

End-point assessment plan for civil engineering technician apprenticeship standard

Apprenticeship standard number	Level of this end-point assessment (EPA)	Integrated
ST0091	3	No

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Introduction and overview

This document sets out the requirements for end-point assessment (EPA) for the civil engineering technician apprenticeship standard. It explains how EPA for this apprenticeship must operate.

This document provides the EPA design requirements for end-point assessment organisations (EPAOs) for this apprenticeship standard. It will also be useful for apprentices undertaking this apprenticeship, their employers and training providers.

EPA must be conducted by an EPAO approved to deliver EPA for this apprenticeship standard. Each employer should select an approved EPAO from the Education & Skills Funding Agency's Register of end-point assessment organisations (RoEPAO).

Full time apprentices will typically spend 32 months on-programme (before the gateway) working towards this occupational standard. All apprentices must spend a minimum of 12 months on-programme. All apprentices must spend a minimum of 20% of on-programme time undertaking off-the-job training.

Before starting EPA, an apprentice must meet the gateway requirements. For this apprenticeship they are:

- the employer must be content that the apprentice is working at or above the occupational standard
- apprentices must have achieved as a minimum the qualification mandated in the civil engineering technician occupational standard:
 - Pearson BTEC Level 3 Diploma in Civil Engineering (603/1217/8)
- apprentices must have achieved English and mathematics at Level 2¹
- apprentices must indicate their preferred civil engineering project subject focus which allows the EPAO to provide the most appropriate technical project brief to be issued at gateway
- apprentices must have compiled and submitted a portfolio of evidence to underpin the EPA professional discussion

The EPAO must confirm that all required gateway evidence has been provided and accepted as meeting the gateway requirements. The EPAO is responsible for confirming gateway eligibility. Once this has been confirmed, the EPA period starts.

The EPA should then be completed within an EPA period lasting typically for 4 months.

¹ For those with an education, health and care plan or a legacy statement, the apprenticeship's English and mathematics minimum requirement is Entry Level 3. British Sign Language (BSL) qualifications are an alternative to English qualifications for those who have BSL as their primary language.

The EPA consists of 2 discrete assessment methods.

It is possible to achieve the following grades in each end-point assessment method:

Assessment Method 1: Technical project report and presentation with questioning

- fail
- pass
- distinction

Assessment Method 2: Professional discussion underpinned by portfolio

- fail
- pass
- distinction

Performance in these end-point assessment methods will determine the overall apprenticeship standard grade of:

- fail
- pass
- distinction

EPA summary table

<p>On-programme (typically 32 months)</p>	<p>Training to develop the knowledge, skills and behaviour (KSBs) of the occupational standard.</p> <p>Apprentices must work towards the following qualification mandated in the standard prior to gateway application:</p> <ul style="list-style-type: none"> • Pearson BTEC Level 3 Diploma in Civil Engineering (603/1217/8) <p>Training towards English and mathematics Level 2, if required.</p> <p>Compiling a portfolio of evidence to underpin the professional discussion.</p>
<p>End-point assessment gateway</p>	<p>The employer must be content that the apprentice is working at or above the level of the occupational standard.</p> <p>Apprentices must have achieved English and mathematics Level 2.</p> <p>Apprentices must have achieved as a minimum the following mandatory qualification:</p> <ul style="list-style-type: none"> • Pearson BTEC Level 3 Diploma in Civil Engineering (603/1217/8) <p>For the technical project report with presentation and questioning:</p> <ul style="list-style-type: none"> • apprentices must indicate their preferred civil engineering project subject focus which allows the EPAO to provide the most appropriate technical project brief to be issued at gateway <p>For the professional discussion underpinned by portfolio:</p> <ul style="list-style-type: none"> • apprentices must have compiled and submit the portfolio of evidence
<p>End-point assessment (typically 4 months)</p>	<p>Grades available for each assessment method</p> <p>End-point assessment method 1: Technical project report and presentation with questions</p> <ul style="list-style-type: none"> • fail

	<ul style="list-style-type: none"> • pass • distinction <p>End-point assessment method 2: Professional discussion underpinned by portfolio:</p> <ul style="list-style-type: none"> • fail • pass • distinction <p>Overall EPA/apprenticeship can be graded:</p> <ul style="list-style-type: none"> • fail • pass • distinction
Professional recognition	<p>On completion of the apprenticeship the apprentice will be eligible for registration as an engineering technician by the relevant professional engineering institutions.</p> <ul style="list-style-type: none"> • Institution of Civil Engineers (ICE) • Chartered Institution of Highways & Transportation (CIHT) • Institute of Highway Engineers (IHE) • Institution of Structural Engineers (IStructE)

Length of end-point assessment period

The EPA will be completed within an EPA period lasting typically for 4 months, starting when the EPAO has confirmed that all gateway requirements have been met.

Order of assessment methods

The assessment methods can be delivered in any order.

The result of one assessment method does not need to be known before starting the next.

EPA gateway

The apprentice should only enter the gateway once the employer is content that the apprentice is working at or above the level of the occupational standard. In making this decision, the employer may take advice from the apprentice's training provider(s), but the decision must ultimately be made solely by the employer.

The EPAO determines when all other gateway requirements have been met, and the EPA period will only commence once the EPAO has confirmed this.

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

- achieved the following mandatory qualification:
 - Pearson BTEC Level 3 Diploma in Civil Engineering (603/1217/8)
- achieved English and mathematics at level 2. For those with an education, health and care plan or a legacy statement the apprenticeships English and mathematics minimum requirement is Entry Level 3 and British Sign Language qualification are an alternative to English qualifications for whom this is their primary language.
- apprentices must indicate their preferred civil engineering project subject focus which allows the EPAO to provide the most appropriate technical project brief to be issued at gateway.
- for the technical project report with presentation and questioning: apprentices must indicate their preferred civil engineering project subject focus which allows the EPAO to provide the most appropriate technical project brief to be issued at gateway
- for the professional discussion, the apprentice must have compiled and submitted a portfolio of evidence – see requirements below

Portfolio of evidence requirements:

- apprentices must compile a portfolio of evidence during the on-programme period of the apprenticeship
- it must contain evidence related to the KSBs that will be assessed by the professional discussion underpinned by portfolio
- the portfolio of evidence will typically contain 10 to 12 individual pieces of evidence
- evidence must be mapped against the KSBs assessed by the professional discussion underpinned by portfolio
- evidence may be used to demonstrate more than one KSB; a qualitative as opposed to quantitative approach is suggested.
- evidence must cover the following areas:
 - using technical software to present civil engineering information

- health, safety and welfare
- project management
- personal and professional practice
- evidence sources may include evidence of work undertaken which may be supported by:
 - civil engineering designs
 - technical drawings
 - briefs, specifications, standards, project plans, technical reports
 - CAD/BIM models
 - client or customer feedback
 - witness statements
 - employer/trainer feedback
 - initial and continuous professional development and training records
 - appraisal records
 - training course completion

This list is not definitive, other evidence sources are permissible however reflective accounts and self-evaluations are not allowed

- any employer contributions should focus on direct observation of performance (for example witness statements) rather than opinions
- the evidence provided must be valid and attributable to the apprentice; the portfolio of evidence must contain a statement from the employer and apprentice confirming this
- the portfolio of evidence must be submitted to the EPAO at the gateway

The portfolio of evidence is not directly assessed. It underpins the professional discussion and therefore should not be marked by the EPAO. EPAOs should review the portfolio of evidence in preparation for the professional discussion but are not required to provide feedback after this review of the portfolio.

End-point assessment methods

The apprentice will be assessed against the KSBs assigned to the assessment methods outlined below, as shown in the mapping section of this EPA plan.

End-point assessment method 1: Technical project report and presentation with questioning

This method has 2 components

Overview

A technical project involves the apprentice completing a significant and defined piece of work that has a real business benefit. The project must be undertaken after the apprentice has gone through the gateway.

The project should be designed to ensure that the apprentice's work meets civil engineering challenges, is relevant to their role and allows the relevant KSBs to be assessed for the EPA. The employer will ensure it has a real business application and the EPAO will ensure it meets the requirements of the EPA, including suitable coverage of the KSBs assigned to this assessment method as shown in the mapping of assessment methods. The EPAO must refer to the grading descriptors to ensure that projects are pitched appropriately.

This assessment method includes two components:

- a technical project with report
- a presentation with questioning

The rationale for this assessment method is:

The technical project reflects employer's civil engineering challenges and is typical of the apprentice's everyday work, ensuring that they can demonstrate KSBs in practice. As part of a civil engineering technicians' role, they will be expected to carry out technical projects before relaying the findings back to various audiences through reports, presentations and discussions. Therefore, this method of assessment is deemed as the most appropriate for this occupation as it accurately reflects the environments and future tasks of the apprentice. The technical project report, presentation and questioning allow for effective assessment of the KSBs assigned to this assessment method.

The technical project report, presentation with questioning will be assessed holistically.

Component 1: Technical project report

Apprentices will undertake a technical project after they have passed the gateway, which would typically take up to 30 hours over a period of 6 working weeks and produce a report that appropriately covers all the KSBs assigned to this method of assessment.

A technical project brief will be designed by the EPAO and agreed in consultation with the employer, to ensure that the apprentice's work will meet the real civil engineering challenges that readily occur in business. The technical project should be relevant to the apprentice's role and must allow the relevant KSBs to be assessed for the EPA. The EPAO will ensure it meets the requirements of the EPA, including suitable coverage of the KSBs assigned to this assessment method as shown in the mapping of assessment methods. The EPAO must refer to the grading descriptors to ensure that technical projects are pitched appropriately.

The EPAO will issue the technical project brief to the apprentice at gateway. The technical project brief will reflect a real work-based civil engineering challenge in a subject area, providing a focus on an area such as:

- bridges
- buildings and structures
- dams and reservoirs
- energy services
- environmental planning and engineering
- geology, geotechnical and ground engineering, and tunnelling
- offshore
- railway systems and infrastructure
- regeneration and development
- research
- river, coast, marine, docks and harbours
- transportation, traffic and highways
- water supply / sewage treatment / drainage and pipelines

This is not an exhaustive list, other projects that provide coverage of the KSBs are allowed.

The purpose of the technical project is to set the apprentice a project which will assess their ability to integrate the range of knowledge, skills and behaviours assigned to this assessment method, which they have acquired during their apprenticeship.

The technical project brief, designed and issued by the EPAO, will be typically 500 words in length. The EPAO will design and issue guidance with the technical project brief, stating that the completion of the technical project is designed to take up to 30 hours for the apprentice to complete over a maximum period of 6 working weeks.

As a minimum, all technical project reports must include:

- an introduction
- the scope of the project (including key performance indicators)
- a project plan and methodology
- research and findings:

- data collection, analysis and evaluation appropriate to the technical project and level of apprenticeship
- reference to:
 - relevant scientific and engineering principles
 - relevant methods and techniques used
 - data and/or calculations used
 - relevant industry standards, policies, regulations, and legislations
 - any environmental and sustainability concerns
- project outcomes
- conclusions
- an evaluation of the apprentice's performance to determine the challenges that the apprentice faced and how they overcame them

The apprentice must prepare a technical project report with appendices of supporting evidence relating to the technical project. The technical project report and all appendices of supporting evidence directly demonstrating performance of KSBs must be attributable to the apprentice in full. Evidence must be accompanied by a witness statement outlining the apprentice's contribution, signed by the apprentice and their employer thereby authenticating it.

Example appendices of supporting evidence may include:

- plans
- diagrams
- calculations
- designs
- feedback
- video clips

This list is not definitive and other evidence sources apart from self-reflection are permissible.

Delivery

Apprentices must submit a technical project report to their EPAO within 6 working weeks of the technical project brief being issued by the EPAO at gateway.

The technical project report must be 2,500 words +/-10%. Appendices, references, diagrams etc. will not be included in this total. The project must map, in an appendix, how it evidences the relevant KSBs for this assessment method.

The apprentice should complete their technical project report unaided. When the technical project report is submitted, the apprentice and their employer must verify that the submitted project is the apprentice's own work.

The technical project report will be reviewed and assessed by two independent assessors.

To allow the apprentice to apply for professional registration on completion of the apprenticeship, two independent assessors must holistically assess all components of the technical project, in-line with the independent assessor requirements set out in this plan. They

will have equal responsibility in grading the assessment. The use of two independent assessors will enable the provision of balance to assessment, to bring in greater breadth and depth of technical expertise to questioning and discussion with the apprentice, elucidating more accurate grading decisions.

In the event that the two independent assessors cannot agree on whether to grade the technical project report and presentation with a pass, fail or distinction, the EPAO is required to moderate in accordance with their moderation procedures. The EPAO will then make the final decision on the grade to award based on the assessment evidence presented.

This process must adhere to all the parameters defined within the roles/responsibilities and IQA section of this assessment plan, particularly with regard to the independence and occupational competence requirements of anyone making assessment judgements. Outcomes from this process will inform future standardisation activity.

Following submission of the technical project report, the EPAO will inform and confirm with the apprentice the date for the formal presentation with questioning. Independent assessors will be given a maximum of 3 working weeks from the date of submission to review the technical project report. The formal presentation with questioning will be carried out within 6 working weeks from the date the technical project report is submitted to the EPAO.

Method 1 Component 2: Presentation with questioning

Apprentices will prepare and deliver a presentation based on the technical project report that appropriately covers the KSBs assigned to assessment method 1.

The presentation will cover the following as a minimum:

- a summary of the technical project report
- explanation of how and why specific techniques and criteria have been selected and applied
- conclusions

The independent assessors will then draw out any further information using questions. EPAOs must develop a question bank of sufficient size to prevent predictability and review them regularly (at least once a year) to ensure the questions they contain are fit for purpose.

Independent assessors must use the question bank as a source for questioning and are expected to use their professional judgement to tailor those questions appropriately. Independent assessors are responsible for generating suitable follow-up questions in line with the EPAO's training and standardisation process. The questions relating to the underpinning KSBs must be varied yet allow assessment of the relevant KSBs.

The presentation will be created and submitted alongside the technical project report, and will be presented to the independent assessors, either face-to-face or via online video

conferencing. If using an online platform, EPAOs must ensure appropriate measures are in place to prevent misrepresentation and ensure the apprentice is not being aided in some way.

The presentation must be submitted at the same time as the technical project report to allow the independent assessors a maximum of 3 working weeks to review it, saving independent assessor time in reviewing multiple documents and will allow the generation and collation of questions from both the report and presentation.

Delivery

The presentation with questioning will last for 30 minutes. The lead independent assessor has the discretion to increase this time by up to 10% to allow the apprentice to complete their last point.

The presentation will be conducted as follows:

The presentation will typically last 10 minutes and the questioning 20 minutes.

To deliver the presentation, the apprentice can have access to:

- commonly used presentation software
- flip chart
- work products
- videos or other media clips
- interactive demonstrations
- notes
- computer

The above list is not exhaustive and other presentation methods may be permissible where appropriate. Where specialist presentation or technical software is needed by the apprentice, for example, CAD or BIM, it is the apprentice's responsibility to ensure that their chosen equipment and resources are in place for the presentation. The EPAO will check this at the time of submission of the presentation.

The independent assessors will ask a minimum of 5 questions at the end of the presentation to ensure KSBs assigned to technical project report and presentation with questioning are covered in sufficient depth and to allow for relevant grading criteria to be drawn out by the independent assessors. The independent assessors may ask additional follow-up questions to seek clarification where required. Assessment should take place against the knowledge, skills and behaviours listed in the mapping section of this document.

The independent assessors must:

- plan the assessment prior to it taking place
- ensure that the location for the assessment is appropriate
- ensure the presentation and questions take place in a room free from distractions with no other people present except those with prior approval from the EPAO

- ensure any reasonable adjustments are taken into consideration in-line with the EPAO's reasonable adjustments policy
- ensure that the apprentice understands the assessment process, the possible outcomes and how it is graded
- take steps to assist the apprentice to be at ease
- ensure that the grading criteria and relevant documentation are to hand before commencing
- capture an audio record of the presentation and questions
- document the outcomes using the EPAO's standard documentation
- collect any additional presentation materials from the apprentice
- ensure the apprentice is not informed of the outcome of the assessment at this stage
- record the outcome of the assessment and grade before confirming this to the EPAO
- send documentation to the EPAO within the agreed time

The independent assessors will discuss apprentice performance and agree grading. The outcome of the grading decision from the technical project report and presentation with questioning will be reported to the EPAO. The grade will be based on a holistic view of the technical project report and presentation with questioning and calculated using the grading criteria.

In the event that the two independent assessors cannot agree on the apprentice's performance and grading, then all assessment evidence must be submitted to the EPAO to moderate. The EPAO will make the final decision on the grade to award.

Assessment location

EPAOs must ensure that the technical project report and presentation with questioning elements are conducted in a suitable controlled environment in any of the following:

- employer's premises
- other suitable venue selected by the EPAO (e.g., a professional institution or training provider)

The venue should be a quiet room, free from distraction and external influence.

Support material

Support materials must be produced to ensure the report and presentation is assessed consistently and accurately.

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

- standard documentation for recording of assessment results
- marking materials
- a question bank

- example questions and guidance documents to facilitate independent assessors to prepare for and carry out their questioning

EPAOs must ensure any reasonable presentation requirements are in place e.g., IT with presentation facilities.

Independent assessors must be developed and trained in the conduct of questioning and answers, and reaching consistent judgement, by their EPAO. The independent assessors must use the assessment tools and procedures that are set by the EPAO to record the presentation with questioning.

End-point assessment method 2: Professional discussion underpinned by portfolio

This assessment method has 1 component.

Overview

A professional discussion is a two-way discussion which involves both the independent assessors and the apprentice actively listening and participating in a formal conversation. It gives the apprentice the opportunity to make detailed and proactive contributions to confirm their competency across the KSBs mapped to this method.

The rationale for this assessment method is:

The professional discussion is a valid method to assess those KSBs that are not likely to occur in the technical project report. Civil engineering technician apprentices are expected to be able to discuss their portfolio, where evidence and results of work-based tasks or projects carried out as part of their apprenticeship are collated, in a formal setting where they will be able to explain in detail their work.

The professional discussion will be underpinned by the portfolio submitted at gateway. EPAOs will receive a copy of the portfolio at the gateway to provide sufficient time for the independent assessors to review its content. The independent assessors must have a minimum of 3 working weeks from the date of submission to review the portfolio in advance of the professional discussion in order to prepare appropriate questions.

Delivery

Two independent assessors will conduct and assess the professional discussion.

To allow the apprentice to apply for professional registration on completion of the apprenticeship, two independent assessors must holistically assess all components of the professional discussion, in-line with the independent assessor requirements set out in this plan. They will have equal responsibility in grading the assessment. The use of two independent assessors will enable the provision of balance to assessment, to bring in greater

breadth and depth of technical expertise to questioning and discussion with the apprentice, elucidating more accurate grading decisions.

In the event that the two independent assessors cannot agree on whether to grade the professional discussion with a fail, pass or distinction, the EPAO is required to moderate. The EPAO will then make the final decision on the grade to award.

The professional discussion must last for 40 minutes. The independent assessors have the discretion to increase the time of the professional discussion by up to 10% to allow the apprentice to complete their last answer. Further time may be granted for apprentices with appropriate needs, in-line with the EPAO's reasonable adjustments policy.

During the professional discussion, the independent assessors must use the question bank as a source for questioning and are expected to use their professional judgment to tailor those questions appropriately in line with the EPAO's training and standardisation process.

The independent assessors will ask a minimum of 5 open questions during the professional discussion and may ask follow-up questions to seek clarification where required.

Assessment should take place against the knowledge, skills and behaviours assigned to this assessment method, which are listed in the mapping section of this document.

The purpose of the professional discussion is to:

- clarify any questions the independent assessors have from their review of the portfolio
- explore aspects of the work, including how it was carried out, in more detail
- require the apprentice to draw on their portfolio evidence to demonstrate the KSBs

Requirements:

- apprentices must receive appropriate notice of their professional discussion time. There should be a minimum of 3 working-weeks' notice of the time, date and venue.
- EPAOs must structure their discussion around the following four areas, covering the KSBs to be tested as detailed in the KSB mapping section of this document. These areas are:
 - using technical software to present civil engineering information
 - health, safety and welfare
 - project management
 - personal and professional practice
- independent assessors must assess the professional discussion using the grading descriptors in this document
- video conferencing can be used to conduct the professional discussion, but the EPAO must have processes in place to verify the identity of the apprentice and ensure the apprentice is not being aided in some way
- apprentices may refer to their portfolio when answering the questions

The independent assessors must use the assessment tools and procedures that are set by the EPAO to record the professional discussion.

If at any point the two independent assessors cannot agree on an assessment decision, then all assessment evidence must be submitted to the EPAO for a final decision. This process must adhere to all the parameters defined within the roles/responsibilities and IQA section of this assessment plan, particularly with regard to the independence and occupational competence requirements of anyone making assessment judgements. Outcomes from this process will inform future standardisation activity.

The grading decision for the professional discussion underpinned by portfolio will be reported to the EPAO. The grade will be based on a holistic view of the professional discussion and calculated using the grading descriptors.

Assessment location

The professional discussion should take place in a quiet room, free from distractions.

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

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

Question and resource development

A question bank must be developed by EPAOs. Independent assessors must use the question bank as a source for questioning and are expected to use their professional judgment to tailor those questions appropriately. The question bank must be of sufficient size to prevent predictability and reviewed regularly (at least once a year) to ensure that it, and its content, are fit for purpose. The questions relating to the underpinning knowledge, skills and behaviours, must be varied yet allow assessment of the relevant KSBs.

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

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

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

- standard documentation for recording of assessment results.
- sample questions for independent assessors
- question bank

Reasonable adjustments

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

Overall EPA grading

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

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

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

EPAOs must combine the individual assessment method grades to determine the overall EPA grade.

Apprentices who fail one or more assessment method will be awarded an overall EPA 'fail'.

In order to gain an overall EPA 'pass', apprentices must achieve a pass in both assessment methods.

In order to achieve an overall EPA 'distinction', apprentices must achieve a distinction in both assessment methods.

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

Assessment method 1 – Technical project report and presentation with questioning	Assessment method 2 – Professional discussion underpinned by portfolio	Overall grading
Fail	Fail	Fail
Pass	Fail	Fail
Fail	Pass	Fail
Fail	Distinction	Fail
Distinction	Fail	Fail
Pass	Pass	Pass
Pass	Distinction	Pass
Distinction	Distinction	Distinction
Distinction	Pass	Pass

Any grade = fail, pass, or distinction

Re-sits and re-takes

Apprentices who fail one or more assessment method/s will be offered the opportunity to take a re-sit or a re-take at the employer's discretion. The apprentice's employer will need to agree that either a re-sit or re-take is an appropriate course of action.

Apprentices may not need to complete a different project where a re-sit/re-take is required but may need to either re-work their project report and/or presentation. Apprentices must be asked different questions in the case of a re-sit or re-take.

A re-sit does not require further learning, whereas a re-take does.

Apprentices should have a supportive action plan to prepare for a re-sit or a re-take.

The timescales for either a re-sit or re-take is agreed between the employer and EPAO. A re-sit is typically taken within 4 months of the EPA outcome notification. The timescale for a re-take is dependent on how much further learning is required and is typically taken within 7 months of the EPA outcome notification.

All assessment methods must be taken within a 11-month period, otherwise the entire EPA will need to be re-sat/re-taken (i.e., 4 months typical EPA period plus 4 or 7 months for a re-sit or re-take respectively).

Re-sits and re-takes are not offered to apprentices wishing to move from pass to a higher grade.

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

Roles and responsibilities

Role	Responsibility
Apprentice	<p>As a minimum, apprentices should:</p> <ul style="list-style-type: none"> • participate in and complete on-programme training to meet the KSBs as outlined in the occupational standard for a minimum of 12 months • undertake 20% off-the-job training as arranged by the employer and training provider • understand the purpose and importance of EPA • undertake the EPA including meeting all gateway requirements
Employer	<p>As a minimum, employers should:</p> <ul style="list-style-type: none"> • select the EPAO and training provider • work with the training provider (where applicable) to support the apprentice in the workplace and to provide the opportunities for the apprentice to develop the KSBs • arrange and support a minimum of 20% off-the-job training to be undertaken by the apprentice • decide when the apprentice is working at or above the occupational standard and so is ready for EPA • ensure that all supporting evidence required at the gateway is submitted in accordance with this EPA plan • remain independent from the delivery of the EPA • confirm arrangements with the EPAO for the EPA (who, when, where) in a timely manner (including providing access to any employer-specific documentation as required, for example company policies) • ensure that the EPA is scheduled with the EPAO for a date and time which allow appropriate opportunity for the KSBs to be met • ensure the apprentice is well prepared for the EPA • ensure the apprentice is given sufficient time away from regular duties to prepare for and complete all post-gateway elements of the EPA, and that any required supervision during this time (as stated within this EPA plan) is in place

	<ul style="list-style-type: none"> • where the apprentice is assessed in the workplace, ensure that the apprentice has access to the resources used on a daily basis • pass the certificate to the apprentice
EPAO	<p>As a minimum, EPAOs should:</p> <ul style="list-style-type: none"> • conform to the requirements of this EPA plan and deliver its requirements in a timely manner • conform to the requirements of the Register of End-Point Assessment Organisations (RoEPAO) • conform to the requirements of the external quality assurance provider (EQAP) for this apprenticeship standard • understand the occupational standard • make all necessary contractual arrangements, including agreeing the price of the EPA • develop and produce assessment materials including specifications and marking materials (for example mark schemes, practice materials, training material) • appoint suitably qualified and competent independent assessors • appoint administrators (and invigilators where required) to administer the EPA as appropriate • provide training for independent assessors in terms of good assessment practice, operating the assessment tools and grading • provide adequate information, advice and guidance documentation to enable apprentices, employers and training providers to prepare for the EPA • arrange for the EPA to take place, in consultation with the employer • where the apprentice is not assessed in the workplace, ensure that the apprentice has access to the required resources and liaise with the employer to agree this if necessary • develop and provide appropriate assessment recording documentation to ensure a clear and auditable process is in place for providing assessment decisions and feedback to all relevant stakeholders • have no direct connection with the apprentice, their employer or training provider. In all instances, including when the EPAO is the training provider (i.e., Further or

	<p>Higher Education Institution), there must be no conflict of interest</p> <ul style="list-style-type: none"> • have policies and procedures for internal quality assurance (IQA), and maintain records of regular and robust IQA activity and moderation for external quality assurance (EQA) purposes • deliver induction training for independent assessors, and for invigilators and/or markers (where used) • undertake standardisation activity on this apprenticeship standard for all independent assessors before they conduct an EPA for the first time, if the EPA is updated and periodically as appropriate (a minimum of annually) • manage invigilation of apprentices in order to maintain security of the assessment in line with the EPAO's malpractice policy • verify the identity of the apprentice being assessed • use language in the development and delivery of the EPA that is appropriate to the level of the occupational standard • provide details of the independent assessor's name and contact details to the employer • have and apply appropriately an EPA appeals process • request certification via the Apprenticeship Service upon successful achievement of the EPA • moderate and confirm final grade if independent assessors do not agree
Independent assessor	<p>As a minimum, independent assessors should:</p> <ul style="list-style-type: none"> • have the competence to assess the apprentice at this level and hold any required qualifications and experience in line with the requirements of the independent assessor as detailed in the IQA section of this EPA plan • understand the occupational standard and the requirements of this EPA • have, maintain and be able to evidence up-to-date knowledge and expertise of the subject matter • deliver the end-point assessment in-line with the EPA plan • comply with the IQA requirements of the EPAO • have no direct connection or conflict of interest with the apprentice, their employer or training provider; in all instances, including when the EPAO is the training provider (i.e., HEI) • attend induction training

	<ul style="list-style-type: none"> • attend standardisation events when they begin working for the EPAO, before they conduct an EPA for the first time and a minimum of annually on this apprenticeship standard • assess each assessment method, as determined by the EPA plan, and without extending the EPA unnecessarily • assess against the KSBs assigned to each assessment method, as shown in the mapping of assessment methods and as determined by the EPAO, and without extending the EPA unnecessarily • make all grading decisions • record and report all assessment outcome decisions, for each apprentice, following instructions and using assessment recording documentation provided by the EPAO, in a timely manner • use language in the development and delivery of the EPA that is appropriate to the level of the occupational standard • mark open (constructed) test answers accurately according to the EPAO's mark scheme and procedures
Training provider	<p>As a minimum, training providers should:</p> <ul style="list-style-type: none"> • work with the employer and support the apprentice during the off-the-job training to provide the opportunities to develop the knowledge, skills and behaviours as listed in the occupational standard • conduct training covering any knowledge, skill or behaviour requirement agreed as part of the Commitment Statement (often known as the Individual Learning Plan). • monitor the apprentice's progress during any training provider led on-programme learning • advise the employer, upon request, on the apprentice's readiness for EPA • remain independent from delivery of the EPA. Where the training provider is the EPA (i.e., a HEI) there must be procedures in place to mitigate against any conflict of interest

Internal Quality Assurance (IQA)

Internal quality assurance refers to the strategies, policies and procedures that EPAOs must have in place to ensure valid, consistent and reliable end-point assessment decisions. EPAOs for this EPA must adhere to all requirements within the Roles and Responsibilities section and:

- have effective and rigorous quality assurance systems and procedures that ensure fair, reliable and consistent assessment across employers, places, times and independent assessors
- appoint independent assessors who have knowledge of the following occupational areas: civil engineering or civil engineering design
- appoint independent assessors who have recent relevant experience of the occupation/sector at least one level above the apprentice gained in the last two years or significant experience of the occupation/sector.
- appoint two independent assessors who are professionally registered members of relevant professional engineering institutions (PEIs) per apprentice
- appoint independent assessors who are competent to deliver the end-point assessment
- Independent assessors will be required to:
 - be an Engineering Council registered member of a relevant professional engineering institution (PEI)
 - be professionally active and maintain their CPD record annually
 - complete an EPAO induction to demonstrate working knowledge of the apprenticeship standard and assessment methodology
 - have had training from their EPAO in terms of good assessment practice, operating the assessment tools and grading
- operate induction training for independent assessors
- provide training for independent assessors in terms of good assessment practice, operating the assessment tools and grading
- undertake standardisation activity on this apprenticeship standard for all independent assessors:
 - before they conduct an EPA for the first time
 - if the EPA is updated
 - periodically as appropriate (a minimum of annually)
- conduct effective moderation of assessment decisions and grades
- conduct appeals where required, according to the EPAO's appeals procedure, reviewing and making final decisions on assessment decisions and grades

Value for money

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

- using an employer's, professional institution's or training provider's premises
- carrying out the presentation with questioning and the professional discussion on the same day
- using IT software and systems that can allow remote assessment

Professional body recognition

On completion of the apprenticeship the apprentice will be eligible for registration as an engineering technician by the relevant professional engineering institution or institute:

- Institution of Civil Engineers (ICE)
- Chartered Institution of Highways & Transportation (CIHT)
- Institute of Highway Engineers (IHE)
- Institution of Structural Engineers (IStructE)

Mapping of knowledge, skills and behaviours (KSBs)

KSB code	KSB statement	Methods mapped against
Knowledge		
K1	Appropriate engineering principles, underpinned by appropriate mathematical, scientific and technical knowledge and understanding, relating to civil engineering and the construction process	AM 1 / Technical Project
K2	Appropriate civil engineering techniques and methods used to design, build and maintain infrastructure and buildings, the standards, contracts and specifications used, and their impact on the construction process	AM 1 / Technical Project
K3	Key principles, techniques and methods of data and technical information collection, analysis and evaluation used in delivering civil engineering models, designs, and technical solutions	AM 1 / Technical Project
K4	Technical drawings, modelling and designs, using computer-based software packages, such as Computer Aided Design (CAD), or Building Information Modelling (BIM), and their use in the sector	AM 2 / Professional Discussion
K5	Statutory health, safety and welfare policies, procedures, and regulations, and risk management, in relation to civil engineering project delivery	AM 2 / Professional Discussion
K6	Industry policies, standards, regulations and codes of practice, such as Common Safety Method (CSM), Construction Design and Management (CDM) or the Design Manual for Roads and Bridges (DMRB), that must be adhered to in the civil engineering environment	AM 1 / Technical Project
K7	Environmental policies and the principles of sustainable development, including those relating to United Nations Sustainable Development Goals (SDG) and net-zero carbon emissions and the climate change act, and their impact on the design, delivery and maintenance of civil engineering projects	AM 1 / Technical Project
K8	Understanding of equality, diversity and inclusion, and its impact on civil engineering solutions	AM 1 / Technical Project
K9	Project management, quality management and assurance systems and continuous improvement as applied to civil engineering	AM 2 / Professional Discussion

K10	Methods of communication and when to use them, including how to write technical reports and using appropriate engineering terminology and conventions	AM 1 / Technical Project
K11	Ethical principles as applied to civil engineering and the security of data and information	AM 2 / Professional Discussion
K12	The values and standards by which they maintain their personal, professional and technical knowledge and skills through initial professional development (IPD) and continuing professional development (CPD)	AM 2 / Professional Discussion
Skills		
S1	Apply appropriate civil engineering principles, techniques, and methods, including mathematical, scientific, and technical know-how, to civil engineering and the construction process	AM 1 / Technical Project
S2	Apply key principles, techniques and methods of data and technical information collection, analysis, and evaluation to support the delivery of civil engineering models, designs, and technical solutions	AM 1 / Technical Project
S3	Operate appropriate software packages for data gathering and analysis, such as Computer Aided Design (CAD) or Building Information Modelling (BIM), to create technical drawings, models and designs using relevant conventions and engineering terminology	AM 2 / Professional Discussion
S4	Apply statutory health, safety and welfare policies, procedures, and regulations in the civil engineering environment, using risk management processes, procedures, and documentation	AM 2 / Professional Discussion
S5	Support and contribute to the production or modification of civil engineering technical solutions in accordance with relevant industry standards, regulations, procedures and codes of practice	AM 1 / Technical Project
S6	Apply environmental policies and sustainable principles in civil engineering projects, recognising the need to reduce carbon use, lower emissions and plan for wider sustainability	AM 1 / Technical Project
S7	Plan, carry out and manage own work in line with quality assurance, recognising the wider implications to customer needs, and within cost and resource limitations	AM 2 / Professional Discussion
S8	Consider equality, diversity and inclusion in the delivery of civil engineering projects	AM 1 / Technical Project

S9	Apply document control processes and procedures using the approved processes, maintaining quality compliance when creating or amending engineering documentation	AM 2 / Professional Discussion
S10	Communicate using appropriate methods for the audience, and incorporate relevant and appropriate terms, standards, and data	AM 1 / Technical Project
S11	Apply ethical principles to civil engineering projects, including the secure use of data and information	AM 2 / Professional Discussion
S12	Plan, undertake and review their own professional competence, regularly updating and reviewing their CPD to improve performance	AM 2 / Professional Discussion
Behaviours		
B1	Complies with health and safety, and industry standards, statutory regulations, policies and codes of practice	AM 2 / Professional Discussion
B2	Works independently, operating in a systematic, proactive, and transparent way, using resources effectively to complete tasks, knowing their limitations and when to ask for support or escalate	AM 2 / Professional Discussion
B3	Applies a structured approach to problem solving with attention to detail, accuracy, and diligence	AM 1 / Technical Project
B4	Is motivated when collaborating in teams, offering sensible challenge, reflects on and provides constructive feedback and contributes to discussions,	AM 2 / Professional Discussion
B5	Maintains professional and ethical working relationships with internal, external, and connected stakeholders.	AM 2 / Professional Discussion
B6	Takes responsibility for their own professional development, seeking opportunities to enhance their knowledge, skills, and experience	AM 2 / Professional Discussion

Grading descriptors

Assessment method 1: Technical project report and presentation with questioning

KSBs	Pass In order to achieve a pass, apprentices must demonstrate all of the pass descriptors	Distinction In order to achieve a distinction, apprentices must demonstrate all the pass descriptors and all the distinction descriptors
Use of civil engineering technical knowledge and techniques K1, K2, S1	Applies appropriate technical knowledge and techniques to the problem outlined in the technical project brief. (K1, K2, S1)	Evaluates the methods and techniques used in the technical project based upon the principles and regulations that underpin them. (K2, S1)
Data collection and analysis K3, S2, B3	Identifies, collects and manages appropriate data. Analyses data using appropriate techniques and methods and presents a valid interpretation of the analysis. Uses the data to support the delivery of civil engineering technical solutions correctly. (K3, S2, B3)	Validates the evidence and assumptions underpinning the data analysis used in the technical project. (S2)
Industry standards, policies, and regulatory requirements K6, K7, K8, S5, S6, S8	Applies relevant statutory and regulatory requirements, industry standards, policies, guidance and procedures to the technical project solution presented. (K6, K7, K8, S5, S6, S8)	Evaluates their choice of industry standards or guidance related to their project solution. (S5, S6, S8)
Communication K10, S10	Uses appropriate communication techniques and methods when presenting the project outcomes, taking care to incorporate relevant and appropriate terminology accurately (K10, S10)	
A fail grade will be awarded if the apprentice does not satisfy all of the pass criteria.		

Assessment method 2: Professional discussion underpinned by portfolio

KSBs	Pass– In order to achieve a pass, apprentices must demonstrate all of the pass descriptors	Distinction In order to achieve a distinction, apprentices must demonstrate all the pass descriptors and all the distinction descriptors
Using technical software to present civil engineering information K4, S3	Explains how they have effectively used technical software to present civil engineering solutions. (K4, S3)	Evaluates the suitability of different software options and their use in civil engineering solutions. (S3)
Health, Safety and Welfare K5, S4, B1	Describes how they have applied health, safety and welfare policies, procedures and regulations, and where they have used risk management, in relation to civil engineering project delivery. (K5, S4, B1)	
Project Management K9, S7, S9, B2	Explains how they manage their own work, within project parameters, and use quality management and assurance processes. (K9, S7, S9, B2)	Evaluates how their application of quality assurance techniques contributes to their own and wider stakeholder continuous improvements. (S7, S9)
Personal and Professional Practice K11, K12, S11, S12, B4, B5, B6	Describes how they apply the ethical principles, values and standards of a professional engineering technician. (K11, K12, S11, S12, B4, B5, B6)	Analyses how they use their own performance to inform and improve their own or others' practices. (K12, S12, B5, B6)
A fail grade will be awarded if the apprentice does not satisfy all of the pass criteria.		