Soil scientist

Key information

Reference: ST1362
Version: 1.0
Level: 7
Typical duration to gateway: 24 months
Typical EPA period: 3 months
Maximum funding: £21000
Route: Health and science

Integration: None
Date updated: 27/10/2023
Approved for delivery: 26 October 2023
Lars code: 734
EQA provider: Ofqual
Review: this apprenticeship will be reviewed in accordance with our change request policy.

Contents

End-point assessment plan

V1.0

Introduction and overview

This document explains the requirements for end-point assessment (EPA) for the soil scientist apprenticeship. End-point assessment organisations (EPAOs) must follow this when designing and delivering the EPA.

Soil scientist apprentices, their employers and training providers should read this document.

A full-time soil scientist apprentice typically spends 24 months on-programme (this means in training before the gateway). The apprentice must spend at least 12 months on-programme and complete the required amount of off-the-job training in line with the apprenticeship funding rules.

The EPA should be completed within an EPA period lasting typically 3 months.

The apprentice must complete their training and meet the gateway requirements before starting their EPA. The EPA will assess occupational competence.

An approved EPAO must conduct the EPA for this apprenticeship. Employers must select an approved EPAO from the register of end-point assessment organisations (RoEPAO).

This EPA has 2 assessment methods.

The grades available for each assessment method are below.

Assessment method 1 - professional discussion, underpinned by a portfolio of evidence:

- fail
- pass
- distinction

Assessment method 2 - practical assessment and questions:

- fail
- pass
- distinction

The result from each assessment method is combined to decide the overall apprenticeship grade. The following grades are available for the apprenticeship:

- fail
- pass
- merit
- distinction

EPA summary table

On-programme - typically 24 months	The apprentice must: • complete training to develop the knowledge, skills and behaviours (KSBs) outlined in this apprenticeship's occupational standard • complete training towards English and mathematics qualifications in line with the apprenticeship funding rules • compile a portfolio of evidence
End-point assessment gateway	The apprentice's employer must be content that the apprentice has achieved sufficient KSBs to complete the apprenticeship. The apprentice must: • confirm they are ready to take the EPA • have achieved English and mathematics qualifications in line with the apprenticeship funding rules For the professional discussion, underpinned by a portfolio of evidence, the apprentice must submit a portfolio of evidence. The apprentice must submit the gateway evidence to their EPAO, including any organisation specific policies and procedures requested by the EPAO.
End-point assessment - typically 3 months	**The grades available for each assessment method are below** Professional discussion, underpinned by a portfolio of evidence: • fail • pass • distinction Practical assessment and questions: • fail • pass

	• distinction **Overall EPA and apprenticeship can be graded:** • fail • pass • merit • distinction
Professional recognition	This apprenticeship aligns with: • British Society of Soil Science for technical membership. The apprenticeship will align with the requirements for membership with British Society of Soil Science. Those enrolling for the apprenticeship will be able to apply for Early Careers membership of the Society which will automatically change to technical membership upon demonstration of successful completion of the apprenticeship.
Re-sits and re-takes	• Re-take and re-sit grade cap: pass • Re-sit timeframe: typically 2 months • Re-take timeframe: typically 3 months

Duration of end-point assessment period

The EPA is taken in the EPA period. The EPA period starts when the EPAO confirms the gateway requirements have been met and is typically 3 months.

The EPAO should confirm the gateway requirements have been met and start the EPA as quickly as possible.

EPA gateway

The apprentice's employer must be content that the apprentice has attained sufficient KSBs to complete the apprenticeship. The employer may take advice from the apprentice's training provider, but the employer must make the decision. The apprentice will then enter the gateway.

The apprentice must meet the gateway requirements before starting their EPA.

They must:

- confirm they are ready to take the EPA
- have achieved English and mathematics qualifications in line with the apprenticeship funding rules
- submit a portfolio of evidence for the professional discussion, underpinned by a portfolio of evidence

Portfolio of evidence requirements:

The apprentice must compile a portfolio of evidence during the on-programme period of the apprenticeship. It should only contain evidence related to the KSBs that will be assessed by this assessment method. It will typically contain 20 discrete pieces of evidence. Evidence must be mapped against the KSBs. Evidence may be used to demonstrate more than one KSB; a qualitative as opposed to quantitative approach is suggested.

Evidence sources may include:

- workplace documentation and records, for example:
- workplace policies and procedures
- witness statements
- annotated photographs
- video clips (maximum total duration **10** minutes); the apprentice must be in view and identifiable

This is not a definitive list; other evidence sources can be included.

The portfolio of evidence should not include reflective accounts or any methods of self-assessment. Any employer contributions should focus on direct observation of performance (for example, witness statements) rather than opinions. The evidence provided should be valid and attributable to the apprentice; the portfolio of evidence should contain a statement from the employer and apprentice confirming this.

The EPAO should not assess the portfolio of evidence directly as it underpins the discussion. The independent assessor should review the portfolio of evidence to prepare questions for the discussion. They are not required to provide feedback after this review.

The apprentice must submit the gateway evidence to their EPAO, including any organisation specific policies and procedures requested by the EPAO.

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.

Professional discussion, underpinned by a portfolio of evidence

Overview

In the professional discussion, an independent assessor and apprentice have a formal two-way conversation. It gives the apprentice the opportunity to demonstrate the KSBs mapped to this assessment method.

The apprentice can refer to and illustrate their answers with evidence from their portfolio of evidence.

Rationale

This assessment method is being used because it:

- allows the holistic assessment of KSBs
- allows the apprentice to demonstrate KSBs regardless of the sector in which they work
- enables the independent assessor to draw on examples of work carried out by the apprentice
- allows the use of the portfolio followed by questioning. This will assist the apprentice to amplify their examples and to demonstrate the work carried out
- will enable the independent assessor to test underpinning knowledge and understanding
- will enable the consistent assessment of activities that might be carried out in different locations at different times of the year
- enables criteria to be assessed that would not occur regularly or would take too long to observe

Delivery

The professional discussion must be structured to give the apprentice the opportunity to demonstrate the KSBs mapped to this assessment method to the highest available grade.

An independent assessor must conduct and assess the professional discussion.

- advanced soil science and management
- soils in the field
- soil analysis techniques
- research techniques
- project and consultancy management
- communicating soil science
- professional development

The EPAO must give an apprentice 14 days' notice of the professional discussion.

The independent assessor must have at least 2 weeks to review the supporting documentation.

The apprentice must have access to their portfolio of evidence during the professional discussion.

The apprentice can refer to and illustrate their answers with evidence from their portfolio of evidence however, the portfolio of evidence is not directly assessed.

The professional discussion must last for 120 minutes. The independent assessor can increase the time of the professional discussion by up to 10%. This time is to allow the apprentice to respond to a question if necessary.

The independent assessor must ask at least 12 questions. The independent assessor must use the questions from the EPAO's question bank.

The independent assessor must make the grading decision.

The independent assessor must keep accurate records of the assessment. They must record:

- the apprentice's answers to questions
- the KSBs demonstrated in answers to questions
- the grade achieved

Assessment location

The professional discussion must take place in a suitable venue selected by the EPAO for example, the EPAO's or employer's premises.

The professional discussion can be conducted by video conferencing. The EPAO must have processes in place to verify the identity of the apprentice and ensure the apprentice is not being aided.

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

Question and resource development

The EPAO must develop a purpose-built assessment specification and question bank. It is recommended this is done in consultation with employers of this occupation. The EPAO must maintain the security and confidentiality of EPA materials when consulting with employers. The assessment specification and question bank must be reviewed at least once a year to ensure they remain fit-for-purpose.

The assessment specification must be relevant to the occupation and demonstrate how to assess the KSBs mapped to this assessment method. The EPAO must ensure that questions are refined and developed to a high standard. The questions must be unpredictable. A question bank of sufficient size will support this.

The EPAO must ensure that the apprentice has a different set of questions in the case of re-sits or re-takes.

The EPAO must produce the following materials to support the professional discussion, underpinned by a portfolio of evidence:

- independent assessor assessment materials which include:
  - training materials
  - administration materials
  - moderation and standardisation materials

  - guidance materials
  - grading guidance
  - question bank
- EPA guidance for the apprentice and the employer

The EPAO must ensure that the EPA materials are subject to quality assurance procedures including standardisation and moderation.

Practical assessment and questions

Overview

In a practical assessment with questions, an independent assessor observes the apprentice completing a task or series of tasks set by the EPAO. The EPAO decides where it takes place. The assessment environment must closely relate to the apprentice's natural working environment. It gives the apprentice the opportunity to demonstrate the KSBs mapped to this assessment method.

Rationale

This assessment method is being used because it:

- enables the collection of first-hand evidence of knowledge, skills and behaviours
- provides equity and fairness to candidates who may have access to different sites and/ or equipment in their usual workplace
- tests knowledge, skills and behaviours holistically and objectively
- enables the practical assessment of competencies in a condensed time period (unlikely to occur in a direct observation in the workplace)
- enables direct testing under controlled conditions
- ensures consistency in demand and challenge during the end-point assessment

Delivery

The practical assessment and questions must be structured to give the apprentice the opportunity to demonstrate the KSBs mapped to this assessment method to the highest available grade.

An independent assessor must conduct and assess the practical assessment and questions.

The assessor may observe three apprentices at a time, in the same location, ensuring at all times quality and rigour are maintained.

The EPAO must give an apprentice 14 days' notice of the . practical assessment and questions

The practical assessment and questions must take 11 hours.

The independent assessor can increase the time of the practical assessment and questions by up to 10%. This time is to allow the apprentice to complete a task or respond to a question if necessary.

The practical assessment and questions may take place in parts but must be completed over 2 working day. A working day is typically considered to be 7.5 hours long. The reason for this split is to enable sufficient time for soil analysis to be carried out and ensure the availability of sufficient data to inform recommendations.

The EPAO must manage invigilation of the apprentice during the assessment, to maintain security of the EPA, in line with their malpractice policy. This includes breaks and moving between locations.

The independent assessor must explain to the apprentice the format and timescales of the practical assessment and questions before it starts. This does not count towards the assessment time.

The independent assessor must observe the following during the practical assessment:

- Plan a soil science investigation and develop Risk Assessment and Method Statements (RAMS). The plan should include the identification of interacting factors and key stakeholders.
- Collect data using samples provided or samples in situ (to be provided/ arranged by the EPAO).
- Process and analyse the condition of soil.
- Evaluate soil function and eco system performance and prepare a soil management and resource plan.
- Present outcomes and recommendations, including how they meet the requirements of the brief.

These activities provide the apprentice with the opportunity to demonstrate the KSBs mapped to this assessment method.

The independent assessor must ask questions. The purpose of the questions is to assess the level of competence against the grading descriptors.

Questioning can occur both during and after the practical assessment. The time for questioning is included in the overall assessment time. The independent assessor must ask at least 6 questions. To remain as unobtrusive as possible, the independent assessor should ask questions during natural stops between tasks and after completion of work rather than disrupting the apprentice's flow. The independent assessor must use the questions from the EPAO's question bank or create their own questions in line with the EPAO's training.

The independent assessor can ask follow-up questions to clarify answers given by the apprentice. These questions are in addition to the above set number of questions for the practical assessment and questions.

The independent assessor must make the grading decision. The independent assessor must assess the practical assessment and responses to questions holistically when deciding the grade.

The independent assessor must keep accurate records of the assessment. They must record:

- the KSBs observed
- the apprentice's answers to questions

- KSBs demonstrated in answers to questions
- the grade achieved

Assessment location

The practical assessment and questions must take place in a simulated environment selected by the EPAO for example, the EPAO's or employer's premises. The simulated environment must relate to the apprentice's natural work environment. Equipment and resources needed for the practical assessment and questions must be provided by the EPAO, who can liaise with the employer to provide these.

Question and resource development

The EPAO must develop a purpose-built assessment specification and question bank. It is recommended this is done in consultation with employers of this occupation. The EPAO must maintain the security and confidentiality of EPA materials when consulting with employers. The assessment specification and question bank must be reviewed at least once a year to ensure they remain fit-for-purpose.

The assessment specification must be relevant to the occupation and demonstrate how to assess the KSBs mapped to this assessment method. The EPAO must ensure that questions are refined and developed to a high standard. The questions must be unpredictable. A question bank of sufficient size will support this.

The EPAO must ensure that the apprentice has a different set of tasks and questions in the case of re-sits and retakes, to minimise predictability.

The EPAO must produce the following materials to support the practical assessment and questions:

- independent assessor assessment materials which include:
  - training materials
  - administration materials
  - moderation and standardisation materials
  - guidance materials
  - grading guidance
  - question bank
- EPA guidance for the apprentice and the employer

The EPAO must ensure that the EPA materials are subject to quality assurance procedures including standardisation and moderation.

Grading

Professional discussion, underpinned by a portfolio of evidence

Fail - does not meet pass criteria

THEME KSBS	PASS APPRENTICES MUST DEMONSTRATE ALL OF THE PASS DESCRIPTORS	DISTINCTION APPRENTICES MUST DEMONSTRATE ALL OF THE PASS DESCRIPTORS AND ALL OF THE DISTINCTION DESCRIPTORS
Advanced soil science and management K1 K3 K4 K5 K7 K9 K12	Describes the characteristics of soil including how soils differ, the soil formation process (pedogenesis), geology, topography, types and structure and soil nutrients, considering the combination and interaction of soil chemical, physical and biological properties. Describes soil-water-air-plant-animal interactions, interfaces and how soil health and resilience is built. Explains soil health, soil degradation and the impact on construction, agricultural and horticultural management. (K1, K5, K7) Explains the creation and use of manufactured soils, how substrates are used to benefit soils and in the remediation of contaminated soil. (K4, K12) Discusses the interactions of soil and climate change on soil considering nutrient management and neutrality, carbon accounting and greenhouse gas emissions. (K3, K9)	Critically evaluates the characteristics of soil types, structure and nutrients considering the benefits of manufactured soils and substrates. (K1, K4)
Soils in the field K2 S3	Explains how they carry out a soil survey in line with a specified standard including the approach required to critique Agricultural Land Classification in line with published guidance, considering health and safety, external soil data, relevant legislation, social,	N/A

	economic and environmental factors. (K2, S3)	
Soil analysis techniques K17 S4 S9	Explains how they apply secondary data collection and interpretation, including Earth Observation data, Geographic Information System mapping, soil maps and outputs of a digital soil model. (K17, S4, S9)	N/A
Research techniques K16	Explains how they use land drainage design and sustainable drainage systems (SuDS) for different environments and drainage system and catchment hydrological modelling. (K16)	N/A

Project and consultancy management K10 K13 K14 K18 K19 K20 K21 S5 S7 S10 S11 B6	Explains how they develop a project based on a client brief, including key deliverables and considering UK policies and legislation, geo-political contexts and sustainability. (K10, K19, K14, S5, S7) Analyses land management economics and the cost of getting it wrong considering horticulture, forestry, construction and soil use for habitat creation. (K13) Explains how they manage delivery of a project plan (including budget, tenders, permits and timescales) and explains how they commission soil surveys, testing and analysis, recognises when to escalate or refer to other stakeholders. (K18, K20, K21, S11) Analyses and handles confidential information securely. (S10, B6)	Describes how they evaluate their key deliverables against sustainablilty benchmarks, the project brief, identifying any areas for continuous improvement. (K10, S5)
Communicating soil science K8 S15 S16 B1 B2	Explains how they work proactively and collaboratively with team members and stakeholders creating verbal and written specialist technical reports. Describes how they follow standard policies and procedures and consider management implications including contamination, compaction, soil sealing and remediation. Explains how they consider implications on construction, agricultural and horticultural management. (K8, S15, B1) Describes how they communicate soil information to meet the needs	N/A

	of various stakeholders in line with organisational professional standards and ethical policy. (S16, B2)	
Professional development K22 S19 B4 B5 B8	Describes how they identify opportunities and demonstrate commitment towards personal development and implement best practice and innovation into a project or organisation within the limits of their own responsibility. (K22, S19, B4, B5, B8)	Critically evaluates the impact that their recommended innovative techniques have had on projects or the organisation. (S19)

Practical assessment and questions

Fail - does not meet pass criteria

THEME KSBS	PASS APPRENTICES MUST DEMONSTRATE ALL OF THE PASS DESCRIPTORS	DISTINCTION APPRENTICES MUST DEMONSTRATE ALL OF THE PASS DESCRIPTORS AND ALL OF THE DISTINCTION DESCRIPTORS
Soils in the field K6 K11 K15 S1 S2 B7	Selects and applies a soil sampling and survey technique to meet the project goals and landscape context, working objectively, adaptively and reliably in line with organisational policies and procedures. (S2, B7) Evaluates the relationships between soil and landscape, land use and climate, considering soil function and the value of soil ecosystem goods and services for both businesses and the wider environment. Evaluates how different soils respond to different types of management practices and the wider ecological and archaeological environment and its impact on soil management. (K6, K11, K15, S1)	Critically evaluates and justifies their selected soil sampling technique, explaining the benefits to the wider ecological and archaeological environment. (K15, S2)
Soil analysis techniques K24 S14 S17	Uses methodologies and techniques to systematically analyse soil information to draw valid conclusions, solve problems and deliver reliable and sustainable results. (K24, S14, S17)	N/A
Communicating soil science K23 S18 B3	Presents project outcomes, showing critical awareness of stakeholder engagement and relationship building and ethically reports any recommendations, including trade-offs. (K23, S18, B3)	N/A

Project and consultancy management S6 S12 S13	Select and justify a cost effective soil testing method to achieve project outcomes, considering interacting factors and key stakeholders. (S6, S13) Develops, maintains and monitors risk assessments and method statements to ensure compliance with health and safety requirements. (S12)	Critically evaluates their choice of soil testing methods and considers the impact upon project outcomes. (S6, S13)
Resource and research planning K25 S8	Designs and implements a soil research and resource plan and survey. Analyses and draws conclusions from the data. (K25, S8)	Critically evaluates their research plan and survey approach, explaining why this was the selected method. (K25, S8)

Overall EPA grading

Performance in the EPA determines the overall grade of:

- fail
- pass
- merit
- distinction

An independent assessor must individually grade the professional discussion, underpinned by a portfolio of evidence and practical assessment and questions in line with this EPA plan.

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

If the apprentice fails one assessment method or more, they will be awarded an overall fail.

To achieve an overall pass, the apprentice must achieve at least a pass in all the assessment methods. To achieve an overall pass, the apprentice must achieve at least a pass both assessment methods. If the apprentice fails either the professional discussion or the practical test and questions the resulting overall grade will be a fail. If they achieve a pass in both methods they will

receive an overall pass grade. Achievement of a pass in one method and a distinction in one method results in an overall merit. To achieve an overall distinction, the apprentice will be required to achieve a distinction in both the professional discussion and the practical test and questions.

Grades from individual assessment methods must be combined in the following way to determine the grade of the EPA overall.

PROFESSIONAL DISCUSSION, UNDERPINNED BY A PORTFOLIO OF EVIDENCE	PRACTICAL ASSESSMENT AND QUESTIONS	OVERALL GRADING
Any grade	Fail	Fail
Fail	Any grade	Fail
Pass	Pass	Pass
Pass	Distinction	Merit
Distinction	Pass	Merit
Distinction	Distinction	Distinction

Re-sits and re-takes

If the apprentice fails one assessment method or more, they can take a re-sit or a re-take at their employer's discretion. The apprentice's employer needs to agree that a re-sit or re-take is appropriate. A re-sit does not need further learning, whereas a re-take does. The apprentice should have a supportive action plan to prepare for a re-sit or a re-take.

The employer and the EPAO should agree the timescale for a re-sit or re-take. A re-sit is typically taken within 2 months of the EPA outcome notification. The timescale for a re-take is dependent on how much re-training is required and is typically taken within 3 months of the EPA outcome notification.

Failed assessment methods must be re-sat or re-taken within a 6-month period from the EPA outcome notification, otherwise the entire EPA will need to be re-sat or re-taken in full.

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

The apprentice will get a maximum EPA grade of pass for a re-sit or re-take, unless the EPAO determines there are exceptional circumstances.

Roles and responsibilities

ROLES	RESPONSIBILITIES
Apprentice	As a minimum, the apprentice should: • complete on-programme training to meet the KSBs as outlined in the occupational standard for a minimum of 12 months • complete the required amount of off-the-job training specified by the apprenticeship funding rules and as arranged by the employer and training provider • understand the purpose and importance of EPA • prepare for and undertake the EPA including meeting all gateway requirements • ensure that all supporting evidence required at the gateway is submitted in line with this EPA plan
Employer	As a minimum, the apprentice's employer must: • 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 off-the-job training to be undertaken by the apprentice • decide when the apprentice is working at or above the occupational standard and is ready for EPA • ensure the apprentice is prepared for the EPA • ensure that all supporting evidence required at the gateway is submitted in line with this EPA plan • confirm arrangements with the EPAO for the EPA (who, when, where) in a timely manner • provide 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 allows appropriate opportunity for the apprentice to meet the KSBs • ensure the apprentice is given sufficient time away from regular duties to prepare for, and complete the EPA • ensure that any required supervision during the EPA period, as stated within this EPA plan, is in place • ensure the apprentice has access to the resources used to fulfil their role and carry out the EPA for workplace based assessments

	• remain independent from the delivery of the EPA • pass the certificate to the apprentice upon receipt from the EPAO

EPAO	As a minimum, the EPAO must:
	• conform to the requirements of this EPA plan and deliver its requirements in a timely manner
	• conform to the requirements of the RoEPAO
	• conform to the requirements of the external quality assurance provider (EQAP)
	• understand the apprenticeship including the occupational standard, EPA plan and funding
	• 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)
	• maintain and apply a policy for the declaration and management of conflict of interests and independence. This must ensure, as a minimum, there is no personal benefit or detriment for those delivering the EPA or from the result of an assessment. It must cover:
	  • apprentices
	  • employers
	  • independent assessors
	  • any other roles involved in delivery or grading of the EPA
	• have quality assurance systems and procedures that ensure fair, reliable and consistent assessment and maintain records of internal quality assurance (IQA) activity for external quality assurance (EQA) purposes
	• appoint independent, competent, and suitably qualified assessors in line with the requirements of this EPA plan
	• appoint administrators, invigilators and any other roles where required to facilitate the EPA
	• deliver induction, initial and on-going training for all their independent assessors and any other roles involved in the delivery or grading of the EPA as specified within this EPA plan. This should include how to record the rationale and evidence for grading decisions where required

	• conduct standardisation with all their independent assessors before allowing them to deliver an EPA, when the EPA is updated, and at least once a year • conduct moderation of all their independent assessors' decisions once EPAs have started • monitor the performance of all their independent assessors and provide re-training where necessary • develop and provide assessment recording documentation to ensure a clear and auditable process is in place for providing assessment decisions and feedback to all relevant stakeholders • use language in the development and delivery of the EPA that is appropriate to the level of the apprenticeship • arrange for the EPA to take place in a timely manner, in consultation with the employer • provide information, advice, and guidance documentation to enable apprentices, employers and training providers to prepare for the EPA • confirm the gateway requirements have been met before they start the EPA for an apprentice • host and facilitate the EPA or make suitable alternative arrangements • maintain the security of the EPA including, but not limited to, verifying the identity of the apprentice, invigilation and security of materials • where the EPA plan permits assessment away from the workplace, ensure that the apprentice has access to the required resources and liaise with the employer to agree this if necessary • confirm overall grade awarded • arrange the certification of the apprenticeship • maintain and apply a policy for conducting appeals
Independent assessor	As a minimum, an independent assessor must: • be independent, with no conflict of interest with the apprentice, their employer or training provider, specifically, they must not receive a personal benefit or detriment from the result of the assessment • have, maintain and be able to evidence up-to-date knowledge and expertise of the occupation • have the competence to assess the EPA and meet the requirements of the IQA section of this EPA plan

	• understand the apprenticeship's occupational standard and EPA plan • attend induction and standardisation events before they conduct an EPA for the first time, when the EPA is updated, and at least once a year • use language in the delivery of the EPA that is appropriate to the level of the apprenticeship • work with other personnel, including additional assessors where used, in the preparation and delivery of assessment methods • conduct the EPA to assess the apprentice against the KSBs and in line with the EPA plan • make final grading decisions in line with this EPA plan • record and report assessment outcome decisions • comply with the IQA requirements of the EPAO • comply with external quality assurance (EQA) requirements
Training provider	As a minimum, the training provider must: • conform to the requirements of the register of apprenticeship training providers (RoATP) • ensure procedures are in place to mitigate against any conflict of interest • work with the employer and support the apprentice during the off-the-job training to provide the opportunities to develop the KSBs as outlined in the occupational standard • deliver training to the apprentice as outlined in their apprenticeship agreement • monitor the apprentice's progress during any training provider led on-programme learning • ensure the apprentice is prepared for the EPA • advise the employer, upon request, on the apprentice's readiness for EPA • ensure that all supporting evidence required at the gateway is submitted in line with this EPA plan • remain independent from the delivery of the EPA

Reasonable adjustments

The EPAO must have reasonable adjustments arrangements for the EPA.

This should include:

- how an apprentice qualifies for reasonable adjustment
- what reasonable adjustments may be made

Adjustments must maintain the validity, reliability and integrity of the EPA as outlined in this EPA plan.

Internal quality assurance

Internal quality assurance refers to the strategies, policies and procedures that an EPAO must have in place to ensure valid, consistent and reliable EPA decisions.

EPAOs for this EPA must adhere to the requirements within the roles and responsibilities table.

They must also appoint independent assessors who:

- have recent relevant experience of the occupation or sector to at least occupational level 7 gained in the last 3 years or significant experience of the occupation or sector
- have professional body membership with:
  British Society of Soil Science or other relevant body (full or fellow grade).

Value for money

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

- utilising digital remote platforms to conduct applicable assessment methods
- conducting assessment methods on the same day

Professional recognition

This apprenticeship aligns with:

- British Society of Soil Science for technical membership. The apprenticeship will align with the requirements for membership with British Society of Soil Science. Those enrolling for the apprenticeship will be able to apply for Early Careers membership of the Society which will automatically change to technical membership upon demonstration of successful completion of the apprenticeship.

KSB mapping table

KNOWLEDGE	ASSESSMENT METHODS
K1 Soil characteristics including how soils differ, soil nutrients, the soil formation process (pedogenesis), geology, topography, types and structure considering the combination and interaction of soil chemical, physical and biological properties.	Professional discussion, underpinned by a portfolio of evidence
K2 How to carry out a soil survey (pedology) including classifying soils to a specified standard, considering health and safety, external soil data, relevant legislation, social, economic and environmental factors.	Professional discussion, underpinned by a portfolio of evidence
K3 Nutrient management and neutrality, carbon accounting and greenhouse gas emission assessment and monitoring, pollution assessments and control, flood risk and natural capital accounting.	Professional discussion, underpinned by a portfolio of evidence
K4 Substrates and amendments used to benefit soils including composts, and remediation in contaminated soils.	Professional discussion, underpinned by a portfolio of evidence
K5 Soil-water-air-plant-animal interactions and interfaces including how soil health and resilience is built.	Professional discussion, underpinned by a portfolio of evidence
K6 Soil function and the value of soil ecosystem goods and services for both businesses and the wider environment.	Practical assessment and questions
K7 Soil health including soil degradation and considerations for construction, agricultural and horticultural management.	Professional discussion, underpinned by a portfolio of evidence
K8 Land management implications including contamination, compaction, soil sealing and remediation and considerations for construction, agricultural and horticultural management.	Professional discussion, underpinned by a portfolio of evidence
K9 The interactions between soil and climate change including organic matter depletion and soil carbon.	Professional discussion, underpinned by a portfolio of evidence

K10 Existing UK policy, guidance, legislation and strategies, basic protection measures for soils and its place within an international context and the UN Sustainable Development Goals.	Professional discussion, underpinned by a portfolio of evidence
K11 How different soils respond to different types of management practices.	Practical assessment and questions
K12 The formation and creation of artificial or engineered soils and how they can be used.	Professional discussion, underpinned by a portfolio of evidence
K13 Land management economics including the cost of getting it wrong: for horticulture, forestry, construction and soil use for habitat creation.	Professional discussion, underpinned by a portfolio of evidence
K14 The global political environment and its impact on soil management.	Professional discussion, underpinned by a portfolio of evidence
K15 The wider ecological and archaeological environment and its impact on soil management.	Practical assessment and questions
K16 Land drainage design and sustainable drainage systems (SuDS) for different environments and drainage system and catchment hydrological modelling.	Professional discussion, underpinned by a portfolio of evidence
K17 Secondary data and information including soil maps, Geographic Information System Mapping (GIS).	Professional discussion, underpinned by a portfolio of evidence
K18 Levels of authority and the circumstances in which escalation or referral to other colleagues or stakeholders is required.	Professional discussion, underpinned by a portfolio of evidence
K19 Working with clients including project management and understanding the brief.	Professional discussion, underpinned by a portfolio of evidence

K20 Developing and implementing soil resource and research plans, sustainable soil management plans, budgets (financial and non-financial), time management, commercial awareness, health and safety (including risk assessments and method statements) and quality standards.	Professional discussion, underpinned by a portfolio of evidence
K21 How to commission soil surveys, testing and analysis.	Professional discussion, underpinned by a portfolio of evidence
K22 Opportunities for introducing innovative techniques across projects or the wider business.	Professional discussion, underpinned by a portfolio of evidence
K23 Critical awareness of stakeholder engagement, mapping, drivers, engagement opportunities and building collaborative relationships.	Practical assessment and questions
K24 Approaches to soil science research questions and the methodologies and techniques required to deliver valid and reliable results.	Practical assessment and questions
K25 Methods used to review, analyse and draw conclusions from data (including how to apply statistically valid comparisons and understand the reliability of data) strategies to present conclusions to clients and other audiences and influence stakeholders.	Practical assessment and questions

SKILL	ASSESSMENT METHODS
S1 Interpret the relationships between soil and landscape, land use and climate.	Practical assessment and questions
S2 Initiate, evaluate, and select the most effective soil sampling and survey technique to meet the project objectives and landscape context.	Practical assessment and questions
S3 Critique Agricultural Land Classification reports.	Professional discussion, underpinned by a portfolio of evidence
S4 Select and apply relevant and effective data collection and interpretation, including before and after analysis, for the required purpose including Earth Observation (EO) data, Geographic Information System Mapping (GIS) and soil maps.	Professional discussion, underpinned by a portfolio of evidence
S5 Based on the client brief, develop project scope and identify outcomes, deliverables and key performance indicators, including sustainability.	Professional discussion, underpinned by a portfolio of evidence
S6 Select and justify cost effective soil testing methods that achieve project outcomes and ensure accuracy.	Practical assessment and questions
S7 Consider the interrelationship between the soil science project, the wider geo-political environment and current regulations and guidelines.	Professional discussion, underpinned by a portfolio of evidence
S8 Design and implement soil experiments, resource and research plans, analysis methodologies, and survey approaches including land access and statistical analysis.	Practical assessment and questions
S9 Undertake digital modelling of soil and use soil data to strengthen the applicability of models.	Professional discussion, underpinned by a portfolio of evidence

S10 Analyse and handle confidential information securely.	Professional discussion, underpinned by a portfolio of evidence
S11 Manage the delivery of the project plans including budget, tenders for services, obtaining relevant permits, timelines and address any risks and concerns.	Professional discussion, underpinned by a portfolio of evidence
S12 Develop, maintain and monitor compliance with health and safety requirements including Risk Assessment and Method Statements (RAMS).	Practical assessment and questions
S13 Take a systematic approach to identify interacting factors of soil investigations and the key stakeholders.	Practical assessment and questions
S14 Analyse soil information to draw robust conclusions and identify the limitations of the results and the context within which they apply.	Practical assessment and questions
S15 Produce verbal and written specialist technical reports, following standard policies and procedures, based on the evidence collected.	Professional discussion, underpinned by a portfolio of evidence
S16 Communicate soil information to meet the needs of various stakeholders.	Professional discussion, underpinned by a portfolio of evidence
S17 Apply a systematic approach to solving problems that involve interacting factors and provide sustainable solutions.	Practical assessment and questions
S18 Present project outcomes and justify the fit with objectives.	Practical assessment and questions
S19 Identify opportunities to implement best practice and innovative techniques and promote their application into the project or across the organisation.	Professional discussion, underpinned by a portfolio of evidence

BEHAVIOUR	ASSESSMENT METHODS
B1 Work proactively and collaboratively with team members and stakeholders from all backgrounds.	Professional discussion, underpinned by a portfolio of evidence
B2 Act professionally, demonstrating integrity, empathy and working ethically.	Professional discussion, underpinned by a portfolio of evidence
B3 Committed to ethical reporting and when making recommendations, including trade-offs.	Practical assessment and questions
B4 Committed to using innovative approaches and new practices.	Professional discussion, underpinned by a portfolio of evidence
B5 Works within limits of responsibility and internal policies and procedures.	Professional discussion, underpinned by a portfolio of evidence
B6 Respect confidentiality on work related and personal matters.	Professional discussion, underpinned by a portfolio of evidence
B7 Be adaptable, reliable and objective.	Practical assessment and questions
B8 Take responsibility for personal development, demonstrating commitment to learning, self-improvement and to continual development of technical skills.	Professional discussion, underpinned by a portfolio of evidence

Mapping of KSBs to grade themes

Professional discussion, underpinned by a portfolio of evidence

KSBS GROUPED BY THEME	KNOWLEDGE	SKILLS	BEHAVIOUR
Advanced soil science and management K1 K3 K4 K5 K7 K9 K12	Soil characteristics including how soils differ, soil nutrients, the soil formation process (pedogenesis), geology, topography, types and structure considering the combination and interaction of soil chemical, physical and biological properties. (K1) Nutrient management and neutrality, carbon accounting and greenhouse gas emission assessment and monitoring, pollution assessments and control, flood risk and natural capital accounting. (K3) Substrates and amendments used to benefit soils including composts, and remediation in contaminated soils. (K4) Soil-water-air-plant-animal interactions and interfaces including how soil health and resilience is built. (K5) Soil health including soil degradation and considerations for construction,	None	None

	agricultural and horticultural management. (K7) The interactions between soil and climate change including organic matter depletion and soil carbon. (K9) The formation and creation of artificial or engineered soils and how they can be used. (K12)		
Soils in the field K2 S3	How to carry out a soil survey (pedology) including classifying soils to a specified standard, considering health and safety, external soil data, relevant legislation, social, economic and environmental factors. (K2)	Critique Agricultural Land Classification reports. (S3)	None

Soil analysis techniques K17 S4 S9	Secondary data and information including soil maps, Geographic Information System Mapping (GIS). (K17)	Select and apply relevant and effective data collection and interpretation, including before and after analysis, for the required purpose including Earth Observation (EO) data, Geographic Information System Mapping (GIS) and soil maps. (S4) Undertake digital modelling of soil and use soil data to strengthen the applicability of models. (S9)	None
Research techniques K16	Land drainage design and sustainable drainage systems (SuDS) for different environments and drainage system and catchment hydrological modelling. (K16)	None	None
Project and consultancy management K10 K13 K14 K18 K19 K20 K21 S5 S7 S10 S11 B6	Existing UK policy, guidance, legislation and strategies, basic protection measures for soils and its place within an international context and the UN Sustainable Development Goals. (K10) Land management economics including the cost of getting it wrong: for horticulture, forestry,	Based on the client brief, develop project scope and identify outcomes, deliverables and key performance indicators, including sustainability. (S5) Consider the interrelationship between the soil science project, the wider geo-political environment and current regulations and guidelines. (S7)	Respect confidentiality on work related and personal matters. (B6)

	construction and soil use for habitat creation. (K13) The global political environment and its impact on soil management. (K14) Levels of authority and the circumstances in which escalation or referral to other colleagues or stakeholders is required. (K18) Working with clients including project management and understanding the brief. (K19) Developing and implementing soil resource and research plans, sustainable soil management plans, budgets (financial and non-financial), time management, commercial awareness, health and safety (including risk assessments and method statements) and quality standards. (K20) How to commission soil surveys, testing and analysis. (K21)	Analyse and handle confidential information securely. (S10) Manage the delivery of the project plans including budget, tenders for services, obtaining relevant permits, timelines and address any risks and concerns. (S11)	
Communicating soil science K8 S15 S16 B1 B2	Land management implications including contamination, compaction, soil sealing and	Produce verbal and written specialist technical reports, following standard policies and	Work proactively and collaboratively with team members and stakeholders from all backgrounds. (B1)

	remediation and considerations for construction, agricultural and horticultural management. (K8)	procedures, based on the evidence collected. (S15) Communicate soil information to meet the needs of various stakeholders. (S16)	Act professionally, demonstrating integrity, empathy and working ethically. (B2)
Professional development K22 S19 B4 B5 B8	Opportunities for introducing innovative techniques across projects or the wider business. (K22)	Identify opportunities to implement best practice and innovative techniques and promote their application into the project or across the organisation. (S19)	Committed to using innovative approaches and new practices. (B4) Works within limits of responsibility and internal policies and procedures. (B5) Take responsibility for personal development, demonstrating commitment to learning, self-improvement and to continual development of technical skills. (B8)

Practical assessment and questions

KSBS GROUPED BY THEME	KNOWLEDGE	SKILLS	BEHAVIOUR
Soils in the field K6 K11 K15 S1 S2 B7	Soil function and the value of soil ecosystem goods and services for both businesses and the wider environment. (K6) How different soils respond to different types of management practices. (K11) The wider ecological and archaeological environment and its impact on soil management. (K15)	Interpret the relationships between soil and landscape, land use and climate. (S1) Initiate, evaluate, and select the most effective soil sampling and survey technique to meet the project objectives and landscape context. (S2)	Be adaptable, reliable and objective. (B7)
Soil analysis techniques K24 S14 S17	Approaches to soil science research questions and the methodologies and techniques required to deliver valid and reliable results. (K24)	Analyse soil information to draw robust conclusions and identify the limitations of the results and the context within which they apply. (S14) Apply a systematic approach to solving problems that involve interacting factors and provide sustainable solutions. (S17)	None
Communicating soil science K23 S18 B3	Critical awareness of stakeholder engagement, mapping, drivers, engagement opportunities and building collaborative relationships. (K23)	Present project outcomes and justify the fit with objectives. (S18)	Committed to ethical reporting and when making recommendations, including trade-offs. (B3)

Project and consultancy management S6 S12 S13	None	Select and justify cost effective soil testing methods that achieve project outcomes and ensure accuracy. (S6) Develop, maintain and monitor compliance with health and safety requirements including Risk Assessment and Method Statements (RAMS). (S12) Take a systematic approach to identify interacting factors of soil investigations and the key stakeholders. (S13)	None
Resource and research planning K25 S8	Methods used to review, analyse and draw conclusions from data (including how to apply statistically valid comparisons and understand the reliability of data) strategies to present conclusions to clients and other audiences and influence stakeholders. (K25)	Design and implement soil experiments, resource and research plans, analysis methodologies, and survey approaches including land access and statistical analysis. (S8)	None

Version log

Version	Change detail	Earliest start date	Latest start date
1.0	Approved for delivery	26/10/2023	Not set