Institute for Apprenticeships & Technical Education

End-point assessment plan for Mineral Products Technician apprenticeship standard

Apprenticeship standard reference number	Level of this end point assessment (EPA)	Integrated
ST0605	5	No

Contents

Introduction and overview

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

Full time apprentices will typically spend 36 months on-programme (before the gateway) working towards the occupational standard, with a minimum of 20% off-the-job training. All apprentices will spend a minimum of 12 months on-programme.

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

All pre-requisites for EPA assessment methods must also be complete and available for the assessor as necessary.

As a gateway requirement and prior to taking the EPA, apprentices must complete all approved qualifications mandated in the Mineral Products Technician standard.

These are:

- MPQC Level 4 Diploma in Safety, Health and Environmental Management in Mineral Products Operations

For level 3 apprenticeships and above apprentices without English and mathematics at level 2 must achieve level 2 prior to taking their EPA.

The EPA must be completed within an EPA period lasting a maximum of 4 months, beginning when the apprentice has passed the EPA gateway.

The EPA consists of 2 discrete assessment methods.

The individual assessment methods will have the following grades:

Assessment method 1: Professional discussion (supported by a portfolio of evidence):

· fail
· pass
· distinction

Assessment method 2: Project comprising of technical health and safety report, presentation with questioning. **(**Component 1- Technical health and safety report, Component 2 - Presentation with questioning):

· fail
· pass
· distinction

Performance in the EPA will determine the overall apprenticeship standard and grade of:

· fail
· pass
· distinction

EPA summary table

On-programme (typically 36 months)	Training to develop the occupation standard's knowledge, skills and behaviours.
End-point Assessment Gateway	• Employer is satisfied the apprentice is consistently working at, or above, the level of the occupational standard • English and mathematics Level 2 Apprentices must complete the following approved qualifications mandated in the standard: • MPQC Level 4 Diploma in Safety, Health and Environmental Management in Mineral Products Operations Apprentices must complete and submit to the EPAO: • A Portfolio of evidence to support the professional discussion. • A project title, scope and outline agreed with their employer.
End Point Assessment (which would typically take 4 months)	Assessment Method 1: **Professional Discussion (supported by a portfolio of evidence)** With the following grades: ·fail ·pass distinction Assessment Method 2: **Project comprising of;** **2a) Technical health and safety report.** **2b) Presentation with questioning.** With the following grades: · fail · pass · distinction
Professional recognition	Aligns with recognition by • The Institute of Quarrying (IQ) • The Institute of Asphalt Technology (IAT) • The Institute of Concrete Technology (ICT) • The Concrete Society • The International Clay Technology Association (ICTA) • The Institute of mining, metals and minerals. (IOM3).

Length of end-point assessment period:

The EPA must be completed within an EPA period lasting typically 4 months, beginning when the EPAO has confirmed that all gatewat requirement have been met.

Any supporting material required for the EPA should be submitted at the gateway point.

If an EPA assessment method is failed, it should be retaken within the EPA period and in-line with the requirements set out in this assessment plan.

Order of assessment methods

The assessment methods can be delivered in any order.

EPA Gateway

The EPA period should only start once the employer is satisfied that the apprentice is consistently working at or above the level set out in the occupational standard, that is to say they are deemed to have achieved occupational competence. 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.

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

English and mathematics at level 2.

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 and British Sign Language qualification are an alternative to English qualifications for whom this is their primary language.

Apprentices must have achieved the following approved qualifications as mandated in the standard:

- MPQC Level 4 Diploma in Safety, Health and Environmental Management in Mineral Products Operations

For the professional discussion (supported by a portfolio of evidence), the apprentice will be required to submit:

The portfolio of evidence described earlier in this plan is to support the professional discussion . The apprentice must submit their portfolio of evidence at the gateway point. An independent assessor will review the portfolio to glean personalised information that will assist the professional discussion.

- Employer is satisfied the apprentice is consistently working at, or above, the level of the occupational standard.
- English/mathematics Level 2

Apprentices must complete the following approved qualifications mandated in the standard:

- MPQC Level 4 Diploma in Safety, Health and Environmental Management in Mineral Products Operations

Apprentices must complete and submit to the EPAO:

- A project title, scope and outline agreed with their employer.
- A portfolio of evidence to support the professional discussion. This is a mandatory portfolio of evidence that must be completed on-programme. This will not be assessed in its own right, but will be used to support the named assessment method. It will contain evidence of the knowledge, skills and behaviours mapped against the assessment method, gathered on-programme, which can then be used to underpin the information provided during the end-point assessment. Evidence must demonstrate the apprentice's core knowledge, skills and behaviours (KSBs) and the apprentice's chosen option's knowledge and skills, that are mapped to the assessment method. It is anticipated that individual pieces of evidence will be mapped to multiple KSBs within the

assessment method. Evidence must relate to 'real' work completed by the apprentice; evidence from simulated activities is not allowed. It will typically contain 10-12 pieces of evidence. The apprentice's employer must provide a written statement confirming the evidence is attributable to the apprentice. Evidence can include:

- ✓ work products produced by the apprentice, for example processes and procedures, production schedules, risk assessments, management reports, meeting records, statistical trend analysis, plans and costings, audit reports,witness testimonies
- ✓ Electronic recorded evidence (video or audio); maximum 20-minutes in total duration
- ✓ training records/CPD/certificates

Evidence **cannot** include reflective accounts.

The employer must sign off the portfolio of evidence, thereby confirming the demonstration of competence against the knowledge, skills and behaviours (KSBs) across the standard and that the apprentice is ready to take the EPA.

The apprentice must submit their portfolio of evidence to their EPAO when applying for the EPA. An independent assessor will review the portfolio to glean personalised information that will assist the professional discussion.

For the Project comprising of a technical, health and safety report, presentation and questioning:

The EPAO must sign-off the project title, scope and outline to confirm its suitability prior to the project commencing. This sign-off must be completed by the EPAO within 2 weeks of Gateway. The EPAO must assure itself that the project allows the apprentice to demonstrate all the KSBs assigned to this method.

Assessment methods

Assessment Method 1: Professional Discussion (supported by a portfolio of evidence) (This Method has 1 component.)

Method 1 Component 1: Professional Discussion (supported by a portfolio of evidence)

Overview

This assessment will take the form of a professional discussion, which must be appropriately structured to draw out the best of the apprentice's competence and excellence and cover the KSBs assigned to this assessment method. It will involve the questions that will focus on coverage of prior learning or activity.

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

· employer's premises
· a suitable venue selected by the EPAO (e.g. a training provider's premises)

The rationale for this assessment method is:

This assessment method has been selected as a valid way to test some of the KSBs in the apprenticeship standard (as outlined in the mapping on page 22).

This is the first supervisory/management rung in the industry. It also requires in-depth technical knowledge. Employees in this occupation must regularly communicate with a wide range of stakeholders about their employer's business and may be questioned and challenged on this. This method replicates that well.

Some of the KSB evidence can not be evidenced over a short space of time, so the method is supported by a portfolio of evidence that is gathered throughout the apprenticeship to ensure all are appropriately included and can form the basis of the discussion.

Delivery

An independent assessor will conduct and assess the professional discussion.

The professional discussion must last for 60 minutes. The independent assessor has 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 EPAOs Reasonable Adjustment Policy.

During this method, the independent assessor must combine questions from the EPAO's question bank and those generated by themselves following their review of the portfolio. The assessor must ask a minimum of 10 questions and follow up questions may be asked where required.

The professional discussion will be conducted as set out here:

The professional discussion will be carried out on a 1:1 basis between the apprentice and the independent assessor. It may be voice recorded with the agreement of the employer and the apprentice, and the recording must be stored in accordance with GDPR legislation.

The discussion is supported by a portfolio of evidence which the independent assessor will have been given a copy of at least two weeks in advance of the date of the assessment.

Both the apprentice and the independent assessor should bring a copy of the portfolio to the assessment to refer to.

At the outset the independent assessor must ensure that the learner understands the process, the possible outcomes and how it is graded.
The independent assessor will use recording documentation issued by the EPAO, and take notes of what is said, as appropriate. They must send this to the end point assessment organisation within the end point assessment organisation's agreed timescale (which must be no later than 3 weeks after the date of assessment).
The independent assessor will use the fail, pass and distinction descriptions for guidance on the grading for the professional discussion. The apprentice will achieve a grade for this element of the end-point assessment that will contribute to the final grade of the apprenticeship award.

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.

The independent assessor will make all grading decisions.

Venue

The professional discussion should take place in a quiet room, free from distractions and influence. Where the employer premises are not used, the EPAO must ensure that the venue can facilitate the EPA.
If video conferencing is to be used this must include secure online conferencing facilities. EPAOs must ensure appropriate methods to prevent misrepresentation are in place should an online option be used. For example, screen share and 360-degree camera. Reasonable adjustments should be made to ensure accessibility requirements for the apprentice.

Other relevant information

A structured specification and question bank must be developed by EPAOs. The ‘question bank’ must be of sufficient size to prevent predictability and the EPAO must review it regularly (and at least once a year) to ensure that it, and its content, are fit for purpose. The specifications, including 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 the professional discussion and reaching consistent judgement.

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

- Grading guidance
- Recording documentation
- Questions to be selected from a question bank of sufficient size to prevent predictability and to be reviewed as a minimum on an annual basis to confirm their suitability

Assessment Method 2: Project comprising of a technical health and safety report, presentation with questioning (This Method has 2 components.)

Method 2 Component 1: Technical health and safety report

Overview

The technical health and safety report is based on a health and safety related project compiled after the apprentice has gone through the gateway process.

The work-based project should be designed to ensure that the apprentice's work meets the needs of the business, is relevant to their role and allows the relevant KSBs to be demonstrated for the EPA. Therefore the project's subject, title and scope will be agreed between the employer and the EPAO. 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 assignment to this assessment method).The EPAO must sign-off the project title to confirm its suitability prior to the project commencing. This sign-off must be completed by the EPAO within 2 weeks of Gateway.

The rationale for this assessment method is:

In this occupation, employees will regularly need to write reports to stakeholders. This could include colleagues, managers and external stakeholders. Therefore this is a valid assessment method that is reflective of the day-to-day work. This is a good way to test a range of KSBs and will provide opportunity for the apprentice to demonstrate the technical and health and safety orientated KSBs. The technical report is the most valid way to gather evidence at the end-point regarding some of the activities which occur in this occupation, but which cannot be scheduled or predicted so cannot be tested through observation (or example, reviewing operational processes and providing recommendations for improvement). All would require a written report, therefore this method tests the apprentice's ability in a valid way that replicates real work situations.

The technical work-based project can focus on an immediate or strategic short-term issue or opportunity. The project should allow the opportunity to cover the KSBs assigned to this method of assessment and the following should be discussed and agreed at the gateway as a minimum:

1. Background
2. Outline of the issue or opportunity
3. Justification for the project
4. Potential benefits (cost saving, improved productivity, quality) and drawbacks including commercial, contractual and organisational etc.
5. Potential risks
6. Consideration of legislation, regulation, industry and organisational policies, procedures and requirements
7. Proposed plan for implementation
8. Stakeholder engagement
9. Measures of success

Delivery

Apprentices will conduct a project in the form of a technical health and safety report.

The project is carried out and the report compiled after the apprentice has gone through the gateway process. The apprentice will conduct their project and submit it to the EPAO after a maximum of 2 months from the EPA start date (when the project title, scope and outline has been agreed).

The employer will ensure the apprentice has sufficient time and the necessary resources, within this period, to plan and undertake the project. The Apprentice will provide a signed statement to confirm that this is their own work and this will be validated by their employer.

The project report should be in the form of an electronic or paper based report.

The project may be based on any of the following:

· a recurring issue
· an idea/opportunity

As a minimum all technical health and safety reports must include:

- The report must include a 375-400 word summary (excluded from the word count below).
- . An introduction explaining the issue(s) evaluated for this report.
- The scope of the report (including business need)
- Identify and quantify the issue(s)
- Research and findings
- Analysis of options
- Recommendations and conclusions (demonstrating an improvement opportunity for the business in either a technical or health and safety aspect).

The project will have a maximum word limit of 3,000.

A tolerance of plus or minus 10% is allowed.

Appendices, references, diagrams etc.arenot be included in this total word count.

The project must mapin an appendixhow it evidences the relevant KSBs for this assessment method.

The project will be conducted as set out here:

The aim of the work-based project must be to implement a measurable business improvement, with a focus on the health and safety implications. The EPAO must sign-off the project title to confirm its suitability prior to the project commencing. This sign-off must be completed by the EPAO within 2 weeks of gateway.
The EPAO must assure itself that the project allows the apprentice to demonstrate all the KSBs assigned to this method.

The project should relate to real work in the employer's business and therefore have a business benefit. The project may be one big task relating to one process or a series of smaller tasks relating to a number of different processes, and relate to a whole end-to-end process or part of a process, to meet the needs of different types of employers.
All work relating to the project and report write-up, must be completed during the EPA period; excluding preliminary research to inform the project outline.
Example project titles include:

- Reducing the health and safety risks associated with an operational process.
- Develop or improve to meet consumer expectations and customer requirements.
- Critically analyse an existing process and recommend improvements.

These are illustrative examples to aid employers/EPAOs and apprentices and are not restrictive.

The EPAO is responsible for ensuring that the apprentice has the opportunity to demonstrate all of the KSBs assigned to this assessment method.

Apprentices must submit their project report a maximum of 2 months after the EPA start date. The apprentice's employer must provide a statement to confirm authenticity of the project and the report. EPAO must hold a bank of example projects (which include Project titles and their outlines) to offer suggested guidance to employers and apprentices; however, apprentices must not be limited to these. EPAOs must review the example projects within the bank regularly (and at least once a year) to ensure the example projects remain fit for purpose.

Marking

The independent assessor will review and assess the project in a timely manner, as determined by the EPAO, and without extending the EPA unnecessarily. Similarly all quality control processes will also be conducted in a timely manner, as determined by the EPAO.

Required supporting material

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

- Outline of the assessment method's requirements
- Recording documentation

Method 2 Component 2:
Presentation with questioning

Overview

Apprentices will prepare and deliver a presentation based on component 1, the technical health and safety report, that appropriately covers the KSBs assigned to this method of assessment.

The presentation will be based on the technical health and safety report. The presentation must focus on the KSBs mapped to this assessment method (as outlined in the mapping on page 22). As Skill 6 requires the apprentice to "Utilise communications technology for performing and supporting the business processes including, communications, work co-ordination, task analysis and problem solving", the presentation must make use of communications technology so this can be practically demonstrated to the assessor. As skills S41 and S51 are most likely to occur during the questioning element of this assessment method, questions must ensure they are covered. The presentation should reflect on the work undertaken by the apprentice when preparing the technical health and safety report with reference to the following:

- Provide an overall Summary of the Technical Health and Safety Report.
- Present product, equipment and staffing information from teams across the site that has helped to support critical decision making (S5) and indicate where innovation has been possible through suggestions and feedback (B10).
- Present knowledge of the local communities together with an engagement plan that will develop positive relationships and minimise identified disputes (S18)
- Demonstrate a strong personal commitment to health, mental wellbeing, safety and the environment. (B1)
- Demonstrate how they have promoted a collaborative team and a commitment to equality and diversity (B9 ~~and B11~~)

  And where required, in terms of the selected Option:-

- Explain how they have planned for the management of efficient, safe, sustainable and environmentally sensitive mineral extraction (S20, S21)
- How they will manage secondary, alternative and recycled product constituents (S30)
- Present how they will maximise resource efficiency and minimise environmental impact through understanding the quarry/clay pit plan (S53)

The presentation will be completed and submitted after the gateway and will be presented to an independent assessor, 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.

The presentation should be submitted alongside the project report, a maximum of 2 months after EPA start date.

- ethic, a supportive positive culture

The rationale for this part of the assessment method is:

In this occupation, employees will regularly need to present information to stakeholders. This could include colleagues, managers and external stakeholders. Therefore this is a valid assessment method that is reflective of the day-to-day work.
This is a good way to test a range of KSBs and will provide opportunity for the apprentice to demonstrate the "people" orientated KSBs, around peer, team, stakeholder and personal interactions that are a key part of this role.

Delivery

The presentation and questioning will last for a minimum of 45 minutes. The presentation should typically be around 20 minutes to allow sufficient time for questioning. The assessor has the discretion to increase the time of the presentation by up to 10% to allow the apprentice to complete their last point.

The independent assessor will ask a minimum of 8 questions at the end of the presentation.

To deliver the presentation, the apprentice will have access to:
· PowerPoint
· flip chart
· work products
· videos
· interactive demonstrations
· notes
· computer

The presentation will be conducted as follows:

- The presentation will take place on a one-to-one basis between the independent assessor and the apprentice.
- The apprentice must have submitted a copy of the technical health and safety report and the presentation to the EPAO in advance in order for the independent assessor to prepare.
- The way in which the content of the presentation is made is not prescriptive but it must ensure that the apprentice demonstrates S6 and uses "communications technology" as part of the presentation.
- A copy of the presentation must be sent to the EPAO in advance and this must outline details of any visual aids to be used and specify any equipment required.
- The independent assessor will review the technical health and safety report and the presentation and prepare questions to be asked at the end of the presentation.
- A minimum of 8 questions should be asked at the end of the Presentation. These questions will be based both on those in the EPAO question bank as well as those drawn up by the Independent Assessor following their review of the Project.

- The question bank must be developed by EPAO and must be of sufficient size to prevent predictability. The EPAO must review it regularly (and at least once a year) to ensure that it, and its content, are fit for purpose.

The project report, presentation and questioning are all being assessed holistically and the independent assessor will make all grading decisions.

Venue

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

· employer's premises
· other suitable venue selected by the EPAO

The venue should be a quiet room, free from distraction and external influence. Where the employer premises are not used, the EPAO must ensure that the venue can facilitate the EPA.

If video conferencing is to be used this must include secure online conferencing facilities. EPAOs must ensure appropriate methods to prevent misrepresentation are in place should an online option be used. For example, screen share and 360-degree camera. The venue must contain relevant ICT equipment required by the apprentice for the presentation (e.g. projector, video conferencing facilities etc.). The apprentice should notify the EPAO of their requirements when they submit their presentation. Reasonable adjustments should be made to ensure accessibility requirements for the apprentice.

Other relevant information

N/A

Support material

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

If the presentation is to be video and/or audio recorded the independent assessor will need to obtain the consent of the apprentice and employer representative prior to doing so. .
Recording documentation that can be used by the independent assessor to record evidence and results must also be produced.

Weighting of assessment methods

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

Grading

Assessment method 1: Professional Discussion (supported by a portfolio of evidence)

The apprentice will be deemed to have failed if they do not meet the criteria outlined in the pass descriptor.

KSBs	Pass	Distinction
K3,K4,K6,K8,K9,K10,K12,K13 K14,K15,K16,K17,K18,K19,K20, K21,K22,K23, K28,K29 K30,K32 K35,K36,K37,K38,K39,K42,K43, K45,K46,K50,K52,K53,K57,K58, K59,K60,K65,K66,K67,K68,K69, K70,S2,S3,S4,S7,S8,S9,S10,S12,S13, S15,S16,S19,S22,S23,S25, S27, S31,S32,S33,S34,S35,S36,S39, S40,S42,S43,S45,S46,S47,S48 S50,S52,S54,S55,S56,S57,S58, B2, B3,B4,B7, B8, B11, B12, B13	Pass – In order to achieve a pass, all of the pass criteria in Annex 1 must be met.	Distinction – In order to achieve a distinction, distinction criteria in Annex 1 must be met.

Assessment method 2: Project comprising of a technical health and safety report and presentation with questioning

The apprentice will be deemed to have failed if they do not meet the criteria outlined in the pass descriptor.

KSBs	Pass	Distinction
K1,K2,K5,K11,K7 K24, K25,K26,K27, K31,K33, K34,K40,K41, K44, K47, K48,K49, K51,K54, K55,K56, K61, K62,K63, K64 S1,S5,S6, S11,S14,S17,S18, S20, S21, S24, S26, S28,S29,S30, S37,S38, S41, S44,S49 S51, S53, S59, B1,B5, B6,B9,B10, ~~B11~~	Pass – In order to achieve a pass, all of the pass criteria in Annex 1 must be met.	Distinction – In order to achieve a distinction, at least five from seven of the distinction criteria in Annex 1 must be met.

Overall EPA grading

All EPA methods must be passed for the EPA to be passed overall.

There are three overall grades available for the Apprenticeship:

Fail - Apprentice did not achieve a minimum of a pass in both assessment methods
Pass - Apprentice achieved a minimum of a pass in both assessment methods
Distinction - Apprentice achieved a distinction in both assessment methods.

Roles and responsibilities

Role	Responsibility
Apprentice	• complete the on-programme element of the apprenticeship • prepare for and complete the EPA
Employer	• identify when the apprentice is ready to pass the gateway and undertake their EPA (in consultation with the training provider and EPAO) • notify the EPAO that the apprentice has passed the gateway
EPAO	As a minimum EPAOs should: • provide training and CPD to the independent assessors they employ to undertake the EPA • Create learner specifications detailing the EPA, process, content etc. • ensure there is no direct connection with the apprentice, their employer or training provider i.e. there must be no conflict of interest • have processes in place to conduct internal quality assurance and do this on a regular basis • organise standardisation events and activities in accordance with this plan's IQA section • organise and conduct moderation of independent assessors' marking in accordance with this plan • have, and operate, an appeals process • conform to the requirements of the nominated EQA provider
Independent assessor	As a minimum an Independent assessor should: • be independent of the apprentice, their employer and training provider(s) i.e. there must be no conflict of interest • ideally hold or be working towards an independent assessor qualification e.g. A1 or at least have had training from their EPAO on how to make valid assessment decisions as a minimum. Where the independent assessor is not qualified all assessments to be countersigned by a qualified assessor.

	• have the capability to assess the apprentice at this level i.e. meet the occupational requirements as set out in the IQA section of this assessment plan • attend the required number of EPAOs standardisation and training events per year (as defined in the IQA section)
Training provider	As a minimum the training provider should: • work with the employer to ensure that the apprentice is given the opportunities to develop the KSBs outlined in the standard and monitor their progress during the on-programme period • advise the employer, upon request, on the apprentice's readiness for EPA prior to the gateway • play no part in the EPA itself

Internal Quality Assurance (IQA)

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

- appoint independent assessors who have knowledge of the following occupational areas: Experience of working in the Mineral Products Industry, with up-to-date knowledge of the options being assessed. Have relevant experience of the occupation/sector gained in the last three years or significant experience of the occupation/sector. This should be at least at the same level as the standard.
- able to demonstrate maintenance of competence through CPD
- appoint independent assessors who are competent to deliver the end-point assessment
- provide training for independent assessors in terms of good assessment practice, operating the assessment tools and grading
- have robust quality assurance systems and procedures that support fair, reliable and consistent assessment across the organisation and over time.
- operate induction training and standardisation events for independent assessors when they begin working for the EPAO on this standard and before they deliver an updated assessment method for the first time

Re-sits and re-takes

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

An apprentice who fails an assessment method, and therefore the EPA in the first instance, will be required to re-sit any failed assessment methods only.

Resits should be taken within 5 months of the fail notification and retakes should be completed within 8 months of the fail notification, otherwise the entire EPA must be taken again, unless in the opinion of the EPAO exceptional circumstances apply outside the control of the apprentice or their employer.

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

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.

Affordability

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

· the project adds direct business value for the employer

. online testing (e.g video conferencing)
· using an employer's premises

Professional body recognition

This apprenticeship is designed to prepare successful apprentices to meet the requirements for registration as Associate Member with:

- The Institute of Quarrying (IQ)
- The Institute of Asphalt Technology (IAT)
- The Institute of Concrete Technology (ICT)
- The Concrete Society
- The International Clay Technology Association (ICTA)
- The Institute of mining, metals and minerals. (IOM3).

Reasonable adjustments

The EPAO must have in place clear and fair arrangements for making reasonable adjustments 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 assessment plan.

Mapping of knowledge, skills and behaviours (KSBs)

KSB code	KSB statement	Methods mapped against
Core Knowledge		
K1	Relevant Health, Safety Environmental Legislation relevant to their workplace	Assessment method 2
K2	The health and safety hazards, major hazards, environmental aspects and risks associated with the operation	Assessment method 2
K3	Major hazards associated with the operational site	Assessment method 1
K4	Emergency response, process and procedure	Assessment method 1
K5	The concepts, theories and practicalities underpinning the safe, efficient operation of the production site	Assessment method 2
K6	The performance and competency requirements for all operational roles on site including contractors and sub-contractors	Assessment method 1
K7	Problem solving tools and techniques	Assessment method 2
K8	An understanding of dynamic work Method Statements and Risk Assessments	Assessment method 1
K9	Understand the effect of production processes on the supply chain	Assessment method 1
K10	Understand the impact of production processes on sustainability	Assessment method 1
K11	Foundation geo-sciences, such as understanding the geology and chemistry of the materials and its application relevant to the mineral products sector	Assessment method 2

K12	The principles of operation of mobile and static plant equipment to produce and process a consistent product to customer and BS EN specifications minimising any waste	Assessment method 1
K13	The principles of predictive and preventative maintenance of all mineral products equipment	Assessment method 1
K14	Knowledge of relevant quality systems (such as ISO standards)	Assessment method 1
K15	An understanding of typical customer requirements and constraints	Assessment method 1
K16	How to establish site costs including cost benefit analysis	Assessment method 1
K17	Communication techniques, including report writing and methods of making written and oral presentations	Assessment method 1
K18	The importance of communicating relevant information with the operational team, customers and all stakeholders	Assessment method 1
K19	The importance of liaison with local communities, official bodies and other stakeholders associated with site operations and any impacts they may have	Assessment method 1
Option 1 Mineral Extraction		
K20	The minerals extraction processing operations that maximises the use of the resources, maximises products from raw materials, ensures availability of resources and restore spent or worked area	Assessment method 1
K21	The social and economic issues associated with the exploration, exploitation and development of a mineral extraction site	Assessment method 1
K22	Different methods of winning and extracting raw material.	Assessment method 1
K23	Techniques employed to load extracted minerals and viable options to transport extracted minerals and its applications	Assessment method 1

	within the industry, including feeding, crushing, screening, washing, separation, classification and beneficiation techniques.	
K24	Sustainable development, reclamation of mineral workings, minerals planning, managing waste and an understanding of environmental law and legislation and its implication for the minerals extractive industry.	Assessment method 2
K25	The requirements of blasting in a safe and environmentally conscious manner, without risk of causing injury or damage whilst optimising overall operating costs.	Assessment method 2
K26	An understanding of chemical and physical properties of aggregates - their specifications in order to produce aggregates that are fit for purpose and the full range of end uses such as concrete, asphalt or rail ballast.	Assessment method 2
K27	An in depth understanding of how to sample and test the aggregates, including typical standard deviations and implications of analysis of the final products in use this includes adjusting operations to achieve the required quality levels.	Assessment method 2
K28	Understand the maintenance processes required to maximise availability and cost base on the range of mobile and static plant including modes of failure, first line maintenance and specific maintenance activities.	Assessment method 1
K29	Understand the principles required and constraints around both new site planning requirements and planning permissions extensions.	Assessment method 1
K30	Deep understanding of the Quarry Regulations 1999.	Assessment method 1
Option 2 Concrete (Readymix and Precast/Prestressed)		
K31	An understanding of fresh and hardened concrete, its constituents, specifications, mix design and its properties, in order to produce concrete that is fit for purpose and durable.	Assessment method 2

K32	An understanding of how to sample and test the end product in a fresh and hardened state.	Assessment method 1
K33	Sustainable use of concrete in durable structures and its environmental impact.	Assessment method 2
K34	Appropriate use of resources, admixtures, additives for constituent materials, and energy consumption.	Assessment method 2
K35	Cementitious materials including cement replacing materials; natural and recycled aggregates; admixtures; properties of fresh, hardening and hardened concrete for durable structures; standards, specifications and conformity control; production and placing.	Assessment method 1
K36	Properties of concretes and cementitious mortars used for specialist end uses - including self-compacting, precast and fibre reinforced concrete; and mortars for masonry, render and screed.	Assessment method 1
K37	Concrete in construction and a deep understanding of reinforced and pre-stressed concrete, including its use in concrete slabs, floors and external paving.	Assessment method 1
K38	The particular characteristics of fresh concrete required for specialist end uses such as pumped, sprayed, foamed and underwater concrete are also studied. Includes an understanding of the influence of formwork on the surface finish of hardened concrete.	Assessment method 1
K39	The factors that influence the long term durability of concrete used in structures, including the role of cracks. Compaction of placed product and impacts of the environmental conditions during placement	Assessment method 1
K40	Methods used to investigate and analyse the causes and extent of deterioration in a concrete structure and how to repair and protect reinforced and pre-stressed concrete structures.	Assessment method 2
K41	The importance and various methods for curing concrete.	Assessment method 2

	Option	
Option 3 Cement and cementitious product		
K42	The sequence of activities required to produce cement, including how the raw materials are sourced and blended; the chemical processes in the cement kiln; and the processing and blending of clinker to give the range of cements required by customers.	Assessment method 1
K43	The complex range of activities and processes that are used in relation to the extracted raw materials and other components required to prepare the dry or semi-dry material known as 'kiln feed.	Assessment method 1
K44	The balanced and efficient use of different fuels (including waste fuels) and their contribution to the economic and sustainable operation of a Portland cement kiln.	Assessment method 2
K45	Clinker processing - the processes that grind and blend the output from the cement kiln into a cement that can be sold to the customer in bulk or in packaging.	Assessment method 1
K46	The safe processes and procedures for site shutdown in both routine and emergency situations.	Assessment method 1
K47	Effective environmental management in line with the Part A process at the clinker manufacturing facility and also local permits at associated depots, including monitoring and reporting of CO2 and improvements in emissions (such as fugitive or respirable dust and gaseous emissions).	Assessment method 2
K48	Quality control and end use of cement and cementitious products, including the correct use, maintenance and calibration of equipment, including XRF, chemical and physical testing equipment.	Assessment method 2
K49	Understand the end use of the cement, cementitious products and the properties which will impact on the final product, this covers conventional and special concretes such as self-compacting concrete.	Assessment method 2
K50	Correct dosing facilities and testing for Chromium(Cr)6+ in cement, reporting shelf life and testing required to confirm	Assessment method 1

	the suitability for use. Understand the health implications of Cr6+ in final product and COSHH of the chemicals used to reduce Cr6+	
Option 4 Asphalt & pavements		
K51	The technology, standards, specifications and other requirements that apply to bituminous products and asphalt mixtures.	Assessment method 2
K52	The technology and principles of designing bituminous mixtures including Recycled Asphalt Product (RAP), and of the specific processes and knowledge required to produce, transport and place the products.	Assessment method 1
K53	Techniques used to manage asphalt product quality so as to satisfy the needs of the customer and end use.	Assessment method 1
K54	Compaction of placed product and impacts of the environmental conditions during placement.	Assessment method 2
K55	Pavement products and how they work to protect the underlying substrates and the fundamental principles of pavement design.	Assessment method 2
K56	Pavement designed for lifespan and traffic predictions, design of treatments to maintain the structure.	Assessment method 2
K57	The 'Asset Management' approach to maintaining highways, and prioritisation of maintenance treatments.	Assessment method 1
K58	Fundamental properties of asphalt mixtures and their function in road pavements. The production of bitumen and special binders, such as emulsions and polymer modified binders.	Assessment method 1
K59	The fundamental requirements of an asphalt mix, durability, resistance to cracking and resistance to deformation.	Assessment method 1
K60	The major specialist treatments for the surface of roads, and their reinforcement.	Assessment method 1

K61	Sustainability through recycling and consideration of ‘alternatives aggregates’.	Assessment method 2
Option 5 Clays (Heavy and White)		
K62	The techniques used to identify potential sources of clay and their potential use in a range of clay products.	Assessment method 2
K63	The environmental and geological factors that can have an impact on the development of a clay extraction site.	Assessment method 2
K64	The methods and techniques used to investigate and evaluate a potential source of clay, including site survey and site investigation methods.	Assessment method 2
K65	Winning & Preparation - methods and techniques used to extract, stockpile and process clay so that it can be used for the production of clay products.	Assessment method 1
K66	The issues and constraints associated with crushing and size reduction of clay lumps and particles.	Assessment method 1
K67	Processes used to prepare clay so that it can be used to produce clay products in a safe way that also respects the environment.	Assessment method 1
K68	Forming - how the moulded clay can influence the dimensions and shape of the finished clay product.	Assessment method 1
K69	How surface treatments can be used to create particular surface characteristics and properties in the finished clay product and how surface finishes can be used to provide resistance to specified ground conditions and end-use environments.	Assessment method 1
K70	Techniques used to dry and then fire clay products. The drying and firing processes that produce different types of clay products and the influence of drying and firing techniques on their characteristics.	Assessment method 1

Core Skills		
S1	Work competently, safely and manage risks in accordance with HSE regulations.	Assessment method 2
S2	Apply their knowledge of health and safety hazards, major hazards, environmental aspects and risks associated with the operation in order to train others to conduct full risk assessments, license to operate procedures and be able to fully investigate and evaluate health, safety and environmental accidents and incidents, report findings and implement improvements.	Assessment method 1
S3	Use their knowledge of emergency response processes and procedures to deal with emergency situations and ensure that in these circumstances the site is evacuated, secured and made safe as swiftly as possible.	Assessment method 1
S4	Recommend and support improvements to environmental, health and safety culture, procedures, process and systems across the operation.	Assessment method 1
S5	Obtain, evaluate and use information from the teams across the site to take critical operational decisions. This could include information on a range of matters such as the products, the equipment and the staffing levels.	Assessment method 2
S6	Utilise communications technology for performing and supporting the business processes including, communications, work co-ordination, task analysis and problem solving.	Assessment method 2
S7	Ensure that operational systems are adhered to by all employees in accordance with quality control plans and procedures.	Assessment method 1
S8	Use appropriate Personal Protective Equipment in order to meet employers and regulatory health and safety requirements.	Assessment method 1
S9	Apply route cause analysis	Assessment method 1

S10	Use the principles of predictive and preventative maintenance of all mineral products equipment in order to minimise downtime and costs.	Assessment method 1
S11	Develop & write technical reports that meet business requirements including the optimisation and continuous improvement of processes and services	Assessment method 2
S12	Maximise the use of the resources, maximise products from raw materials, ensuring sustainability of resources.	Assessment method 1
S13	Provide technical knowledge transfer to colleagues and continuous improvements in line with business requirements.	Assessment method 1
S14	Optimise processes & products re: cost and performance in line with budget requirements.	Assessment method 2
S15	Communicate all relevant information with the operational team, customers and all stakeholders by email, handheld radio, phone and face to face to keep them up to date with site production issues, ensuring information is passed clearly and promptly.	Assessment method 1
S16	Plan and implement plans for work activities and projects.	Assessment method 1
S17	Monitoring trends, interpreting results and making adjustments in production.	Assessment method 2
S18	Use knowledge of the local communities, official bodies and other stakeholders associated with Mineral Products and their interests in the industry to liaise and engage with them to ensure positive working relationships are established, minimising disputes.	Assessment method 2
Options 1 Mineral Extraction		
S19	Ensure safe and effective utilisations of mineral extraction equipment and resources by following standard operating procedures and/or site rules.	Assessment method 1

S20	Maximise operational and resource efficiency in a mineral extraction environment, in accordance with the quarry/mine plan.	Assessment method 2
S21	Plans processes to win and extract mineral in a safe, efficient and environmentally sensitive manner applying blasting, digging or cutting techniques.	Assessment method 2
S22	Plan to use, select and utilise face loading machines, dumptrucks, conveyor systems, processing and benefication equipment by planning material flow and matching equipment.	Assessment method 1
S23	Use and apply the the quarry/mine plan to assess environmental impact, planning constraints, site restoration and the wider sustainability agenda.	Assessment method 1
S24	Achieve and verify product quality meets both European Standards and customer specifications and optimizes the production process to achieve these in a cost effective manner and whilst maintaining end use applications.	Assessment method 2
S25	Ensures all test equipment is maintained, used correctly and calibrated, retains appropriate records. Interprets all test results for accuracy, retesting as required, and taking appropriate actions and communications if results fall outside of specifications.	Assessment method 1
S26	Conduct the full range of legislative and procedural inspections required in the quarry, processing plant and associated locations, record, document findings and take appropriate action. For inspections conducted by specialist third parties – can interpret, prioritize and action the recommendations.	Assessment method 2
Option 2 Concrete (Readymix and Precast/Prestressed)		
S27	Planning work activities and production schedule with customer requirements.	Assessment method 1
S28	Sampling and testing of concrete products to the relevant European standards.	Assessment method 2

S29	Monitoring trends, interpreting results and making adjustments in concrete mix designs.	Assessment method 2
S30	Management of product constituents to include secondary, alternative and recycled materials.	Assessment method 1 and Assessment method 2
S31	Demonstration of the selection and appropriate use of reinforcement materials in concrete applications.	Assessment method 1
S32	Planning the selection and utilisation of fresh concrete delivery systems by planning material flow and matching equipment.	Assessment method 1
S33	Able to apply different concrete batching techniques in the manufacture of concrete products.	Assessment method 1
S34	Undertaking of assessment, inspection and development of suitable repair strategies for existing concrete structures.	Assessment method 1
Option 3 Cement and cementitious product		
S35	Planning work activities and production schedule with customer and trend requirements.	Assessment method 1
S36	Managing risks specific to high energy and cost production processes.	Assessment method 1
S37	Sampling, testing and reporting of Cement, Lime and Cementitious products to the relevant European standards.	Assessment method 2
S38	Sampling, testing and reporting of incoming and intermediary materials supporting the adjustments in the cement manufacturing process.	Assessment method 2
S39	Management of product constituents to include secondary, alternative and recycled materials.	Assessment method 1
S40	Planning the selection and utilisation of milling, grinding and blending equipment by planning process flow and matching equipment	Assessment method 1

S41	Demonstrate an understanding of the selection and use of different fuel types in order to maximise thermal efficiencies and minimise environmental impacts.	Assessment method 2
S42	Planning the selection and utilisation of Cement, Lime and Cementitious Products delivery systems.	Assessment method 1
Option 4 Asphalt & pavements		
S43	Planning work activities, production schedules, transport and delivery in line with customer requirements.	Assessment method 1
S44	Sampling source materials, bitumens and asphalt products.	Assessment method 2
S45	Defining different asphalt production processes and ancillary equipment to maximise production. Inspecting and optimising asphalt production plant and equipment.	Assessment method 1
S46	Inspecting and optimising laying and compaction plant and equipment.	Assessment method 1
S47	Managing risks to health and safety and the environment associated with the production, transport and laying of asphalt mixtures.	Assessment method 1
S48	Application and on going management of assets both in terms of production and laying equipment and in pavements, foundations, drainage, skid resistance, embankments, bridges and street furniture.	Assessment method 1
S49	Application of pavement design according to design speciications.	Assessment method 2
S50	Identifying pavement failure modes and subsequent remedial options.	Assessment method 1
S51	Application of specialist road surface treatments and sustainable recycled aggregates and recycling processes.	Assessment method 2
Option 5 Clays (Heavy and White)		

S52	Apply understanding of the nature and formation processes of clay deposits to the manufacture of heavy clay construction products to ensure product quality.	Assessment method 1
S53	Maximise operational and resource efficiency by using and understanding the quarry/clay pit plan in and minimising environmental impacts.	Assessment method 2
S54	Supervision of methods of extraction, transportation and stockpiling of clay raw materials to industry standards.	Assessment method 1
S55	Effective management of raw material processing in relation to the manufacturing operation.	Assessment method 1
S56	Recognise the influence of raw material properties in the selection of the appropriate clay forming equipment and drying processes.	Assessment method 1
S57	Appropriate selection and use of different surface texturing and colouring processes.	Assessment method 1
S58	Planning and control of the appropriate drying and firing cycles for the production process.	Assessment method 1
S59	Sampling, testing and reporting of intermediary and final clay products supporting the adjustments in the process.	Assessment method 2
Core Behaviours		
B1	A strong personal commitment to health, mental wellbeing, safety and the environment.	Assessment method 2
B2	Leads from the front setting a high example to all employees.	Assessment method 1
B3	Works within the company policies, procedures and regulations at all times.	Assessment method 1
B4	Remains calm, composed and maintains accuracy of detail under pressure.	Assessment method 1
B5	Takes responsibility for own behaviours, actions and standards of work.	Assessment method 2

B6	Identifies improvements that could be made and contributes to implementing new procedures or ways of safe and effective working.	Assessment method 2
B7	Takes responsibility for on-going continuous professional development	Assessment method 1
B8	Ensures a customer focused approach and is an advocate for the business.	Assessment method 1
B9	Promotes a collaborative team ethic as well as a supportive and positive culture.	Assessment method 2
B10	Encourages innovation and supports suggestions and feedback.	Assessment method 2
B11	Demonstrates a commitment to equality and diversity and manages/challenges others to meet the requirements of fairness at work.	Assessment method 1
B12	Maintains a professional, courteous, polite and friendly approach at all times.	Assessment method 1
B13	Identify own development needs and takes action to meet those needs.	Assessment method 1

Annex 1

Grading descriptors for each assessment method

The apprentice will be deemed to have failed if they do not meet the criteria outlined in the pass descriptor.

Professional discussion (supported by a portfolio of evidence)		
Grouping	Pass Criteria In order to achieve a pass, all of the pass criteria must be met.	Distinction Criteria In order to achieve a distinction, the distinction criteria for the apprentices chosen option must fully meet at least 6 of the 9 categories of core distinction criteria.
CORE		
Business or Finance (K16)	Explains the business and finance processes, reporting and procedures and how site costs are identified. Can explain the benefits of this information and how it used by the business for making key business decisions or strategy.	Describes a range of methods of establishing site costs (at least two) and can explain the circumstances in which each is the most appropriate.

Commercial (K15)	Explains typical customer requirements in terms of the products and production process. Outlines the difference between a feature and a benefit.	Explains the impact customer constraints have on quality, effectiveness, reliability or efficiency and the strategies used to overcome those challenges
Communications (K17,K18)	Explains typical communication techniques including report writing and methods of making written and oral presentations and when they area used. Explains the benefits to the business of effective communications and how it can improve business process and safety with reference to different techniques and methods	Explains the pros and cons of different communication methods. Outline the impact of poor communication on business objectives. Outline how they determine the most appropriate method of communication
Engineering (K13,S10)	Explains the principles of preventative maintenance and how it can aid the production process with reference to an example where they have used these principles in their role.	Can describe the risks of failing to carry out preventative maintenance.
HSE (K3,K4,S2,S3,S8)	Identifies and applies the appropriate H&S and environmental regulations and operational procedures for the situation and provides examples of applying H&S processes and training others to use them. Can describe the major hazards associated with the site and how to investigate and evaluate health, safety and environmental accidents and incidents, report their findings and implement improvements. Describes how they can use this knowledge todeal with emergency situations and ensure the site is evacuated swiftly. Provides evidence that they correctly use PPE.	
Leadership and Personal Development (B2,B4,B7, B11,B12, B13)	Explains the benefits to the business of effective, professional leadership and leading from the front, how it can improve business process and	Reference and discusses the impact of not following calm, professional leadership practice, referencing the potential consequences and risks.

	safety with examples from their own work They must directly tie in the importance of remaining calm when under pressure. Explains the importance of respecting all stakeholders with specific reference to the importance of equality and diversity and the need to be courteous, polite and friendly at all times. Describes how they have identified their own development needs and taken personal responsibility for implementing the required actions	
Management and Supervision (K6,S13,S16)	Explains how they plan and implement projects and work activities effectively, explaining how success is measured for all individuals site. Is able to explain the benefits to the business of effective management\supervision and how it can improve business process and safety. Can explain the difference between leadership and management of employees, with examples of when they have transferred knowledge to colleagues to improve business processes. Is able to describe the performance and competency requirements of the operational roles on site, including contractors and sub-contractors.	Describes the risks of failing to induct contractors and sub-contractors to the site. Explains the impact of poor planning/implementation on business objectives
Operations (K9,K10,K12,S12)	Explains the production process, the importance of maximizing resources and how production impacts on other areas of the business (e.g the supply chain, sustainability, customers). Explains how consistency of the end product is achieved to meet	Analyses the cause and effect that impacts on the wider business (internally and externally)

	customer and BS EN specifications and requirements.	
Stakeholder Management (K19, S15, B8)	Is able to define and explain the benefits to the business of a customer focused approach with an example of this. How stakeholder management is used in the day to day business, with reference to local communities, official bodies and other stakeholders associated with site operations, and how poor stakeholder management could have a detrimental effect on the business, with an example of how they have been an advocate for the business. Explains how they have communicated information to the operational team, customers and stakeholders by email, hand-held radio, phone and face to face, in a clear and prompt manner with examples from the portfolio.	Describes with examples where they have used stakeholder management to improve the business or manage a situation. Explains why stakeholder management is important in a modern business. Describes when they have exceeded customer expectations as a result of embedding a customer-focused approach in a team or educating others/mentoring others on how to apply a customer-focused approach
Systems and Standards (K8,K14,S4,S7,S9,B3)	Identifies, describes and demonstrates how they adhere to existing systems, standards and procedures, including: method statements, risk assessments, quality systems, environmental and health and safety culture, how they ensure that others adhere to systems and root cause analysis. Demonstrates that they work collaboratively with colleagues to implement improvements.	Explains the importance of following systems and standards, explains the potential return on investment for the business in running a compliant and regulated business. Articulates how they plan to keep their knowledge and skills up-to-date (CPD). Explains how they have led the implementation of an improvement project'
OPTIONS		
Option1: Mineral Extraction		

Mineral Extraction operational knowledge K20, K21, K22, K23, K28, K29, K30	Explains the mineral extraction production process from raw material to end product, including winning materials. Explains how it impacts on other processes and other areas of the business. This should include the sustainability of raw materials, end product consistency and quality. Explains the principles of planning requirements and quarry regulations. Explains the social and economic issues regarding the mineral extraction process.	
Mineral Extraction operational skills S19, S22, S23, S25	Describe how you ensure safe utilisation of equipment and resources in line with standard operating procedures and/or site rules. (Guidance: The apprentice will be able to explain how they used the correct process or procedure as appropriate to the site and task they were undertaking at the time.) Explains how they have planned material flow by selecting the appropriate equipment and machinery for the job, using an example from their portfolio. Describes with an example of how they have used the quarry/mine plan to assess the most appropriate way to carry out work, which minimises environmental impact and allows for site restoration. Describes with an example of how they have ensured equipment is correctly maintained and the procedures that must be followed if they fall outside specification.	Explains the importance of following standard operating procedures and site rules and the implications of failing to do so, with examples of steps they have taken to ensure colleagues are aware and have applied them.

Option 2: Concrete (readymix and precast/prestressed)		
Concrete (readymix and precast/prestressed) operational knowledge K32, K35, K36, K37, K38, K39	Explains how to sample and test concrete in fresh and hardened state. Describes the properties and uses of at least two cementitious products, including durability and the impact of the environment on the product. Explains the characteristics of reinforced and pre-stressed concrete and its use in construction. Explains the characteristics of concrete in specialist environments such as pumped, sprayed or underwater.	
Concrete (readymix and precast/prestressed) operational skills S27, S31, S32, S33, S34	Describes how to plan work activities and the steps taken to maximise efficiency of concrete products, taking into account production capability, production schedules, availibilty of raw materials, logistics and customer requirements. Provides evidence of selection and appropriate use of reinforcement materials in concrete applications. Describes with an example of when they have planned for a fresh concrete delivery and the factors that they took into account. Describes with an example how they apply different concrete batching techniques in the manufacture of concrete products Provides an example of deployment of a repair strategy for a concrete structure.	Explains how they balance the conflicting demands of customer expectations and requirements, customer trends, logisitics and commercial implications of production activities and how they decide which to prioritise and why.

Option 3: Cement and cementitious products		
Cement and cementitious products operational knowledge K42, K43, K45, K46, K50	Describes how to plan work activities for the production of cement and cementitious products and the steps taken to maximise efficiency taking into account production capability, production schedules, availibilty of raw materials, logistics and customer requirements Explains the sequence of activates required to produce cement, including sourcing raw materials, chemical processes, and blending of clinker to produce a range of products. Explains the range of activities required to prepare kiln feed and process clinker Explains the procedures that need to be followed to shut down production in the case of emergency.	
Cement and cementitious products operational skills S35,S36, S39, S40, S42	Describes with an example of when they have managed the risks specific to high energy and cost production processes. Explains how they have managed product constituents(e.g secondary, alternative, recycled materials) using an example. Explains how they plan for the selection and use of milling, grinding and blending equipment and products.	Explains the most important factors to take into account when planning the production of cement and cementitious products (e.g customer requirements, trends, logistics, budget and commercial impact). Explains how they decide which to prioritise and the risks and implications.
Option 4: Asphalt & pavements		

Asphalt & pavements operational knowledge K52, K53, K57, K58, K59, K60	Describes how to plan work activities and the steps you take to maximise efficiency in the production of asphalt, asphalt concretes and pavement products, taking into account production capability, production schedules, availibilty of raw materials, logistics and customer requirements	
Asphalt & pavements operational skills S43, S45, S46, S47, S48, S50	Explains the processes used to maximise asphalt production, including use of equipment and plant. Provides an example from their portfolio to support this. Explains the risks associated with the production, transportation and laying of asphalt and ways to mitigate them. Explains reasons for possible pavement failure(s) and the appropriate remedial action required.	Explains the most important factors to take into account when planning the production of asphalt and pavement products (e.g customer requirements, trends, logistics, budget and commercial impact). Explains how they decide which to prioritise and the risks and implications.
Option 5: Clays (heavy and white)		
Clays (heavy and white) operational skills K65, K66, K67, K68, K69, K70	Explains the production process for winning and preparation of clay, including extraction, stockpile and storage. Explains the safety and environmental considerations required when preparing clay for use. Explains how to prepare clay for use including drying, firing and surface treatments.	
Clays (heavy and white) operational knowledge S52, S54, S55, S56, S57, S58	Describes how clay desposits are formed during the production process and provide an example of when they have applied this knowledge to ensure product quality.	Explains the key risks and concerns associated with production of clay products and the steps they have taken to minimise or mitigate them (e.g Deposites, storage, drying and firing).

	Explains how they have planned and managed the extraction, transportation and stockpiling of clay raw materials, using an example from their portfolio. Provides an example of a surface and colouring process and the factors to be taken into account. Describes how they have planned the drying and firing cycles for the production process, illustrated with a specific example.	

The apprentice will be deemed to have failed if they do not meet the criteria outlined in the pass descriptor.

Project comprising of a technical, health and safety report, presentation and questioning		
Grouping	Pass Criteria In order to achieve a pass, all of the pass criteria must be met.	Distinction Criteria In order to achieve a distinction, the distinction criteria for the apprentices chosen option must fully meet at least 3 of the 5categories of core distinction criteria.
CORE		
Communications (S11)	Is able to communicate the information in a clear manner. Considers the audience receiving the information and presents the data accordingly. Demonstrates the ability to develop and write technical reports in line with business requirements, including the optimization and continuous improvement of processes and services.	

Data Analysis (S17,B6)	Can show how they conducted analysis of the data, monitored trends, interpreted results and made adjustments in production to improve results by providing the workings or how they reached the conclusion by showing the alternatives and why they were dismissed. Can provide an example of identifying improvements and contributing to new procedures and safer ways of working.	
Finance/Business (S14)	Is able to explain the business and finance processes, reporting and procedures. Can explain the benefits of this information and how it can be used in business to make effective decisions with an example of how they have used this information to optimise processes and products.	
Geo-Science (K11)	Is able to demonstrate how geotechnical aspects and geo-sciences has been used in the planning and production processes. Can explain the importance of geo-sciences in the industry.	
Health and Safety (K1,K2,S1)	Recognises, identifies and applies the appropriate H&S and environmental regulations and operational procedures for the situation including hazards and risks.	
Systems and Standards (S5)	Explains how they have made appropriate use of information gathered from teams across the site to assist them in making robust operational decisions.	Critically evaluates alternative options and is able to justify their chosen option
Communications (S6)	Demonstrates that they can use communications technology to support the	Articulates with clear practice examples when they have used effective communication

	business and explains the benefits to the business of effective communications and how it can improve business process and safety	skills to improve business processes
Leadership (B1,B5,B9,B10)	Demonstrates how they lead in the workplace. This must make reference to promotion of a collaborative team working ethic, fairness and equality and a strong personal commitment to health and safety. Demonstrates how they encourage innovation and support suggestions from others	Demonstrates ongoing visible leadership, with examples of influencing others to act and improve.
Stakeholder Management (S18)	Is able to define and explain the benefits to the business of stakeholder management, with reference to local communities and official bodies. How stakeholder management is used in the day to day business and how poor stakeholder management could have a detrimental effect on the business	Can demonstrate or provide examples where they have used stakeholder management to improve the business or manage a situation. Demonstrates a clear understanding why stakeholder management is important in a modern business.
Systems and Standards (K7)	Describes problem solving tools and techniques used in their organization.	Explains how using problem solving tools and techniques can improve overall business performance.
OPTIONS		
Option 1: Mineral Extraction		
Mineral Extraction K24, K25, K26, K27, S20, S21, S24, S26	Provides an example(s) of when they have planned a process to win and extract mineral in a safe, efficient and environmentally sensitive manner. Explains two key factors that they took into consideration in the planning process, providing information	Analyses risks and issues within the operations process, identifying the cause and effect of the process and how that impacts on the wider business (internally and externally) making recommendations for improvement.

	or guidance used in the planning. Explains the legislation that they considered when carrying out the process. Describes the chemical and physical properties of two aggregates and explains how they can be put to end use and what needs to be taken into account to ensure they are fit for purpose. Describes the health and safety requirements that need to be taken into account when undertaking mineral extraction using blasting techniques. Provides an example of the sample and testing techniques they have specified to ensure aggregates are fit for purpose, with an example. Explains the range of legislative and procedural inspections required in the quarry and provides an example of action they have taken to meet this. Explains how they have ensured product meets European standards and customer needs and the actions they have taken to do so in the most cost effective manner.	
Option 2: Concrete (Readymix and precast/prestressed)		
Concrete (Readymix and precast/prestressed) K31, K33, K34, K40, K41, S28, S29, S30	Explains identified trends, and how that leads to making adjustments in concrete mix designs. How the adjustments	Explains the various methods to identify trends. Describes how this analysis may lead to making adjustments in concrete mix design or

	will be identified in continuous monitoring. Explains the concrete production process (raw material to end product) with reference to the properties of concrete and how they ensured it met European Standards Explains sustainable use of concrete and explains causes of deterioration in concrete, how to analyse and how to repair and protect materials. Explains the importance and methods available for curing concrete Describes with an example how they have managed raw material or product constituents including secondary, alternative and recycled materials.	production process and evaluates the potential impact of adjustments on the customer, production and consistency of the product.
Option 3: Cement and cementitious products		
Cement and cementitious products K44, K47, K48, K49, S37, S38, S41	Describes the sampling regime, testing process and reporting of cementitious or hydraulic products to the relevant standards and how they have applied this in the workplace. Explains the balanced and efficient use of different fuels (including waste fuels) and their contribution to the economic and sustainable operation of a Portland cement kiln. Explains how to ensure quality control of cement and cementitious products,	Explains the sampling regime, testing process and reporting of cementitious or cementitious products to the relevant standards. Describes how this analysis may lead to the making of adjustments or variations to the product and evaluates the impact on the customer and or production process.

	including correct use of equipment and the properties which will impact on the final product.	
Option 4: Asphalt & Pavements		
Asphalt & Pavements K51, K54, K55, K56, K61, S44, S49, S51	Describes the sampling regime, testing process and reporting of bitumous products to the relevant standards. Explains how to design, transport and place bitumous mixtures, including recycled asphalt product (RAP) and the environmental considerations. Explains what is meant by "alternative aggregates" and the factors they take into account when considering recycling products or researching sustainable alternatives. Describes the application of pavement design specification and the application of road surface treatments and what factors they took into consideration. Explains the environmental factors that need to be taken into account when placing products and compacting them.	Explains the sampling regime, testing process and reporting of bitumous and or concrete asphalt products to the relevant standards. Describes how this analysis may lead to the making of adjustments or variations to the product and evaluates the impact on the customer and or production process.
Option 5: Clays (Heavy and white)		
Clays (Heavy and white) K62, K63, K64, S53, S59	Describes the sampling, testing and reporting of intermediary and final clay products as well as any implications of variations in the products. Describes the methods and techniques used to investigate	Explains the sampling regime, testing process and reporting of intermediary and final clay products to the relevant standards. Describes how this analysis may lead to the making of adjustments or variations to the product and

	and evaluate a potential source of clay, including site survey and site investigation methods and the environmental and geological factors that need to be taken into account. Describe how they have maximised operational and resource efficiency by using and understanding the quarry/clay pit plan in and minimising environmental impacts.	evaluates the impact on the customer and or production process.