

Heritage Engineering Technician  
Level 3  
End Point Assessment Plan

Table of Contents	Page
1. Introduction	3
2. Overview of Apprenticeship Journey	4
3. On - Programme Training and Development	4
4. Readiness for the End-Point Assessment (Gateway)	4
5. Portfolio of Evidence	5
6. Components of the End-Point Assessment	6
7. Specification of the End-Point Assessment Components	7
8. Roles and Responsibilities	10
9. Internal and External Quality Assurance	13
10. Apprenticeship Implementation	13
11. Grading	14
12. Final Assessment Decision	15
13. Professional Engineering Institution Recognition	15
Annex A. End-Point Assessment Methods Mapping	15
Annex B. Grading Descriptors	28

## 1. Introduction

This document sets out the requirements and process for the end-point assessment of the Heritage Engineering Technician Apprenticeship. All apprentice standards must include an independent end-point assessment to check the apprentices overall performance against the standard.

This document is designed for employers, apprentices, training providers and End-Point Assessment Organisations (EPAOs) and should be read in conjunction with the Heritage Engineering Technician approved apprenticeship standard.

The duration of the Heritage Engineering Technician apprenticeship is typically 42 to 48 months depending on prior qualifications and relevant experience.

The EPA must be completed over a maximum total assessment time of 2 days, within a six month period, after the apprentice has met the EPA gateway requirements.

EPA must be conducted by an organisation approved to offer services against this standard, as selected by the employer, from the Education & Skills Funding Agency's Register of End Point Assessment Organisations.

Performance in the EPA will determine the apprenticeship grade of fail, pass or distinction.

The EPA consists of 3 assessment methods:-

Knowledge test – to assess the apprentice's knowledge through a test using for example scenarios, case studies and short answer questions

Practical observation – to assess the apprentice's application of skills within the apprentice's place of work or in a suitable environment away from the workplace (e.g. In a centre approved by the EPAO)

Professional discussion – to holistically assess Knowledge, Skills and Behaviours across the standard supported by a portfolio of evidence.

This assessment plan has been designed to ensure that:

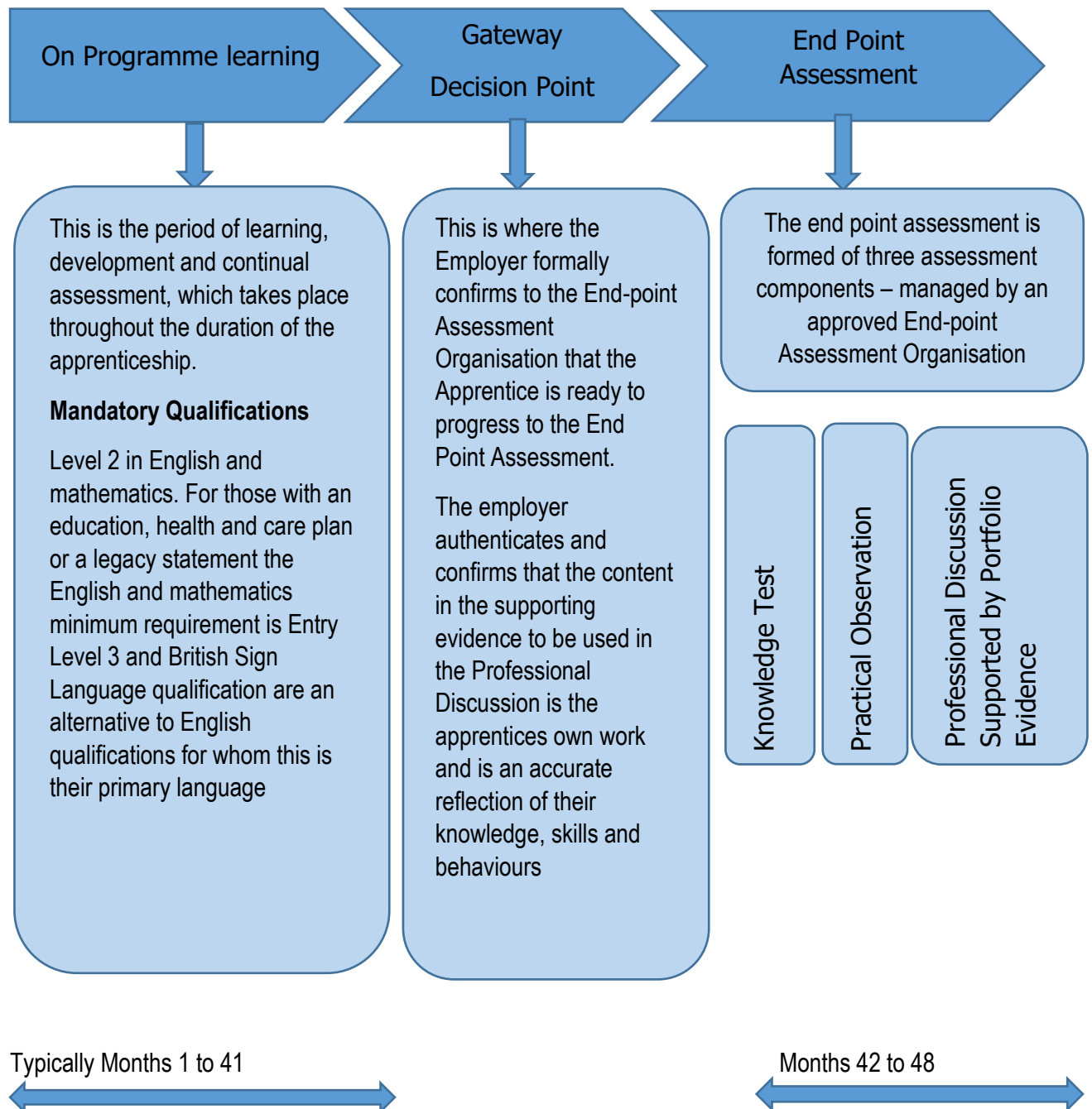
- ✓ Apprentices meet the knowledge, skills and behaviours as defined within the standard.
- ✓ The end-point assessment is appropriate, feasible and consistent.
- ✓ The process adds value to both the apprentice and employer.

The approach to assessment has adopted the following broad principles:

- The assessment process will build on, and compliment, the on-programme learning and development.
- It should encourage continuing professional development.

The end-point assessment must have independence and successful completion will lead to final certification of the apprenticeship and demonstrate that the apprentice is fully competent and can work safely and confidently as a Heritage Engineering Technician.

## 2. Overview of Apprenticeship Journey



## 3. On-programme Training and Development

For recommended on programme information, this can be found on Heritage Engineering Apprenticeships website at <https://heritage.engineering>

## 4. Readiness for the End-point Assessment (Gateway)

The independent end-point assessment is synoptic, that is it takes an overview of an apprentice's competence. It is important, therefore, that this should only take place when the employer is confident that the apprentice has met all the knowledge, skills and behaviours as set out in the standard and is performing competently in their job role.

- Level 2 in English and mathematics. For those with an education, health and care plan or a legacy statement the English and maths minimum requirement is Entry Level 3 and British Sign Language qualification are an alternative to English qualifications for whom this is their primary language.
- The apprentice can then progress to the end-point assessment via the apprenticeship gateway (decision point).

An apprentice should not be recommended for end-point assessment until they are ready and support should be in place for those who find it difficult to meet the minimum requirements.

## 5. Portfolio of Evidence

Before the End-Point Assessment can take place each apprentice will have prepared a portfolio of evidence which will be used during the Professional discussion. This portfolio of naturally occurring evidence will enable the apprentice to present the specific work related tasks that they have completed during their apprenticeship in order to showcase how they have achieved occupational competence as set out in the Level 3 Heritage Engineering Technician Standard by demonstrating what competencies they have achieved, what they have learnt and how they have applied this knowledge and skills on real work tasks undertaken at the employers workplace. The portfolio of evidence must be mapped to the knowledge, skills and behaviours set out in the standard and will show how the apprentice has demonstrated occupational competence as a Heritage Engineering Technician.

The portfolio will include as a **minimum three or up to a maximum of six** different examples of competent performance evidence generated from employer directed work based projects/tasks achieved during their apprenticeship and must include:

- Specific records/job reports of the work undertaken by the apprentice including any quality/compliance records, reports or documents produced as part of the work activity.

together with:

- Evidence of the way the apprentice carried out the activities to meet the requirements of the Standard, such as technical expert observations, supervisor/mentor references/ witness testimonies, behavioural assessment, or authenticated apprentice reports of the activities undertaken.
- Each portfolio Project/task must be assessed and recorded by the apprentice's line manager or other competent person designated by the employer confirming the project/tasks completed by the apprentice met the employer and standards' requirements in terms of **Safety, Quality, Performance and Timelines** and that the apprentice demonstrated the required knowledge, skills and behaviours throughout the project/task.

The portfolio can include other relevant evidence such as technical training and/or health and safety courses that supports the attainment of the skills, knowledge and behaviours required for occupational competence as set out in the Standard and **must** be available during the End-Point Assessment.

Notes for Portfolio of Evidence.

The employer must have checked the completed portfolio at the gateway and confirmed the evidence, demonstrates occupational competence against the knowledge, skills and behaviours specified in the Standard.

The independent assessor must review the portfolio prior to the End-Point Assessment. This can be done either on the day the end-point assessment takes place or another day prior to the end-point assessment that is agreed with the employer. In certain circumstances, depending on the nature of the business/department where the apprentice is employed the portfolio/documentation may not be allowed to leave the premises and/or certain cases information in the portfolio may be required to be redacted for confidentiality reasons. The End-Point Assessment Organisation and their assessors may also be required to sign a confidentiality/non-disclosure agreement with the apprentices' employer.

This will enable the independent assessor to start to review and formulate relevant, specific and targeted questions to be used during the End-Point Assessment from a bank of pre-prepared questions developed by the End-Point Assessment Organisation and cross-referenced to the knowledge, skills and behaviours set out in the Level 3 Heritage Engineering Technician Standard.

The apprentices' portfolio cannot include reflective statements or any other form of self-assessment.

The end-point assessment should take place within three months of the employer confirming the apprentice is ready for assessment (via the gateway).

## 6. Components of the End-Point Assessment

The end-point assessment will be made up of three assessment components, which are managed by the End-Point Assessment Organisation. These are:

<b>Assessment Component</b>	<b>Skills/Knowledge and/or Behaviour assessed?</b>	<b>Conducted by whom</b>	<b>Grading Outcomes</b>
Knowledge Test	Knowledge	End-Point Assessment Organisation	<b>Fail</b> <b>Pass</b> <b>Distinction</b>
Practical Observation Tasks	Knowledge, Skills and Behaviour	End-Point Assessment Organisation (Independent assessor)	<b>Fail</b> <b>Pass</b> <b>Distinction</b>
Professional Discussion & EPA Assessor Questioning	Knowledge, Skills and Behaviours	End-Point Assessment Organisation (Independent assessor)	<b>Fail</b> <b>Pass</b> <b>Distinction</b>

## 7. Specification of the End-point Assessment Components

The knowledge test must take place before the practical observation and professional discussion. It is anticipated that the knowledge test and professional discussion will take place on the same day. The practical observation will take place on a separate day. However, this is not a requirement to allow end-point assessment organisations flexibility in scheduling and cost-effective allocation of resources.

## 7.1 Assessment Method 1: Knowledge Assessment

### Key Facts:

- 90 minute, multiple-choice test comprising of 50 knowledge based questions, with four answers from which the apprentices must select one and for the multiple correct options must select the 2 correct answers  
40 Multiple choice questions  
10 Multiple select questions
- One mark will be awarded per question.
- Any incorrect or missing answers must be assigned 0 marks.
- Externally set, marked and invigilated by the End-Point Assessment Organisation.
- The on line knowledge test will take place at a location approved by the EPAO. They must ensure that it is conducted in a suitable controlled environment i.e. quiet room free from distraction and influence with the necessary equipment, e.g. computer.
- Closed book with no supporting documents allowed.
- Graded by End Point Assessment Organisation as a fail / pass / distinction.

### Note:-

The 90 minute time is applicable unless the EPAO accepts special arrangements for that apprentice based for example, on an official education or health plan.

Apprentices will undergo an on-demand test, under controlled and invigilated, conditions that will synoptically test the knowledge requirements stated within the standard, detailed in annex A. This test will usually be taken online and be automatically marked, unless specific assessment needs have been identified, requiring alternative methods to be used, such as a paper-based test.

The definition of controlled conditions will be set out by the End-Point Assessment Organisation, which will clearly define and explain the requirements. However, as a minimum, the controlled conditions must include apprentices not having any access to the internet, email or data stored on the hard drive of a computer or portable storage media e.g. memory sticks and must also include apprentices not having access to any unauthorised materials, including web enabled sources of information (iPads and smart phones) during the knowledge test. The controlled conditions should also include any specific requirements in relation to the assessment environment, such as, lighting, space, privacy and the requirements for an invigilator to follow best practice processes.

To achieve a pass grade the apprentice must answer at least 60% of the questions correctly. To achieve a distinction grade the apprentice must answer at least 80% of the questions correctly.

Knowledge assessment questions must be set so that a pass will represent competence in knowledge; with a distinction representing a deeper understanding of knowledge.

End-Point Assessment Organisations will be expected to set and monitor the quality and performance of their questions and tests.

The End-Point Assessment Organisations are responsible for ensuring questions are current and reflect the requirements of 50 multiple-choice questions, related to the core and the 4 disciplines Aviation, Marine, Steam and Vehicle.

EPAOs will produce the following material to support this method:

- Questions must be written by EPAOs and it is recommended that this be done in consultation with representative employers to gain the necessary occupational expertise in this sector. EPAOs should maintain the security of their questions when consulting employers.
- EPAOs 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.

## 7.2. Assessment Method 2: Practical Observation

Key facts;

- A one day practical observation in the apprentice's own workplace or, if this is not possible, in an external controlled environment reflective of their normal workplace.
- For group observations, Independent assessors may observe up to a maximum of 3 apprentices at any one time, to allow for cost effective use of resources while maintaining quality and rigour.
- Apprentices must be observed by an independent assessor completing 3 (out of 4) practical observation tasks providing an opportunity for the apprentice to demonstrate both the core and their chosen option, knowledge, skills and behaviours.
- Observation specifications must be determined and standardised by end-point assessment organisations, in consultation with representative employers.
- Graded as fail/pass/distinction

The practical observation is a synoptic assessment of the apprentice within a controlled environment. The EPAO must ensure that the controlled environment meets the minimum requirements detailed in Annex B, allowing the apprentice to demonstrate the breadth of their knowledge, skills and behaviours and must be observed by an independent assessor. The apprentice will not know in advance the activities that will be assessed.

Knowledge Skills and Behaviours observed and answers to questions must be documented by the Independent Assessor. EPAO's will provide a standard template for IA's to record assessment outcomes. After each task the Independent Assessor must ask open questions to include the following (This will be an additional time up to a Maximum Duration of 10 Minutes per task):

- 1 question about the health and safety risks relevant to the task.
- 1 question about the possible risks of damage to the vehicle, aircraft, vessel or steam equipment.
- 3 questions about knowledge of the vehicle, aircraft, vessel or steam equipment systems relevant to the task.

Each of the 4 tasks must have a different set of questions..

The Independent Assessor may also ask supplementary questions where clarification of the answers or clarification of the actions being carried out is required. EPAOs will provide a standard template for IA's to record questions and assessment outcomes

The apprentice will be briefed during an initial 15-minute session before the start of the Practical Observation, where they should be encouraged to ask questions and confirm their understanding of each



individual task. Each practical observation task will have a time limited duration, which includes a maximum of 5 minutes briefing on the individual task before the task commences, again they should be encouraged to ask questions and confirm understanding of what is required of them during the observation.

The practical observation tasks reflect frequent scenarios from the apprentice's normal work activities. The structure of the practical observation should require the apprentice to demonstrate they can work safely whilst conducting inspection, fault finding, removal & replacement, set-up and adjustment activities.

Three practical skill tasks as defined in the Heritage Engineering Standard will be selected from the following four practical observation task types;

Task 1 – Set-up including measuring, shimming and torque setting (90 Minutes +/- 10 minutes)

Task 2 – Identification of corrosion & wear and appropriate rectification techniques/processes (90 Minutes +/- 10 minutes)

Task 3 – Inspection, fault finding and reporting (90 Minutes +/- 10 minutes)

Task 4 – Identification of components and systems (45 Minutes +/- 5 minutes)

EPAOs must develop 'question and task banks' of sufficient size to prevent predictability and review them regularly (and at least once a year) to ensure they, and the questions and tasks they contain, are fit for purpose. They must also have a process in place to ensure that an apprentice is not disadvantaged due to equipment failure and ensure that a technician is available to resolve any technical issues.

### **7.3. Assessment Method 3: Professional Discussion**

The professional discussion is an interactive process, which will enable the independent assessor to further assess the apprentices' occupational competence. It is a structured and formal discussion between the apprentice and the independent assessor, drawing upon the portfolio of evidence and supporting documentation, of how the apprentice has performed during the apprenticeship by undertaking employer directed work based projects/tasks during their apprenticeship.

This enables the end-point assessment to cover a broad range of knowledge, skills and behaviours set out in the standard as detailed in End-Point Assessment Methods Mapping document Annex A:

It will also be an opportunity for the independent assessor to:

- Clarify any points and/or probe the apprentice on the evidence they have presented in their portfolio.
- Confirm and validate that the portfolio of evidence is the apprentices own work.
- Confirm and validate the judgements about the quality of the work the apprentice has completed.
- Explore particular areas of work presented in the portfolio, how it was carried out, any problems that they encountered and how these were resolved.
- Validate the apprentice's knowledge and understanding of the organisation in terms of their products, processes, procedures, tools, equipment, materials, documentation and information systems.

The End-Point Assessment Organisation will develop a bank of core questions which can be used and contextualised by the independent assessor during the professional discussion. The independent assessor must ask the apprentice 10 open questions, follow up questions are allowed to seek clarification after reviewing the portfolio to further explore competence against the knowledge, skills and behaviours specified in the standard. The End-Point Assessment Organisation will use a standardised and structured

template for the independent assessor to use during the interview, to provide robustness, consistency and fairness with a clear and auditable mechanism for providing feedback to the apprentice.

The requirements for the Professional discussion are:

- It covers the knowledge, skills and behaviours listed in Annex A as being assessed by the professional discussion.
- The apprentice should have a minimum of two weeks' notice of their professional discussion date and time.
- The professional discussion is expected to be 60 minutes +/- 5 minutes in duration.
- The professional discussion will be conducted on a one to one basis either face to face or via live video link (where the End-Point Assessment Organisation have the facilities available and can guarantee the integrity of the assessment).
- The professional discussion will be conducted in a 'controlled environment', i.e. a quiet room, away from the normal work area.
- The professional discussion can be recorded (audio or video) if all parties are in agreement. Where permission is not given it is permissible for another independent assessor to be present to document evidence presented and the response to questions.
- A technical expert from the employer can attend the professional discussion if they request to do so in order to provide the independent assessor with any relevant technical support, advice and guidance such as confirming company policies, procedures, processes, providing context on technical information or on emerging technologies. However, the independent assessor must agree that a technical expert from the employer can attend the professional discussion and any information provided by the employer's technical expert must only be at the request of the independent assessor who has the final say over the assessment and grade awarded. The employer's technical expert must not provide evidence on behalf of the apprentice and cannot take part in the discussion.
- The grading criteria for fail, pass and distinction are defined in Annex B
- The apprentice will be informed of the independent assessor's overall assessment decision by the EPAO as soon as possible after both assessment methods have been completed.
- EPAOs 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.

## 8. Roles and Responsibilities

Ensuring independence is key to the validity of this assessment plan. Although employers and training providers are involved in the on-programme training and assessment, providing evidence and supporting the end-point assessment procedures, the end-point assessment is managed and administered by the Independent End-Point Assessment Organisation.

### 8.1 End-Point Assessment Organisations

End-Point Assessment Organisations are responsible for appointing and managing independent assessors and for ensuring that assessments are;

- Fair
- Valid

- Reliable
- Consistent

End-Point Assessment Organisations wishing to offer end-point assessment services for this apprenticeship, must:

be registered on the Education and Skills Funding Agency Register of End-Point Assessment Organisations (RoEPAO).

- Ensure independent assessors meet the criteria outlined in this plan.
- Deliver the end-point assessment outlined in this plan.
- Be able to demonstrate a detailed understanding of the occupational role profile
- Be able to demonstrate a detailed understanding of the requirements to achieve the Engineering Technician (EngTech) competencies as defined by the Engineering Council UK -SPEC.
- Provide adequate information and documentation to enable apprentices, employers and providers to prepare for the end-point assessment.
- Develop appropriate assessment tools to ensure all apprentices are judged fairly and consistently
- Provide appropriate resources and processes for apprentices, employers and providers, to clarify and/or dispute the outcome of an end-point assessment, including appeals and re assessment(s).
- Ensure there are no unnecessary barriers or hindrance, cognitive or physical, to an apprentice completing assessments. Assessments and assessment environments must be designed to be accessible to all apprentices and be in line with the Equality Act.

End-Point Assessment Organisations must maintain high quality systems and processes, which validate and continuously review an independent assessor's experience, skills and competence. They must also maintain a system that allows individual end-point assessments and an independent assessor's decision, to be externally quality assured and verified by an External Quality Assurance Organisation

End-Point Assessment Organisations must have processes and procedures in place with their independent assessors, which clarify what is expected of them in this role. If an independent assessor is not in the direct employment of the End-Point Assessment Organisation, then they must make it clear that when undertaking end-point assessments, the independent assessor is solely representing the End-Point Assessment Organisation. These processes and procedures must be understood by all parties involved in the assessment of the apprenticeship.

The final decision on whether the apprentice has "failed, has passed or has passed with distinction", lies solely with the End-Point Assessment Organisation.

## 8.2 The Independent Assessor

Independent assessors are responsible for conducting the end-point assessment of the apprenticeship and are appointed and managed by an End-Point Assessment Organisation. The independent assessor must be someone who has nothing to gain from the outcome of the assessment and has had no direct involvement in the day-to-day training and development of the apprentice during the on programme phase of apprenticeship. When conducting an end-point assessment, the independent assessor is acting on behalf of the relevant End-Point Assessment Organisation, and is subject to the auditing procedures set by them.

Independent assessors will be subject to rigorous quality assurance, and must take part in regular updating and standardisation activities specified by the End-Point Assessment Organisation.

The following key principles are mandatory for independent assessors:

### 8.2.1 Independent Assessor Occupational requirements

Independent Assessors must meet the following requirements:

- An in depth knowledge and understanding of the Heritage Engineering Apprenticeship Standard and End-Point Assessment Plan.
- Occupational competence at, or above the level of the Heritage Engineering Apprenticeship Standard.
- Hold a Level 3 assessor award or equivalent
- Have a minimum of 3 years heritage skills and customer service experience.
- Complete and record a minimum of 20 hours relevant CPD per annum.
- Attend initial EPA assessor training delivered by the EPAO.
- Attend standardisation events a minimum of every 12 months.

End-Point Assessment Organisations may use new independent assessors who are in training/development. However, all assessment decisions must be countersigned by a fully qualified and experienced assessor who also has the required technical knowledge and skills of the occupational area being assessed.

### 8.2.2 Assessment Practice

Independent Assessors from the Apprenticeship End-Point Assessment Organisation should:

- Practice standardised assessment principles as set out by the End-Point Assessment Organisation.
- Attend regular standardisation meetings with colleagues.
- Share best practice in assessment through a range of appropriate activities, such as email, meetings, events, workshops and social media.
- Have sufficient resource to carry out the role of independent assessor including time for planning and preparation.

### 8.2.2 Continuous Professional Development (CPD)

Independent assessors must regularly update their occupational expertise and sector knowledge in the areas being assessed to ensure currency of skills and knowledge. This should be achieved through planned CPD, appropriate to their individual development needs. A record of this should be maintained through an up-to-date CPD log. Examples of CPD could be (but not limited to):

- External employer visits.
- Achievement of new or updated training or qualifications.
- Attendance at seminars and/or conferences.
- Attendance at development days.

## 8.3 Employer

The employer will support the apprentice throughout the apprenticeship helping them to reflect on their performance throughout the period of on-programme training and development. They will ensure the apprentice prepares and collates the necessary evidence to demonstrate occupational and professional competence against the requirements of the apprenticeship. They will ensure the apprentice is prepared for the end-point assessment and will formally confirm to the End-Point Assessment Organisation that the apprentice is ready to pass through the gateway. The employer will also liaise with the End-Point Assessment Organisation with regards to the scheduling, timing and location of the assessments, ensuring

that any facilities and resource requirements such as power point projectors and interview rooms are fit for purpose and take into account any security and confidentiality (personal and/or business) requirements.

## **8.4 Training Provider**

The training provider will develop on-programme training and development programmes to meet the needs of the employer and delivers the knowledge, skills and behaviour requirements as defined by the standard. They may be consulted by the employer when determining readiness for end-point assessment but will not be involved in the actual end-point assessment of apprentices.

## **9. Quality Assurance**

### **9.1 Consistency**

The process and procedure for carrying out an end-point assessment must be quality assured to ensure consistent, reliable and valid judgments.

### **9.2 Internal Quality Assurance**

Internal quality assurance is carried out by, or on behalf of an approved End-Point Assessment Organisation and involves ensuring that individual end-point assessments are undertaken correctly and consistently including the marking, standardisation and reporting of the outcomes of the end-point assessment. It must:

- Ensure there are robust processes in place to deliver end-point assessments to the required standard and that they are appropriate for the occupation.
- Train all independent assessors to ensure they assess consistently against the requirements of the standard, including the opportunity to attend standardisation workshops annually.
- Apply robust internal quality assurance and verification processes to the end-point assessments.

### **9.3 External Quality Assurance**

The Institute for Apprenticeships, (IfA) – will conduct the external quality assurance for the Level 3 Heritage Engineering Technician standard.

## **10. Implementation**

### **10.1 Affordability**

The cost and practicalities of the assessment process have been a key consideration in the development of the end-point assessment plan due to the range and type of businesses likely to deliver this apprenticeship. Both large and small employers alike must manage the cost of apprenticeship training and development and prepare the apprentice for the end-point assessment. Whilst the end-point assessment needs to be robust, valid and reliable the assessment needs to be affordable and not take away vital funding to support the training and development of apprentices for all, irrespective of the size of the employer and the number of apprentices they recruit.

As part of the negotiation process between the employer and End-Point Assessment Organisation, to ensure transparency and value for money, the employer can ask the End-Point Assessment Organisation for a detailed cost breakdown of the costs to deliver the end-point assessment.

## 10.2 Accessibility and Manageability

The practicalities and accessibility of the end-point assessments have been considered during the development of this assessment plan to ensure that the assessments are equally accessible to large and small employers across a range of employers and for all apprentices. End-Point Assessment Organisations must ensure there are no unnecessary barriers to an apprentice completing the end-point assessments. End-point assessments and assessment environments must be designed to be accessible for all apprentices and be in line with the Equality Act.

End-Point Assessment Organisations must work with employers to manage end-point assessments in a way that minimises the impact on the employers' business activity.

On demand end-point assessment should be offered by the End-Point Assessment Organisation or on a quarterly basis as a minimum, this will give employers and apprentices access to end-point assessments on a regular basis and allow adequate time for preparation. This will also give End-Point Assessment Organisations adequate time to plan assessments to ensure they are manageable, feasible and cost efficient.

End-point assessment should be completed within a six month period following the employer gateway decision point.

We anticipate approximately 150 starts on this apprenticeship in the first 12-18 months, and expect demand for this apprenticeship to grow to over 1000 in future years.

## 11. Grading

The overall grade for the apprenticeship will be determined as follows

**Fail** - the apprentice fails to achieve the pass mark for any of the three assessment method

**Pass** – requires the apprentice to pass each of the three assessment methods

**Distinction** – requires the apprentice to achieve a distinction in each of the three assessment methods

Where possible, feedback will be given to the apprentice and the employer by the independent assessor after each assessment has been completed.

### Resits and Retakes

**A retake** involves the apprentice requiring further learning and therefore would need to go through the gateway process again.

**A re-sit** does not require further learning. Apprentices are able to **re-sit** the individual assessment component where a pass has not been achieved.

If re-sits or re-takes are required, apprentices should complete them within 6 months unless in the opinion of the EPAO exceptional circumstances apply outside the control of the apprentice or their employer.

Whilst there are no limits to the number of re-takes/re-sits an apprentice can undertake it is important that they should have sufficient time to retrain and develop the necessary knowledge, skills or behaviours prior to retaking the component.

If a re-take/re-sit relates to a practical observation task the apprentice must be presented with a different version of the same task, which must cover the same components/activities.

If the re-take/re-sit relates to the online test the apprentice will be presented with a new randomised On-line knowledge test.

If the re-take/re-sit relates to the professional discussion the apprentice must be questioned on the same subject area.

An apprentice requiring a re-sit or a re-take cannot achieve a distinction unless the End-Point Assessment Organisation identifies exceptional circumstances accounting for the original grade of Fail.

## 12. Final Assessment Decision.

The final assessment decision on occupational competency and the grade of Pass, Fail or Distinction will be made by the End-Point Assessment Organisation taking into account the decision/recommendations made by their independent assessor.

## 13. Professional Engineering Institution Recognition.

On completion of the apprenticeship and supported by the required experience and evidence the apprentice may apply to a relevant Professional Engineering Institution licenced by the Engineering Council for professional recognition at the appropriate level such as Engineering Technician (EngTech) subject to meeting any requirements set by the Professional Engineering Institution. For more details on the requirements and application process go to the Engineering Council website at [www.engc.org.uk](http://www.engc.org.uk)

### Annex A - End-Point Assessment Methods Mapping

The following table provides an overview of the requirements detailed within the Heritage Engineering Technician Standard and where they are covered by each end-point assessment component.

	<b>Core Knowledge</b> – The apprentice has knowledge and understanding of:-	<b>Assessment Method</b>
CK1	Current statutory, quality, organisational and health & safety regulations.	<b>Knowledge Test</b>
CK2	The Guidelines for the Care of Larger and Working Historic Objects published by the Museums and Galleries Commission	<b>Practical Observation</b>
CK3	The importance of heritage engineering achievements in telling the story of the development of the modern world.	<b>Professional Discussion</b>
CK4	The correct use of materials, tools and equipment, both modern and from a heritage era.	<b>Practical Observation</b>
CK5	The importance of working collaboratively to investigate historically sympathetic and appropriate design solutions which ensure the most efficient, cost effective and environmentally friendly programme of work.	<b>Professional Discussion</b>



CK6	How to review and amend plans and schedules as the project progresses, initial solutions may need to be modified, components and materials may fail or be found faulty.	<b>Practical Observation</b>
CK7	Mathematical and scientific principles, graphical expressions, symbols formulae and calculations used by Heritage engineering technicians including understanding metric and imperial forms of measurement.	<b>Knowledge Test</b>
CK8	The typical problems that may arise in the restoration, renovation or recreation project, i.e. no drawings.	<b>Practical Observation</b>
CK9	The application of appropriate lifecycle approaches to each restoration project or process to ensure any waste of energy, materials and consumables is minimised and environmental impact is reduced.	<b>Knowledge Test</b>
CK10	The principles of manpower requirements, costing, pricing and budgeting along with Supply Chain Management <del>including integrity of supply, particularly confirming material adhering to specification</del>	<b>Knowledge Test</b>
CK11	The original methods and techniques used to inspect, remove, renovate, repair, manufacture and reassemble.	<b>Knowledge Test</b>
CK12	The structure, properties and characteristics of common materials that have been used in the Heritage sector.	<b>Knowledge Test</b>
CK13	How to identify various forms of corrosion, chemical reaction and other forms of age related degradation, and how to select the appropriate treatment, renovation or replacement method(s).	<b>Knowledge Test</b>
CK14	Non Destructive Testing (NDT) methods and applications of the different techniques. <del>such as Magnetic particle Testing, Liquid Penetrate, Ultra-sonic Testing, X-Ray and High End Microscopy.</del>	<b>Knowledge Test</b>
CK15	Mechanical, non-mechanical and thermal jointing processes including riveting, glues, soldering, brazing and welding.	<b>Professional Discussion</b>
CK16	The historic restoration industry and their company's position within it, its structure, history, heritage and the range of specialist processes and skills.	<b>Knowledge Test</b>
CK17	The expectation of customer requirements and budgets, managing their expectations, where appropriate.	<b>Knowledge Test</b>

<b>Core Skills – The apprentice can:-</b>	<b>Assessment Method</b>
---	--------------------------



CS1	Apply current Health & Safety practices at all times, ensuring all Hazards and Risks are identified and managed effectively, specifically complying with all relevant general and heritage specific regulations.	<b>Practical Observation &amp; Professional Discussion</b>
CS2	Dis-assemble and assemble constructs, using video and/or other recording methods as appropriate to ensure the knowledge is not lost if significant time elapses between the two functions.	<b>Practical Observation</b>
CS3	Apply the processes of continuous improvement, such as Kaizen and Workplace Organisation.	<b>Professional Discussion</b>
CS4	Obtain check and use the appropriate original documentation.	<b>Practical Observation</b>
CS5	Develop, apply and implement appropriate delivery plans to complete tasks within the agreed timescale.	<b>Practical Observation</b>
CS6	Apply industry recognised/best practice standards at all times during the restoration of a project to ensure that each stage is completed properly and has no adverse effect on future operations and progress.	<b>Professional Discussion</b>
CS7	Plan and where applicable obtain all the resources required to undertake the work activity.	<b>Practical Observation</b>
CS8	Use the correct original or contemporary tools, processes, procedures and equipment to inspect remove, renovate and reassemble components where applicable including those for periodic adjustment.	<b>Practical Observation</b>
CS9	Identify various forms of corrosion, chemical reaction and other forms of degradation, and treat accordingly.	<b>Professional Discussion</b>
CS10	Apply Non Destructive Techniques (NDT), using the correct technique for the specific application.	<b>Professional Discussion</b>
CS11	Use mechanical, non-mechanical and thermal jointing processes including riveting, glues, soldering, brazing and welding.	<b>Practical Observation</b>
CS12	Apply appropriate and approved diagnostic procedures and equipment with logical problem-solving techniques.	<b>Practical Observation</b>
CS13	Restore the work area on completion of the activity.	<b>Practical Observation</b>
CS14	Deal with customers, to ensure their satisfaction and expectations are exceeded.	<b>Professional Discussion</b>

	<b>Behaviours</b> – The apprentice must be able to demonstrate the following behaviours as part of the review process:-	<b>Assessment Method</b>
CB1	<b>Personal Responsibility &amp; Compliance:</b> With statutory and organisational health & safety regulations and policies at all times such as the Health and Safety at Work Act 1974 (HASAWA), Control of Substances Hazardous to Health Regulations 2002 (COSHH) and Control of Asbestos Regulations 2012.-Accepts responsibility to work load with a responsible approach to risk. Continually demonstrates a high level of motivation and resilience when facing challenges.	<b>Practical Observation &amp; Professional Discussion</b>
CB2	<b>Working Effectively in Teams:</b> Create and maintain positive, professional and trusting working relationships with the team a wide range of internal, external and connected stakeholders.	<b>Professional Discussion</b>
CB3	<b>Effective Communication &amp; Interpersonal Skills:</b> Maintain effective partnerships with suppliers and customers through the company processes to achieve sound objectives.Open and honest clear communication using appropriate methods. Always demonstrating a positive and respectful attitude.	<b>Professional Discussion</b>
CB4	<b>Quality &amp; Problem Solving:</b> Strong desire to ensure that the root cause of a problem is identified and addressed, continually seeks opportunities to improve quality, speed and efficiency.	<b>Practical Observation</b>
CB5	<b>Continuous Professional Development:</b> Have a strong commitment and be self-motivated to develop, learn and adapt to new processes and technologies. Strive to improve personal performance.	<b>Professional Discussion</b>
CB6	<b>Equality, Diversity and Ethical Values:</b> Demonstrate an understanding and commitment to maintaining and promoting honour and honesty with the fundamental ethical values in the workplace.	<b>Professional Discussion</b>

**Specific Requirements of Knowledge and Skills for each Individual role, Apprentices must complete one of the following 6 options**

1. **Heritage Engineering Aviation Technician**
2. **Heritage Engineering Marine Technician**
3. **Heritage Engineering Steam (Mechanical Overhaul) Technician**
4. **Heritage Engineering Steam (Boiler-smith) Technician**
5. **Heritage Engineering Vehicle Mechanical Technician**
6. **Heritage Engineering Vehicle Coach-building & Trim Technician**

**Option 1 - Heritage Engineering Aviation Technician**

	<b>Aviation Technician - Specific Knowledge</b> – The apprentice has knowledge and understanding of:-	<b>Assessment Method</b>
AK1	The Heritage Aviation industry and their company's position within it.	<b>Professional Discussion</b>
AK2	The company's range of specializations and resources.	<b>Knowledge Test</b>
AK3	The Principles of Aviation Heritage Conservation.	<b>Knowledge Test</b>
AK4	Ethical Guidelines affecting the Heritage Aviation sector.	<b>Knowledge Test</b>
AK5	Aerodynamics and theory of flight, basic aircraft design: the equilibrium between thrust, drag, lift and weight.	<b>Knowledge Test</b>
AK6	The type and applications of Heritage Aircraft components and construction, including materials and their uses.	<b>Knowledge Test</b>
AK7	Aircraft Structural Classifications including; Primary, Secondary or Tertiary Structure.	<b>Knowledge Test</b>
AK8	The classification of aircraft fasteners and how to identify them.	<b>Professional Discussion</b>
AK9	Basic electrical theory along with knowledge of the different types of connections, fixings, fusing, switching, power conversion etc. found on heritage aircraft.	<b>Knowledge Test</b>
AK10	The basic aircraft instruments and the principles upon which they work: e.g. compass, altimeter, air speed indicator, artificial horizon etc.	<b>Knowledge Test</b>
AK11	Avionics such as basic heritage radio and navigation systems such as radio direction finder.	<b>Knowledge Test</b>
AK12	Relating to static aircraft only – awareness power plants systems for basic types of heritage aircraft power plant: piston – rotary, radial, in-line; jet: turbojet, turboprop. Engine-driven systems such as fuel and hydraulic pumps.	<b>Professional Discussion</b>

	<b>Aviation Technician - Specific Skills</b> – The apprentice can:	<b>Assessment Method</b>
AS1	Use appropriate aviation terminology.	<b>Professional Discussion</b>
AS2	Fully document and record all work with European Aviation Safety Agency/Civil Aviation Authority requirements.	<b>Professional Discussion</b>
AS3	Survey Heritage Aircraft, and classify damage as: Negligible, Repairable by treatment, Repairable by patching or insertion or requiring replacement.	<b>Professional Discussion</b>
AS4	Apply appropriate conservation treatment(s) with minimum physical intervention and removing no or as little as possible original material.	<b>Professional Discussion</b>
AS5	Correctly identify and employ appropriate riveting techniques	<b>Professional Discussion</b>

AS6	Manufacture and replace aircraft panels/components using conforming material.	<b>Practical Observation</b>
AS7	Use sealants to add aerodynamic smoothness to exposed surfaces as seams and joints in the fuselage and wings	<b>Practical Observation</b>
AS8	Use sealants to prevent air and fluid leakage.	<b>Practical Observation</b>
AS9	Undertake jacking & lifting operations without endangering themselves or others.	<b>Practical Observation &amp; Professional Discussion</b>
AS10	Assess external condition of aircraft electrical systems, instruments and power-plant as to their appearance.	<b>Professional Discussion</b>
AS11	Utilise appropriate conservation techniques to return electrical systems, instruments and power-plant to a satisfactory external appearance.	<b>Professional Discussion</b>
<b>AS12</b>	Remove equipment and store in an environmentally controlled bonded secure storage facility, so that it could be re-used in the future.	<b>Professional Discussion</b>

### Option 2 - Heritage Engineering Marine Technician

	<b>Marine Technician - Specific Knowledge</b> – The apprentice has knowledge and understanding of:- :	<b>Assessment Method</b>
MK1	The use of appropriate Heritage marine terminology.	<b>Professional Discussion</b>
MK2	The prime mover principles of operation for propulsion such as, steam, electric, two stroke and four stroke petrol and diesel engines.	<b>Knowledge Test</b>
MK3	Propulsion system principles and designs with the underpinning knowledge to service, maintain, operate locate faults and rectify or repair.	<b>Knowledge Test</b>
MK4	Vessel auxiliary systems for electrical supply, fuel supply, cooling systems, plumbing systems.	<b>Knowledge Test</b>
MK5	Vessel steering theory, system principles and designs including steering components and the method of operation.	<b>Professional Discussion</b>
MK6	Manual handling, lifting, jacking operations without endangering the condition of the Heritage vessel or its components.	<b>Knowledge Test</b>
MK7	The method to identify the sources of information and codes of practice used to restore or recreate a historic vessel as well as identify the material used to construct her.	<b>Knowledge Test</b>
MK8	How to keep the fabric of construction of the vessel suitably maintained to ensure longevity.	<b>Knowledge Test</b>

	<b>Marine Technician - Specific Skills –</b> The apprentice can:	<b>Assessment Method</b>
MS1	Service, maintain operate, locate faults and rectify or repair on prime movers such as; steam, electric, two and four stroke petrol and diesel engines.	<b>Practical Observation</b>
MS2	Service, maintain, operate locate faults and rectify or repair propulsion systems.	<b>Practical Observation</b>
MS3	Locate faults and rectify or repair Heritage vessels auxiliary systems for electrical supply, fuel supply, cooling and plumbing systems.	<b>Practical Observation</b>
MS4	Service, maintain, operate, rectify and repair vessel steering components.	<b>Practical Observation</b>
MS5	Manufacture replacement components using conforming materials such as wood, metal or fabric	<b>Professional Discussion</b>
MS6	Undertake lifting, slinging, jacking operations without endangering the vessel, components or persons for large heavy objects.	<b>Practical Observation &amp; Professional Discussion</b>
MS7	Manage the processes required to implement an effective vessel assessment including how to assess a vessel for her historical significance and her current fabric condition.	<b>Practical Observation</b>
MS8	Manage the process required to stabilise a Heritage vessel and how to protect her condition by applying appropriate treatments with minimum physical intervention and removing as little original material.	<b>Professional Discussion</b>
MS9	Maintain the fabric of the vessel and keep it suitably maintained even under museum conditions to ensure longevity.	<b>Professional Discussion</b>

### **Option 3 - Heritage Engineering Steam (Mechanical Overhaul) Technician**

	<b>Steam (Mechanical Overhaul) Technician - Specific Knowledge –</b> The apprentice has knowledge and understanding of:- :	<b>Assessment Method</b>
SMK1	Examination requirements for periodic inspection of components as set out in relevant documentation (e.g. MT 276 and GMRT 2004 and others).	<b>Professional Discussion</b>
SMK2	How the mechanical components of a steam engine are constructed and function.	<b>Knowledge Test</b>
SMK3	What to look for in their periodic examination of condition and need for repair, replacement.	<b>Knowledge Test</b>
SMK4	Lubrication systems and their maintenance.	<b>Knowledge Test</b>
SMK5	Techniques for overhaul and repair of the motion components (connecting and coupling rods, slide bars and valve gear); brake gear.	<b>Professional Discussion</b>
SMK6	Techniques for overhaul and repair of footplate fittings, including injectors and pipework.	<b>Knowledge Test</b>
SMK7	Locomotive frame construction, wheels and tyres (including when wear of treads and flanges requires repair/replacement).	<b>Professional Discussion</b>

SMK8	Interference fits and the tolerances involved in this type of mechanical assembly.	<b>Knowledge Test</b>
SMK9	Understanding of major variations in locomotive design and construction over time.	<b>Knowledge Test</b>
SMK10	Air and vacuum brake systems and pumps.	<b>Knowledge Test</b>

	<b>Steam (Mechanical Overhaul) Test - Specific Skills – The apprentice can:</b>	<b>Assessment Method</b>
SMS1	Use appropriate terminology in recording of work.	<b>Professional Discussion</b>
SMS2	Undertake safe handling including hot/in steam working and workshop systems – electric, air, lifting.	<b>Practical Observation &amp; Professional Discussion</b>
SMS3	Ability to undertake hand and machine fitting including effective use of machine shop tools associated with mechanical repair work (e.g. making replacement components).	<b>Practical Observation</b>
SMS4	Mechanical exams and checks on lubrication systems, brake systems, hoses and couplings.	<b>Professional Discussion</b>
SMS5	Undertake mechanical testing techniques, carrying out the required test procedure without causing damage to the component or system.	<b>Practical Observation</b>
SMS6	Undertake white metalling and refurbishment of bearings.	<b>Practical Observation</b>
SMS7	Carry out examination of locomotive frames and their alignment.	<b>Practical Observation</b>
SMS8	Carry out examination procedures for wheel-sets, tyres and flanges, axles and springs to determine repair or adjustment needs in line with guidance e.g. MT 276.	<b>Practical Observation</b>
SMS9	Carry out valve and piston examination and slide bar alignment.	<b>Practical Observation</b>

#### **Option 4 - Heritage Engineering Steam (Boiler-smith) Technician**

	<b>Steam (Boiler Smith) Technician - Specific Knowledge – The apprentice has knowledge and understanding of:-</b>	<b>Assessment Method</b>
SBK1	Main types of riveted boiler and their construction, and of common faults on locomotive and marine boilers (e.g. grooving), how to identify them.	<b>Knowledge Test</b>
SBK2	Correct use of common repair techniques including patches.	<b>Knowledge Test</b>
SBK3	Understanding of the HRA Guidance Note 'HGR-B9000-Is01 - Steam Locomotive Boilers - Introduction' and the further guidance notes to which it refers.	<b>Professional Discussion</b>

SBK4	Methods of inspection and correct use of testing techniques e.g. flares and hammer testing.	<b>Knowledge Test</b>
SBK5	Legislation standards and procedures for safety and insurance inspection.	<b>Knowledge Test</b>
SBK6	Carrying out steam and hydraulic testing; operation of safety valves.	<b>Knowledge Test</b>
SBK7	Safe working practices in the handling and repair of boilers e.g. slinging.	<b>Professional Discussion &amp; Practical Observation</b>
SBK8	Traceability and selection of materials. Use of different materials in boiler construction and fittings including copper fireboxes and stays.	<b>Knowledge Test</b>
SBK9	Purpose and correct use of fusible plugs, patch screws.	<b>Knowledge Test</b>
SBK10	Hot and cold plate forming and flanging.	<b>Knowledge Test</b>
SBK11	Boiler water treatments, washout and boxing up including mud-hole doors.	<b>Knowledge Test</b>

	<b>Steam (Boiler Smith) Technician - Specific Skills – The apprentice can:</b>	<b>Assessment Method</b>
SBS1	Use appropriate terminology and recording of the work.	<b>Professional Discussion</b>
SBS2	Correctly mark out plate for different boiler sections.	<b>Practical Observation</b>
SBS3	Undertake safe handling including hot/in steam working and correct use of tools associated with boiler work.	<b>Professional Discussion &amp; Practical Observation</b>
SBS4	Carry out thorough survey and examinations, testing techniques including hydraulic and have the skills to identify and carry out the required test procedure without causing damage to the component or system.	<b>Professional Discussion &amp; Practical Observation</b>
SBS5	Carry out riveting repairs (hot and hydraulic).	<b>Professional Discussion</b>
SBS6	Carry out tube removal and boiler re-tubing.	<b>Professional Discussion</b>
SBS7	Undertake correct fitting of boiler mountings and safety valves.	<b>Practical Observation</b>
SBS8	Carry out plate-work repairs and patching.	<b>Practical Observation</b>
SBS9	Carry out inner and outer firebox repair, including drilling and tapping, stay removal and replacement.	<b>Practical Observation</b>

### **Option 5 - Heritage Engineering Vehicle Mechanical Technician**



	<b>Vehicle (Mechanical) Technician - Specific Knowledge – The apprentice has knowledge and understanding of:- :</b>	<b>Assessment Method</b>
VMK1	Appropriate heritage vehicle mechanical terminology and the history of vehicle technologies and their applications.	<b>Knowledge Test</b>
VMK2	Inspection, assessment and preservation of the mechanical condition of historic vehicles.	<b>Knowledge Test</b>
VMK3	Operation of historic vehicle systems safely and without damage to components and systems.	<b>Professional Discussion &amp; Practical Observation</b>
VMK4	The principles of motive power construction, their application and operation; such as rotary, radial, sleeve-valve, in line, V, W, Broad Arrow, opposed piston, twin crankshaft, naturally aspirated and forced induction spark ignition and compression ignition engines, high and low pressure external combustion engines and historic electric motors.	<b>Professional Discussion</b>
VMK5	How to lift, secure, service, maintain vehicle systems, investigate and rectify faults.	<b>Knowledge Test</b>
VMK6	<i>Chassis</i> design principles, construction and historical use of materials and jointing methods.	<b>Knowledge Test</b>
VMK7	<i>Auxiliary systems</i> such as cable and rod operated external or internal band brakes, hydrostatic brakes, pipework and pressure systems. Fuel systems including fuel types, storage and delivery. Damping, suspension and steering principles, design and use of liquids, fuels, coolants and oils (Vegetable and mineral).	<b>Professional Discussion</b>
VMK8	<i>Powertrain</i> ; such as cone or centrifugal clutches, chain, gear, or belt drive, pre-selector, sliding mesh and constant mesh gearboxes, fast and loose pulleys, fluid flywheels, torque converters, torque tube, open and final drive variations.	<b>Knowledge Test</b>
VMK9	<i>Electrics</i> ; such as magnetos, trembler coils, distributors, generators, current control devices and other power sources.	<b>Knowledge Test</b>
VMK10	Re-manufacture of components: techniques and use of historic materials and processes including modern materials and techniques where appropriate	<b>Knowledge Test</b>

	<b>Vehicle (Mechanical) Technician - Specific Skills – The apprentice must be able to:</b>	<b>Assessment Method</b>
VMS1	Operate historic vehicles and systems safely and without damage to components and systems.	<b>Professional Discussion &amp;</b>



		<b>Practical Observation</b>
VMS2	Conduct and record inspections and assessments relating to historic vehicles and systems taking into account the historic pedigree and use of materials & processes.	<b>Professional Discussion</b>
VMS3	Produce technical drawings, use a range of measuring techniques including the use of metric and imperial measuring systems.	<b>Professional Discussion</b>
VMS4	Implement plans to preserve, repair, disassemble, re-assemble or re-manufacture the range of historic vehicles systems and components.	<b>Practical Observation</b>
VMS5	Lift/jack, support and lower historic vehicles safely and without damage to chassis, components or systems.	<b>Professional Discussion &amp; Practical Observation</b>
VMS6	Service, maintain and repair the range of historic motive power systems.	<b>Practical Observation</b>
VMS7	Service, maintain and repair historic vehicle auxiliary systems.	<b>Practical Observation</b>
VMS8	Retain originality of materials and apply/use preservation techniques where appropriate.	<b>Practical Observation</b>
VMS9	Re-manufacture components using hand skills, milling, turning, grinding and fabrication skills appropriate to the particular vehicle.	<b>Practical Observation</b>
VMS10	Use mechanical, non-mechanical & thermal jointing processes including riveting, glues, soldering, brazing, mig, tig, spot & arc welding.	<b>Professional Discussion</b>

### **Option 6 - Heritage Engineering Vehicle Coach-building & Trim Technician**

	<b>Vehicle (Coach-building &amp; Trim) Technician - Specific Knowledge</b> – The apprentice has knowledge and understanding of:- :	<b>Assessment Method</b>
VCTK1	The use of appropriate heritage vehicle coach-building & trim terminology and the history of vehicle technologies and their applications.	<b>Professional Discussion</b>
VCTK2	How to inspect, assess and preserve the coachwork and trim condition of historic vehicles.	<b>Professional Discussion</b>
VCTK3	Chassis and Body construction techniques & materials: Repair, adjustment, removal and replacement of minor/major component defects.	<b>Knowledge Test</b>

VCTK4	The nature of mechanical, non-mechanical and thermal jointing techniques including bonding, hot & cold riveting, welding, braizing, solder, spot, annealing, hardening and tempering.	<b>Knowledge Test</b>
VCTK5	Forming, folding, lead filling, casting, fabrication & remanufacture of panels and structural components such as wheeling, shrinking, forming, pressing and production and use of bucks.	<b>Knowledge Test</b>
VCTK6	Principles of wood and composite framing & panel work.	<b>Professional Discussion</b>
VCTK7	The appropriate conservation treatments whilst preserving original components and structure.	<b>Knowledge Test</b>
VCTK8	The removal, replacement, refurbishment or re-manufacture of the internal and external trim components in a range of materials.	<b>Knowledge Test</b>
VCTK9	The repair and manufacture of bright work and castings, polishing and plating techniques, refurbishment of seat, frames and sub-straight, cutting / sewing / piping / quilting / use of adhesives and production of hoods, frames, head linings and upper environment trim.	<b>Knowledge Test</b>
VCTK10	Removal, replacement, refurbishment and re-manufacture of vehicle glazing.	<b>Knowledge Test</b>

	<b>Vehicle (Coach-Building &amp; Trim) Technician - Specific Skills – The apprentice can:</b>	<b>Assessment Method</b>
VCTS1	Conduct and record inspections & assessments relating to historic vehicle construction and components taking into account the historic pedigree and use of materials and processes.	<b>Professional Discussion</b>
VCTS2	Dismantle, store and rebuild historic vehicles safely and without damage to components and systems.	<b>Professional Discussion &amp; Practical Observation</b>
VCTS3	Produce technical drawings, use a range of measuring techniques including the use of metric and imperial measuring systems.	<b>Practical Observation</b>
VCTS4	Implement plans to preserve, repair, disassemble, reassemble or re-manufacture the range of historic vehicles chassis, panels and components.	<b>Practical Observation</b>

VCTS5	Use historic building techniques such as 'wheeling' (panels being hand rolled).	<b>Practical Observation</b>
VCTS6	Use all jointing processes including riveting, glues, soldering, brazing and welding methods.	<b>Professional Discussion</b>
VCTS7	Remove, replace, refurbish or re-manufacture the internal and external trim components in a range of materials including hoods, frames, head linings, and upper environmental trim.	<b>Practical Observation</b>
VCTS8	Remove, replace, refurbish or re-manufacture the internal and external trim components in a range of materials including fabric, wood, metal and composites.	<b>Practical Observation</b>
VCTS9	Remove, replace, refurbish or re-manufacture the vehicle glazing.	<b>Professional Discussion</b>
VCTS10	Prepare vehicles for handover to customers, transportation, exhibitions and display	<b>Practical Observation</b>

## ANNEX B

The independent assessor must assess the Professional Discussion and Practical Observation using the grading criteria in table below, to award a grade of fail, pass or distinction:

Knowledge Test									
	Fail	Pass	Distinction						
<b>Knowledge test</b> This will be graded by a standardised pass mark	Less than 60%	60% to 79%	80% and above						
Professional Discussion									
Fail criteria	Pass criteria – To achieve a pass apprentices must demonstrate competence in all the relevant, skills, knowledge and behaviours of the standard	Distinction criteria – is in addition to meeting the pass criteria. To achieve distinction all of the following criteria must be met:	Core Element code	Option Element Code					
				1. Aviation	2. Marine	3. Steam (Mechanical Overhaul)	4. Steam (Boiler-Smith)	5. Vehicle (Mechanical)	6. Vehicle (Coach-Building & Trim)
The apprentice cannot demonstrate the minimum evidence to achieve a pass	Identify current Health, Safety and Environmental legislation and describes how they comply with the	Explain the organisations management system for health & safety.  Example evidence:	CS1 CB1	AS9	MS6	SMS2	SBK7 SBS3 SBS4	VMK3 VMS1 VMS5	VCTS2

	regulations applicable to their role	makes reference to individual roles and responsibilities							
The apprentice cannot demonstrate the minimum evidence to achieve a pass	All tasks are completed in a competent manner in accordance with company specific operating procedures. Identify and describes instances where they have worked effectively on both an individual basis and as part of a team	Explain why it is important to adhere to the company procedures and processes and the implications if these are not followed correctly. Explain the process used within the organisation to review and update relevant specific operating procedures. Consults and involves work colleagues to make a contribution to identify and recommend improvements to working practices and procedures	CK3 CK5 CK15 CS3 CS9 CB2	AK8 AS5	MS5	SMK5 SMK7 SMS4	SBS5 SBS6	VMS10	VCTK6 VCTS6 VCTS9
The apprentice cannot demonstrate the minimum evidence to achieve a pass	Identify the company specific policies and procedures relevant to their role and demonstrates how these are applied. Complies with company Continued Professional Development requirements, working within the companies code of	Explain where they have proactively researched how to engage with the relevant Professional Institution in order to gain professional recognition, at the appropriate level such as Engineering Technician (Eng Tech) and understands the	CB3 CB5 CB6						

	conduct and their equality and ethical values	requirements of gaining professional recognition. Example evidence: promoting the company's code of conduct and a fundamental commitment to equality, diversity and ethical values							
The apprentice cannot demonstrate the minimum evidence to achieve a pass	Demonstrate that they adhere to the procedure that determines which conservation product or process must be used relevant to the task being undertaken in order to meet Heritage requirements	Explain where they have applied two conservation treatments and two conservation techniques. Can explain the criteria used to determine which treatment and conservation method should be used to protect the integrity of the heritage component or structure.		AK1 AK12 AS1 AS4 AS11 AS12	MK1 MK5 MS8 MS9	SMS1	SBSC 1	VMK4 VMK7 VMS4	VCTK1
The apprentice cannot demonstrate the minimum evidence to achieve a pass	All required documentation is fully and accurately completed in line with company specific requirements	Analyses, and interprets recorded data and articulates the need for accuracy and the importance of qualitative data capture and recording to preserve historical context. Can explain the risks/consequences of not doing this.	CS6 CS10 CS14	AS2 AS3 AS10		SMK1	SBK3	VMS2 VMS3	VCTK2 VCTS1

Practical Observation									
Fail criteria	Pass criteria – To achieve a pass apprentices must be able to:	Distinction criteria – is in addition to meeting the pass criteria. To achieve distinction all of the following criteria must be met:	Core Element Code	1. Aviation	2. Marine	3. Steam (Mechanical Overhaul)	4. Steam (Boiler-Smith)	5. Vehicle (Mechanical)	6. Vehicle (Coach-Building & Trim)
The apprentice cannot demonstrate the minimum evidence to achieve a pass	Demonstrate they manage the health & safety of themselves and others and the application / implementation of risk assessments, reviewing control measures which to ensure the safety, security and integrity of the work area	Appraises own approach to health and safety, acting as a role model by identifying deficiencies and providing proactive solutions to ensure the safety, security and integrity of the work area	CS1 CB1	AS9	MS6	SMS2	SBK7 SBS3 SBS4	VMK3 VMS1 VMS5	VCTS2

The apprentice cannot demonstrate the minimum evidence to achieve a pass	Demonstrate that they correctly prepare and undertake heritage restoration activities that meet company quality standards and requirements.	Lead aspects of a heritage restoration project including agreeing with the customer a schedule and programme of work Describes instances where they have used negotiation and influencing skills to heritage restoration projects.	CK2 CS11	AS6 AS7 AS8	MS1 MS2 MS4	SMS3 SMS5 SMS6 SMS9	SBS2 SBS7 SBS8 SBS9	VMS6 VMS7 VMS9	VCTS5 VCTS7 VCTS8
The apprentice cannot demonstrate the minimum evidence to achieve a pass	Demonstrate all required quality processes and levels are fully and accurately completed in line with company specific requirements	Analyses, and interprets quality data and articulates the need for accuracy and the importance of qualitative data capture and recording, whilst driving quality processes within the company.	CK4 CS2 CS4		MS7	SMS7 SMS8		VMS8	VCTS3
The apprentice cannot demonstrate the minimum evidence to achieve a pass	Show work planning and execution is completed in line with company procedures with both methodical and logical order.	Uses company approved planning techniques and implements these to improve work efficiency. Operates upon own initiative, in line with their individual responsibilities, demonstrating examples of critical reflection, analysis and evaluation	CK6 CS5 CS7 CS8						VCTS4 VCTS10



<p>The apprentice cannot demonstrate the minimum evidence to achieve a pass</p>	<p>Describe the use, benefits and applications of continuous improvement techniques and methods (Such as Kaizen or Six Sigma). Also has a strong desire to ensure that the root cause of a problem is identified and addressed.</p>	<p>Explain the specific continuous improvement techniques and methods that are used in the work area and the improvements that have been achieved and the impact on the business. Having identified more than one root cause of different problems and not only addressed them but made significant contributions to identify solutions.</p>	<p>CK8 CS12 CS13 CB4</p>						
---	---	--	--------------------------------------	--	--	--	--	--	--

**To achieve an overall pass for the apprenticeship, the apprentice must achieve a minimum of a pass in all of the core and relevant option grading descriptors for the knowledge test, the professional discussion and the practical observation.**

**To achieve an overall distinction for the apprenticeship, the apprentice must achieve a distinction for all the core and relevant option grading descriptors in the knowledge test, the professional discussion and the practical observation.**

**The Apprentice will fail if ANY individual grading descriptor is failed.**