes

- Apprentices need only resit/retake the component/s of the End Point Assessment they fail
- Where an apprentice fails one or more components of the End Point Assessment, the maximum overall grade they can achieve following a successful Resit/retake is a Pass, unless the Independent Assessment Organisation determines there are exceptional circumstances accounting for the fail. For this reason it is important that apprentices are not entered for the end assessment until the employer and training provider feel the apprentice is ready for the End Point Assessment

Independence

- Independence is provided to the Service and Maintenance apprenticeship by:
 - the multiple choice knowledge test being centrally set, maintained and marked by the Independent Assessment Organisation
 - the Written Scenario Based Project being centrally set and maintained by the Independent Assessment Organisation and marked by the Independent Assessor

- the Independent Assessment Organisation providing Independent Assessors to assess the End Point Assessment
- the End Point Assessment being co-ordinated by the Independent Assessment Organisation
- the Independent Assessment Organisation being responsible for the overall decision on apprenticeship completion with input from an Independent Assessor
- the Independent Assessment Organisation being responsible for grading the apprenticeship

Roles in Pre-End Point Assessment

Training Provider	<ul style="list-style-type: none"> • Delivers and assesses on-programme learning, working with the employer to: <ul style="list-style-type: none"> - support the apprentice to generate workplace evidence and develop the Record of Achievement - plan and continuously monitor the apprentice's progress, address any gaps in learning or experience and to ensure work is completed to a high standard for End Point Assessment • Supports the employer in deciding the timing of and arranging the End Point Assessment • Prepares the apprentice for end point assessment with training on the process • Supports the employer in agreeing remedial action required by the apprentice before resitting/retaking any unsuccessful component/s
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Roles in End Point Assessment/Gateway

Apprentice's Employer	<ul style="list-style-type: none"> • Contributes to the assessment gateway by observing and authenticating the workplace evidence to substantiate that it is authentic and meets industry standards • Decides when the apprentice is ready and makes arrangements for the on programme and End Point Assessment, with the support of the training provider as required • Ensures the apprentice has the necessary documentation for End Point Assessment • Works with the training provider to agree remedial action required by the apprentice before resitting/retaking any unsuccessful component/s
Independent Assessors	<ul style="list-style-type: none"> • Bring an independent view as they have not been previously involved with the apprentice • Administer and mark the knowledge assessment • Administers and marks the Written Scenario Based Project • Observe and assess the Practical Observation • Conduct and assess the Professional Discussion • Inform the Independent Assessment Organisation of the overall grade and grades for each assessment method the apprentice has achieved in the End Point Assessment • Participates in at least two standardisation events per year which will be arranged by the assessment Organisation
Independent Assessment Organisation	<ul style="list-style-type: none"> • Is registered on the Register of Apprentice Assessment Organisations • Makes final decision on apprentice's competence and grading of apprenticeship • Maintains a network of venues that are approved to deliver either the Knowledge Test and/or the Written Scenario Based Project • Provides independent assessment of knowledge by centrally setting, maintaining and marking on demand multiple choice examinations and Written Scenario Based Projects • Provides and manages Independent Assessors to: <ul style="list-style-type: none"> ○ mark and score the Written Scenario Based Project ○ observe, mark and score the Practical Observation and ○ conduct, mark and score the Professional Discussion • Provides documentation, training and support for independent assessors to

	ensure rigour and consistency
Quality Assurance – internal	
<ul style="list-style-type: none"> • Quality assurance of End Point Assessment is provided by the Independent Assessment Organisation who will: <ul style="list-style-type: none"> - produce and enforce criteria for assessment venues by defining the staff, resources, processes and procedures required to undertake the Knowledge Test and Written Scenario Based Project - provide and manage a network of Independent Assessors to undertake marking and scoring of the Written Scenario Based Project, Practical Observation, and Professional Discussion - provide documentation, training and support for independent assessors to ensure rigour and consistency • The Independent Assessors will attend at least two meetings per year, arranged and managed by the Independent Assessment Organisations. The purpose of these meetings will be: <ul style="list-style-type: none"> - to improve consistency and rigour in the approach and execution of their responsibilities - to ensure that where any technical or assessment variation (or scope for variation) is identified, a standard interpretation is established and applied 	
Quality Assurance - external	
<ul style="list-style-type: none"> • External quality assurance of the end point assessment for this apprenticeship standard will be managed by the Institute for Apprenticeships 	
Implementation	
Affordability:	
<ul style="list-style-type: none"> • The percentage proportion of End Point Assessment against the overall cost of the apprenticeship is 14.4% 	
Volumes:	
<ul style="list-style-type: none"> • Based on previous apprenticeship patterns it is expected that there will be 250 Service and Maintenance Engineer apprentices enrolled each year 	
Annex	
<ul style="list-style-type: none"> • Annex A shows which method/s of assessment are used to cover each element of the Apprenticeship Standard 	

Annex A

Assessment Methods – Standard Coverage

This chart provides an overview of what an apprentice can expect to be covered in each assessment method.

Key to assessment method identification within tables:

- IEA** Independent End Assessment activity – identifies which assessment method will be used for that section of the standard. This chart provides an overview of what an apprentice can expect to be covered in each assessment method.
- T** Assessment will be through the on demand Knowledge Test
- S** Assessment will be through Written Scenario Based Project
- O** Assessment will be through the Observation
- PD** Assessment will be through the Professional Discussion

Some sections of the standard can be demonstrated by more than one method.

Knowledge and Understanding		IEA			
Understand what is required to undertake building services engineering planned preventative maintenance and rectification activities within buildings including:		T	S	O	P D
Working Safely	<ul style="list-style-type: none"> Relevant safety legislation and safe working practices applying to themselves and others. 	✓			✓
Working Sustainably	<ul style="list-style-type: none"> Scientific principles underpinning building services engineering industrial and commercial systems including measurement, force and pressure, heat and power, materials and electricity. 	✓			✓
	<ul style="list-style-type: none"> Environmental protection measures within building services engineering for effective use of material resources, minimising wastage, legislation surrounding the effective use of energy, gas and water resources. 	✓		✓	✓
Planning and Preparing	<ul style="list-style-type: none"> How to - utilise resources effectively including the roles and responsibilities of relevant people, ensure the correct tools, materials and equipment are available; produce risk assessments and method statements. 	✓	✓		✓
	<ul style="list-style-type: none"> How to plan work programmes, the importance of working within contract requirements and how to complete the necessary reports. 	✓	✓		✓
	<ul style="list-style-type: none"> The preparation requirements, including consulting with clients and making them aware of any impact work will have on the system, the buildings use, and how long it is likely to take. 	✓	✓		✓
Undertaking Planned and Reactive Maintenance	<ul style="list-style-type: none"> The procedures, process, standards, specifications and codes of practice required. 	✓	✓		✓
	<ul style="list-style-type: none"> The design principles, layout, and operating principles, installation, decommissioning, fault finding, fault diagnosis, component replacement, testing and re-commissioning techniques for industrial and commercial ventilating, heating, water supply, waste (effluent discharge), drainage, systems and related electrical systems. 	✓	✓		✓
	<ul style="list-style-type: none"> How to adjust building management systems set points, time schedules and temperatures. 	✓		✓	
	<ul style="list-style-type: none"> The principles and requirements of industrial and commercial mechanical sustainable energy systems. 	✓			✓

Skills		IEA			
Undertake building services engineering planned preventative maintenance and rectification activities within buildings by:		T	S	O	P D
Working Safely	<ul style="list-style-type: none"> Applying relevant safety legislation, codes of practice and safe working practices to themselves and others. 			✓	✓
Planning, Preparing and Working Sustainably	<ul style="list-style-type: none"> Planning, organising and undertaking activities in ways which use resources effectively to complete work, with consideration for cost, quality, time, safety, security and environmental impact, within relevant legislative requirements, specifications, codes of practice and industry recognised practices. 		✓	✓	✓
	<ul style="list-style-type: none"> Preparing work areas ensuring safe access and egress for self and others is maintained, components, tools and equipment are stored and positioned safely and to allow efficient workflow. 			✓	✓
Undertaking and Finishing Planned and Reactive Maintenance	<ul style="list-style-type: none"> Carrying out fault finding, fault diagnosis, de-commissioning, component replacement, testing and re-commissioning of existing industrial and commercial ventilating, heating, water supply, waste (effluent discharge), drainage, and related electrical systems. 		✓	✓	✓
	<ul style="list-style-type: none"> Providing the client and contract supervisor with options for repairs, replacements and improvements, and the likely impact, cost and timescales for any work required that is additional to the specification or contract. 		✓	✓	✓
	<ul style="list-style-type: none"> Finishing maintenance activities by; notifying the client of the work undertaken, completing the necessary reports and contract related processes and procedures; explaining and demonstrating how to operate the system in the most energy efficient way. 		✓	✓	✓

Behaviours		IEA			
Undertake building services engineering planned preventative maintenance and rectification activities within buildings by:		T	S	O	P D
Communicating Effectively	<ul style="list-style-type: none"> Using oral, written and electronic methods to communicate technical and other information effectively with work colleagues, clients, service centre, contract supervisors, and other members of the service and facilities team. 	✓	✓	✓	✓
Working Effectively and Efficiently	<ul style="list-style-type: none"> Working reliably and effectively without supervision, to the appropriate specifications, codes of practice and be aware of the needs and concerns of others, especially where related to diversity and equality. 		✓	✓	✓
	<ul style="list-style-type: none"> Solving problems within their own scope of responsibility, by applying technical and behavioural skills and knowledge to define the problem, identify, evaluate and select alternatives and implement solutions. 		✓	✓	✓
Taking Responsibility	<ul style="list-style-type: none"> Accepting responsibility for their own work and actions. 		✓	✓	✓
Managing Tasks	<ul style="list-style-type: none"> Accepting, prioritising and undertaking technical and other tasks effectively. 		✓	✓	✓
Working with	<ul style="list-style-type: none"> Working effectively with colleagues, the public, clients, 			✓	✓

Others	service centre, contract supervisors, and other members of the service and facilities team.				
	<ul style="list-style-type: none"> Managing client relationships to ensure their expectations match the agreed service level and any shortfalls or changes in service level are effectively communicated together with any credible solutions. 		✓	✓	✓
	<ul style="list-style-type: none"> Supporting the learning and development of others through activities such as mentoring, and sharing professional expertise and knowledge. 			✓	✓
Continuing Personal Development	<ul style="list-style-type: none"> Maintaining and enhance competence in own area. 				✓
Working Ethically	<ul style="list-style-type: none"> Exercising responsibilities in an ethical manner. 			✓	✓
	<ul style="list-style-type: none"> Promoting the image of the business to others. 			✓	✓
	<ul style="list-style-type: none"> Providing feedback to improve the quality and effectiveness of business products and services. 			✓	✓