

Highways Maintenance Skilled Operative Apprenticeship, Level 2: End Point Assessment Plan

Introduction & Overview

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

The objective of the Highways Maintenance EPA is to provide a high quality, cost effective means of measuring the apprentice's knowledge, skills and behaviour.

The assessment plan design is driven by the following principles:

- The apprentice demonstrating competence through workplace performance
- The apprentice's ability to meet specified industry standards of competence performance
- The apprentice's ability to demonstrate the requisite knowledge, skills and behaviours that support workplace performance

Full time apprentices will typically spend 18-24 months on-programme working towards the apprenticeship standard and complete the required amount of off-the-job training in line with the apprenticeship funding rules.

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

- As a gateway requirement, apprentices must complete all training prior to taking their EPA and have a completed portfolio to support assessment. Apprentices must have achieved English and mathematics qualifications in line with the apprenticeship funding rules.

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

An approved EPAO must conduct the EPA for this apprenticeship. Employers must work with the training provider to select an approved EPAO from the apprenticeship providers and assessment register (APAR).

The EPA consists of two distinct assessment methods:

- Knowledge Test
- Practical Skills Assessment

The Knowledge Test will be graded as fail, pass or distinction.

The Practical Skills Assessment will be graded as fail or pass.

The individual grades will be combined to determine the overall grade of fail, pass or distinction.

On-programme (typically 18-24 months)	End Point Assessment Gateway	End Point Assessment (maximum one month)
Training to develop the occupation standard's knowledge, skills and behaviours	Have achieved English and mathematics qualifications in line with the apprenticeship funding rules	Knowledge test Practical Skills Assessment
Complete training towards English and mathematics qualifications in line with the apprenticeship funding rules	Completed work-based Record of Evidence to support the end-point assessment Employer satisfied apprentice is consistently working at or above the level of the standard	

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Diagram 1; Typical Highways Maintenance Apprenticeship Summary

This apprenticeship is designed to operate as the standard for workers on highways maintenance within rural and urban roads across the UK. The standard and end point assessment plan have been developed by employers who operate in this sector.

Upon completion of this apprenticeship, the operative will have demonstrated the knowledge, skills and behaviours (KSBs) outlined in the apprenticeship standard for highways maintenance on rural and urban roads, which will enable them to carry out maintenance and repairs to these roads.

Highways maintenance on rural and urban roads is a safety critical trade and each individual working in the sector must be aware of their responsibility to themselves, those they are working with, the end user and also others who they may come into contact with whilst carrying out their role e.g. members of the public.

End-point Assessment Gateway

The EPA should only start once the employer is satisfied that the apprentice is consistently working at or above the level set out in the standard, the pre-requisite gateway requirements for EPA have been met and that they can be evidenced to an EPAO. Employers may wish to take advice from their apprentice's training provider(s).

Gateway requirements:

- Have achieved English and mathematics qualifications in line with the apprenticeship funding rules
- Completed the Record of Evidence to support the end-point assessment

Requirements for the Record of Evidence

The EPAO will provide a Record of Evidence document for use by the apprentice to gather work-based evidence; this evidence is to support the end point assessment by identifying how the apprentice applied skills, knowledge and behaviours against the standard, as identified in Annex A.

The Record of Evidence presents a wide range of evidence generated in the workplace which allows the apprentice to demonstrate they are able to meet the standard consistently. The evidence is from the following sources:

- Witness Testimony of work completed and evidenced (minimum of three)
- Employer reports (minimum of three)
- Copies of Time sheets (minimum three)

This evidence is to be signed off by the employer. The Record of Evidence must be supplied to the EPAO a week before the EPA.

The Record of Evidence may include any evidence previously assessed within the on-programme part of the apprenticeship.

End-point Assessment Methods, Timescales & Location

The EPA consists of 2 distinct assessment methods:

- Knowledge Test
- Practical Skills Assessment comprised of two components:
 - Component 1: Practical task including 6 set questions
 - Component 2: Questions to assess KSBs not demonstrated in the practical task

The EPA must be completed over a maximum period of two months, after the apprentice has met the EPA gateway requirements.

The assessment methods must be completed in the following order Knowledge Test and then the Practical Skills Assessment. Candidates must pass the knowledge test before moving onto the practical test.

Requirements for each assessment method are detailed below.

1. Knowledge test:

- Apprentices must complete a knowledge test, which will be the first assessment method of the EPA.
- The knowledge test must assess apprentices against the standard's knowledge and skills as shown in annex A.
- The knowledge test must consist of 50 multiple-choice scenario/knowledge based questions.
- Each question must present the apprentice with 4 options, from which the apprentice must select one or multiple correct options.
- Each question answered correctly must be assigned 1 mark, any incorrect or missing answers must be assigned 0 marks.
- Apprentices must have 1.5 hours to complete the knowledge test.
- The knowledge test must be closed book i.e. the apprentice cannot refer to reference books or materials.
- The test should be delivered as an on screen multiple choice examination.
- EPAOs must ensure that the knowledge test is conducted in a suitable controlled environment i.e. quiet room free from distraction and influence, with the necessary equipment for each assessment method e.g. computer.
- Apprentices must take the knowledge test in the presence of an EPAO invigilator.
- The maximum invigilator to apprentice ratio must be 1 to 10.
- Knowledge tests must be marked by EPAO independent assessors or markers following a marking guide produced by the EPAO; electronic marking is permissible.

- Independent assessors must award a grade using the following grading boundaries:

Grading boundaries	Fail	Pass	Distinction
Marks	0-37	38-44	45-50

- EPAOs must ensure the knowledge test is available for apprentices within their 1-month EPA time period
- EPAOs must develop and maintain a knowledge test question bank of sufficient size to mitigate predictability and review them regularly to ensure they are fit for purpose. Where this occurs they must put measures in place to ensure question security.
- Knowledge test questions must be set so that a pass will represent competence in the knowledge and skills; with a distinction representing a deeper understanding of the knowledge and skills.
- EPAOs must ensure that apprentices have a different set of questions in the case of re-sits or re-takes.

2. Practical Skills Assessment:

- **The practical skills assessment has two components:**
 - Component 1: Practical task including 6 set questions (duration 7 hours with a tolerance of 10% either way of the prescribed time)
 - Component 2: Questions to assess KSBs not demonstrated in the practical task (duration 30 minutes with a tolerance of 10% either way of the prescribed time)

The KSBs being assessed by this method are detailed in Annex A.

The total duration of the practical skills assessment will be 7 hours 30 minutes (including a 30-minute lunch break). Lunch break is to be taken at a set time for all

apprentices on the practical test and supervised by the independent assessor or facilities staff, to ensure no collusion or discussion of the test by the apprentices.

Component 1: Practical task including 6 set questions

- Due to the safety-critical nature of the highways maintenance role the practical task must take place in a controlled environment with appropriate equipment and materials for the assessment. The controlled environment should replicate a realistic work situation, under normal conditions.
- The apprentice must use and follow a specification and drawing to carry out a maintenance and repair practical task, to a given specification. Apprentices must be provided with both written and verbal instructions on the task they must complete, including timescales.
- Apprentices must be observed by an independent assessor completing a practical task. There is no requirement for the practical test to be recorded. Completion of the task and the end-product are both being observed.
- The practical test must be graded by the independent assessor using the grading criteria in Annex D.
- Due to safety critical reasons, the grading for this component will be pass or fail only.
- During the practical task the independent assessor must ask 6 set open questions to assess related underpinning knowledge. These questions must be different for each apprentice but will be based on the criteria in the Specification for Highway Works and the specification for the task being

undertaken. They may ask to follow up questions where clarification is required.

- Questioning must be completed within the total time allowed for the practical test. Answers to questions must be documented by the independent assessor on separate documentation provided by the EPAO.
- The EPAO is to ensure that standard questions that have been developed for each specification are used by the independent assessors and the responses recorded on the documentation provided by the EPAO, for moderation purposes.
- The apprentice will carry out the practical task in their own defined area, segregated from other apprentices. If manual handling requires a two man lift then a technician should be available from the assessment centre solely for this purpose.
- The apprentice should bring the following personal protective equipment (PPE) to the EPA for the practical test: hard hat, goggles, reflective clothing, steel top cap boots and gloves.
- Tools and equipment must be selected by the apprentice to carry out the practical task, which will be supplied by the assessment centre. When planning the use of tools and equipment (which will be a shared resource) effective communication and team work with other apprentices, who are taking the end point assessment, will be required.
- The Practical test will be based upon:
 - Application of Health, safety and Environmental procedures
 - Reading, interpreting and working to drawings and specifications
 - Use of the Manual of Contract Documents for Highways Works

- Moving and Handling of Resources
- Preparing and operating powered tools and pedestrian plant
- Excavation and reinstatement through carrying out maintenance and repair
- Working within a controlled environment

These will be assessed whilst carrying out one of the following 3 activities:

- Laying Bitumen
 - Laying Kerbs
 - Concrete or modular paving
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- The independent assessor 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. Given the variation in the activities and the manual handling required it is expected that an assessor and technician will be present with clearly defined responsibilities to support the process. They should also ensure all the resources provided for the practical test e.g. equipment, meet with the test specification.
 - The Practical test will be developed by the EPAO. It is mandatory that the Manual of Contract Documents for Highways Work is used as guidance in this development, using the sections for Laying Bitumen, Kerbs or Concrete or modular paving. The Manual can be found at Standards for highways.
 - The EPAOs should develop a bank of practical test specifications for the practical test, including questions relating to underpinning knowledge, and it is recommended this is undertaken in consultation with representative employers. The EPAO must put measures in place to ensure specification security and to maintain a specification bank of sufficient size to mitigate predictability and review them regularly to ensure they are fit-for-purpose.

Component 2: Questions to assess KSBs not tested in the practical task

- Following the practical task, the apprentice will be asked questions to assess KSBs not demonstrated through the practical task.
- An independent Assessor will formulate questions taking into account the practical test the apprentice will be set and the Record of Evidence the apprentice will have submitted.
- The apprentice should submit their Record of Evidence to the EPAO a week before the EPA, so that the independent assessor has time to prepare the questions. The Independent assessor should also be advised at the same time by the EPAO which practical test the apprentice will be undertaking, so that the independent assessor can prepare the questions accordingly.
- The questioning will take place in a designated space, in a quiet room free from distractions. This session should be recorded for quality assurance purposes.
- The apprentice is able to refer to their Record of Evidence when answering the questions.
- The EPAO, advised by the independent assessor makes the final decision on if the apprentice has demonstrated the knowledge, skills and behaviours which have been mapped against the Practical Skills assessment method.

Apprenticeship Grading

Independent assessors must individually grade each assessment method according to the requirements set out in this plan.

- The Knowledge Test will be graded as fail, pass or distinction.
- The Practical Skills Assessment will be graded as fail or pass.

An independent assessor must combine the grades of the two assessment methods to determine the overall EPA grade. See grading combination table below.

Where more than one independent assessor is involved, the independent assessor responsible for the assessment method completed last will be responsible for combining the grades.

Independent assessors' decisions must be subject to moderation by the EPAO – see internal quality assurance section below. Decisions must not be confirmed until after moderation.

Knowledge test grade	Practical test grade	Overall EPA grade
Distinction	Pass	= Distinction
Pass	Pass	= Pass
Distinction	Fail	= Fail
Fail	Pass	= Fail
Pass	Fail	= Fail
Fail	Fail	= Fail

Re-sit and Re-take Information

Apprentices who fail one or more assessment method will be offered the opportunity to take a resit or retake. The apprentice's employer will need to agree that a resit or retake is an appropriate course of action. Apprentices should have a supportive action plan to prepare for the resit or retake. A resit does not require further learning, however a re-take does.

The maximum grade awarded to a re-sit or re-take will be pass, unless the EPAO identifies exceptional circumstances accounting for the original fail.

EPAOs must ensure that apprentices complete a different knowledge test and or practical test when taking a re-sit or re-take.

If the apprentice must resit or re-take the practical skills assessment the independent assessor is to identify to the EPAO the areas failed using the documentation completed by the independent assessor during the assessment.

End-point Assessment Organisations

An approved EPAO must conduct the EPA for this apprenticeship. Employers must work with the training provider to select an approved EPAO from the apprenticeship providers and assessment register (APAR).

EPAOs must appoint:

- Administrators, invigilators and markers to administer, invigilate and mark the knowledge test
- independent assessors to grade the knowledge test
- independent assessors to assess and grade the practical test supported by the Professional Discussion
- quality assurance staff to undertake moderation of EPA

They must have no direct connection with the apprentice, their employer or training provider, for example there must be no conflict of interest. There are no specific qualification or experience requirements for administrators, invigilators and markers. They must be trained in the task(s) by their EPAO and operate according to their guidance.

Quality assurance staff must hold or be working towards quality assurance qualifications.

Minimum requirements for Independent Assessors

Independent assessors must be occupationally competent and competent to assess.

They must meet the following requirements:

- Independence, by having no connection with the apprentice, their employer or training provider. EPAOs are to manage any conflict of interest.
- Occupational competence - people with experience within the sector of Highways Maintenance on rural and urban roads who should be able to demonstrate up-to-date, relevant, in-depth and broad experience through evidence of:
 - Achieved a Level 2 or above in Highways Maintenance and Repair
 - Hold a recognised Training Award or Instructional Qualification that is suitable to Highways Maintenance and Repair
 - Competent to assess – must be working towards or have achieved a relevant recognised assessor qualification such as a Level 3 Award in Assessing Competence in the Workplace and continue to practice to that standard. Independent assessors who hold earlier qualifications (D32 or D33 or A1 or TQFE/TQSE must have CPD evidence to the most current standards.
 - Undertake CPD each year for technical knowledge and identify any failures or improvement to the End Point Assessment. CPD training should be carried by EPAOs on a yearly basis

Independent assessors will be recruited and trained by the EPAO.

Internal Quality Assurance

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

- appoint independent assessors that meet the requirements as detailed in this plan – see independent assessor requirements above

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- provide training for independent assessors in terms of good assessment practice, operating the assessment tools and grading
- have quality assurance systems and procedures that support fair, reliable and consistent assessment across organisation and over time
- operate regular standardisation events that enable independent assessors to attend a minimum of 1 events per year
- operate moderation of assessment activity and decisions, through examination of documentation and observation of activity, with a minimum of 15% of each independent assessors' assessments moderated

External Quality Assurance

The employer led approach has been chosen as the external quality assurance model, with the employers working in partnership with the Construction Industry Training Board (CITB).

Implementation

Affordability

- Affordability has been built into the design of the EPA in the following way:
 - The knowledge test element, the online test, provides an effective and appropriate means of testing the apprentice's knowledge and efficient method of marking
 - The practical element of the end-point assessment has been valued with a maximum group size of 3 individuals respectively. Every effort must be made to maximise the attendee to independent assessor ratio whilst maintaining validity of the end-point assessment.

Volumes

It is expected that the demand for up take on this apprenticeship will be in the region of 80-150 starts in the first year and 150 starts per year once established.

Annexes

Annex A

Mapping of Assessment Methods to the standard

Annex B

Grading criteria for the Practical Skills Assessment

Annex A

Assessment Methods

This chart provides an overview of the knowledge, skills and behaviours to be assessed by the assessment methods.

T = Assessment through the Knowledge test

PSA = Assessment through the Practical skills assessment

Knowledge and Understanding	T	PSA
<ul style="list-style-type: none"> The principles of health, safety and welfare and how they must be applied in relation to their own work and others. 	X	
<ul style="list-style-type: none"> The responsibilities under current legislation (including Health and safety at Work Act 1974, Provision and Use of Workplace Equipment 1998, Manual Handling Operations regulations 1992 and official guidance (risk assessment, method statements) to undertake work. 	X	
<ul style="list-style-type: none"> How to work in accordance with the National Highway Sector Schemes, Industry Codes of Practice, the New Roads & Street Works Act 1991 and other guidance relevant to the occupation. 	X	
<ul style="list-style-type: none"> Understand the structure of the highway, civil engineering methods, construction technology and have knowledge of different road categories and types, construction materials and working methods. 	X	
<ul style="list-style-type: none"> How to identify, locate and excavate around underground services such as gas and power cables to avoid strikes and loss of service. 	X	X
<ul style="list-style-type: none"> How to carry out excavation and reinstatement of the highway. 		X
<ul style="list-style-type: none"> How to carry out reactive and planned repair to damaged surfaces, including repairs to potholes, replacement and reinstatement of pavements and kerbs and laying new surfaces. 	X	X
<ul style="list-style-type: none"> How to prepare and operate powered power and hand tools, pedestrian plant, machinery for generator's, pumps, pedestrian operated plant or machines (e.g. pushed roller), mixers, compressors and self-powered tools. 	X	X
<ul style="list-style-type: none"> Know how to prepare and set up Temporary Traffic control using traffic lights, bollards and barriers. 	X	X
<ul style="list-style-type: none"> Have an understanding and knowledge of Traffic Management on rural and urban roads including safety zones, movement and flow of traffic and pedestrian restrictions. 	X	

<ul style="list-style-type: none"> Know how to carry out clearance and maintenance of rural and urban roads to current legislation, this includes the process and procedure for removal of dead animals (who to inform and what precautions must be taken). 	X	
Skills	T	PSA
<ul style="list-style-type: none"> Apply appropriate health, safety and environment procedures when working on the roads. 		X
<ul style="list-style-type: none"> Plan and undertake work practice productively when carrying out repairs to potholes, pavements and kerbs, and laying new surfaces on rural and urban roads. 		X
<ul style="list-style-type: none"> Read, interpret and work to drawings, specifications and highways information. Highways information will include details on the use of safety barriers, cones, traffic flows and safety zones to work in when working on the highway. 		X
<ul style="list-style-type: none"> Use underground cable locators to identify buried water, gas or sewer lines or other utility services and once identified excavate by hand around the line to stop any damage and disruption to services. 		X
<ul style="list-style-type: none"> Apply safe working practise for moving, storing, lifting and handling of resources. 		X
<ul style="list-style-type: none"> Excavation and reinstatement of the highway by carrying out maintenance and repairs, including removal of material within the road or road side using hand or power tools and reinstatement of the area using concrete, screeds, sub-base, aggregates or bituminous materials. 		X
<ul style="list-style-type: none"> Install Street Ironworks (drain access covers and frames and gully gates situated on the road) to given work instructions. 	X	
<ul style="list-style-type: none"> Install Street Ironworks to given work instructions relating to access covers and frames and gully gates situated on the road. 		X
<ul style="list-style-type: none"> Prepare and operate powered tools or pedestrian plant, machinery or equipment for use on roads. This will include machinery for generator's, pumps, pedestrian operated plant (e.g. pushed roller), mixers, compressors and self-powered tools (pneumatic drill). 	X	X
<ul style="list-style-type: none"> Prepare, set up and work within temporary traffic management (using traffic lights, cones and barriers to section off elements of the road from vehicles and pedestrians) on urban and rural roads whilst excavating and re-instating the highway. 	X	X
<ul style="list-style-type: none"> Work with other sub-contractors on larger schemes (e.g. traffic management). 	X	

Behaviours	T	PSA
• Effective communication: oral, written, listening, the use of signalling, body language, presentation.		X
• Team work: work effectively with others including with limited supervision.		X
• Independent working: take responsibility for completion of their own work.		X
• Logical thinking: use clear and valid reasoning when making decisions to undertake the work instructions.		X
• Working effectively: undertake the work in a reliable and productive manner.		X
• Time management: use own time effectively to complete the work instructions to schedule.		X
• Adaptability: be able to adjust to changes to the work instructions.		X
• Assertiveness and confidence: able to resist pressures to work following unsafe practices.		X
• Respect: apply equality, diversity and inclusion in dealing with others.		X
• Commitment to safe working.	X	X

Annex B – Grading criteria for the Practical Skills assessment

The assessment method consists of two parts:

- Component 1: Practical task including 6 set questions
- Component 2: Questions to assess KSBs mapped to this method not tested in the practical task

A Practical Fault is any mistake which is not Health and Safety critical. In the table below A = Practical Fault

A Health and Safety Major Fault is a fault that is Health and Safety critical. In the table below B = Health and Safety Major Fault

The grading criteria for each component are in the table below.

COMPONENT 1	
For the practical task including 6 set questions	
FAIL	PASS
Apprentices awarded: 1 x B or 4 x A's will not have demonstrated the necessary standard required	Correct Personal Protective Equipment selected (B)
	Determined the correct risk in relation to the specification (B)
	Read, correctly interpret drawings including specifications (A)
	Radio detection equipment selected and correctly operated (B)
	Effective communication established by listening to instruction from the independent assessor (A)
	Positive body language e.g. engaged with the task and other apprentices (A)
	Respect for others and inclusion where appropriate (A)

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	Independently works: taking responsibility for completion in allocated time (A)
	Demonstrates logical thinking by clear and valid reasoning as applied to the process (A)
	Demonstrates established working practice and work undertaken in the logical sequence (A)
	Working area correctly segregated from selected equipment in line with legislative control (B)
	Correct tools selected for task and used correctly (B)
	Safe working practice demonstrated for moving, storing, lifting and handling resources (B)
	Check excavation for line and level (A)
	All works completed in line with the specification requirements in the Highways Manual (B)
Component 2	
Questions to assess KSBs not tested in the practical task	
FAIL	PASS
The apprentice has not met the pass criteria	<p>The apprentice:</p> <ul style="list-style-type: none"> • is able to describe an example of the implementation of each skill area raised by the independent assessor, using evidence from their Record of Evidence to exemplify their response • is able to answer every question accurately describing the processes, information, specifications, procedures, hazards, risks and standards, relevant to the knowledge component questions raised by the independent assessor

	<ul style="list-style-type: none"> • is able to describe an example or examples of exhibiting the behaviours raised by the independent assessor, drawing on evidence from their Record of Evidence
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The overall grade for the Practical Skills assessment

Component 1: Practical task including 6 set questions - To achieve a pass the apprentice must have no more than 3 Practical Faults and no Health and Safety Major Faults

Component 2: Questions – To achieve a pass the apprentice must have demonstrated the pass criteria

The grades will be combined as follows to give the overall grade for the method:

To achieve a pass both Component 1 and Component 2 must be passed

Training specifications to support Apprenticeship Standards approved for delivery can be found at <https://www.citb.co.uk/qualifications-standards/apprentice-frameworks/apprenticeship-frameworks-england/>