Institute for Apprenticeships & Technical Education

End-point assessment plan for project controls professional apprenticeship standard

Apprenticeship standard number	Apprenticeship standard level	Integrated end-point assessment
ST0845	6	No

Contents

Introduction and overview

This document sets out the requirements for end-point assessment (EPA) for the project controls professional apprenticeship standard. It explains how EPA for this apprenticeship must operate.

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

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

Full-time apprentices will typically spend 42 months on-programme (before the gateway) working towards this occupational standard. All apprentices must spend a minimum of 12 months on-programme. All apprentices must spend a minimum of 20% of on-programme time undertaking off-the-job training.

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

- the employer must be content that the apprentice is consistently working at or above the occupational standard
- the EPAO must sign off the apprentice's technical work-based basis of assignment to confirm its suitability
- the apprentice must submit a portfolio of evidence to their EPAO, which will underpin the EPA professional discussion
- for level 3 apprenticeships and above, all apprentices must have achieved English and mathematics at Level 2[1] prior to taking their EPA.

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

This EPA should then be completed within an EPA period lasting typically for 6 months.

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

This EPA consists of two discrete assessment methods. It will be possible to achieve the following grades in each assessment method:

Assessment method 1: Technical work-based assignment with report, presentation and questioning.

- Fail
- Pass
- Distinction

Assessment method 2: Professional discussion underpinned by a portfolio.

- Fail
- Pass
- Distinction

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

- Fail
- Pass
- Merit
- Distinction

EPA summary table

On-programme (typically 42 months)	Training to develop the knowledge, skills and behaviours (KSBs) of the occupational standard. Training towards English and mathematics Level 2[1], if required. Compiling a portfolio of evidence.
End-point assessment gateway	The employer must be content that the apprentice is consistently working at, or above, the occupational standard. Apprentices must have achieved English and mathematics Level 1 and have taken the assessments for Level 2[1]. The EPAO, employer and apprentice must agree the basis of the technical work-based assignment and the EPAO should sign this off at the gateway. Apprentices must: • Submit a portfolio of evidence which underpins the professional discussion assessment method.
End-point assessment (which will typically take 6 months)	Assessment method 1: Technical work-based assignment with report, presentation and questioning. With the following grades: • Fail • Pass • Distinction Assessment method 2: Professional discussion underpinned by a portfolio of evidence. With the following grades: • Fail • Pass • Distinction With the overall EPA/apprenticeship graded: • Fail • Pass • Merit • Distinction
Professional recognition	This standard aligns with the following professional recognition: ACostE (Association of Cost Engineers) at iCostE (Incorporated Cost Engineer)

Length of end-point assessment period

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

Order of assessment methods

The assessment methods can be delivered in any order.

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

EPA gateway

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

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

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

- achieved English and mathematics 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. British Sign Language (BSL) qualifications are an alternative to English qualifications for those who have BSL as their primary language

At EPA gateway the following must also happen:

- Submission by the apprentice of the following:
    - The basis of assignment for the technical work-based assignment
    - The portfolio of evidence
- The EPAO will consider the expertise necessary to assess the apprentice and, in certain circumstances, may identify the need for support from a specialist technical expert to support the EPA assessment. This will be discussed with the employer.

Requirements for the basis of assignment for the technical work-based assignment:

At gateway the apprentice submits a basis of assignment and this is agreed by the apprentice, the employer and the EPA organisation. This is to ensure that the apprentice's assignment: meets the needs of the business; is relevant to their role; and has a real business application. It should also ensure that the apprentice is planning to undertake

work that meets the requirements of competence of the KSBs assigned to this assessment method.

The basis of assignment will typically be 500 words and will include:

- the title and objective
- a summary of the technical work-based assignment
- an outline of how the assignment will cover the KSBs mapped to this assessment method
- details of any initial work they have undertaken to inform the assignment.

The apprentice is expected to carry out initial work to inform the technical work-based assignment to ensure they have access to the technical data and information needed to undertake it. Details of this should be included in the basis of assignment.

The apprentice's manager or mentor will typically support the apprentice in identifying their choice of the technical work-based assignment.

This assignment must be undertaken on a project that the apprentice has not worked on. In certain circumstances this may be impossible and, if this is the case, the apprentice must base their work-based technical assignment on a different part of the project to the part they are working on.

For the professional discussion underpinned by a portfolio, the apprentice will be required to submit:

- a portfolio of evidence

Portfolio of evidence requirements:

Apprentices must compile a portfolio of evidence during the on-programme period of the apprenticeship. The portfolio is not assessed as it underpins the professional discussion. EPAOs should review the portfolio in preparation for the professional discussion but are not required to provide feedback after this review of the portfolio.

The portfolio of evidence must be submitted to the EPAO at the gateway.

The portfolio of evidence must contain a statement from the employer and apprentice confirming that all evidence provided in the portfolio is valid and attributable to the apprentice.

It must not include reflective accounts or any methods of self-assessment

The portfolio of evidence will typically contain the following:

- 14 pieces of evidence
- evidence related to each of the KSBs that will be assessed by the professional discussion
- mapping, by the apprentice, of the evidence against the KSBs assessed by the professional discussion

Each piece of evidence in the portfolio may be used to demonstrate more than one KSB - a qualitative as opposed to quantitative approach is suggested (therefore, ensure the mapping submitted alongside the portfolio is clear). Evidence can be provided through a range of sources including:

- workplace documentation such as reports, plans, presentations, spreadsheets and narratives
- annotated images or documentation
- expert witness evidence/testimony statements (which may be employer contributions based on direct observation of evidence of competence rather than opinions)
- feedback from line managers or stakeholders
- records of learning activities or training

This is not a definitive list and other evidence sources are possible.

End-point assessment methods

Assessment method 1: Technical work-based assignment with report, presentation and questioning.

Overview

The technical work-based assignment with report, presentation and questioning involves the apprentice completing a significant and defined piece of work that has a real business benefit.

The rationale for this assessment method is:

- it provides an opportunity for the apprentice to demonstrate the relevant KSBs in the occupational standard
- it typically reflects the type of activity in a format that would be completed by project control professionals – whether in project control, estimating, scheduling, planning or cost control
- it is a holistic assessment method and allows the apprentice to demonstrate KSBs in an integrated way
- it provides a cost-effective assessment as it optimises independent assessor time
- it should contribute recommendations for improvements of project control[2] delivery for the employer so benefitting the employer and providing additional return on the investment the employer has made in training the apprentice.

At gateway the apprentice submits a basis of assignment and this is agreed by the apprentice, the employer and the EPA organisation. This is to ensure that the apprentice's assignment: meets the needs of the business; is relevant to their role; and has a real business application. It should also ensure that the apprentice is planning to undertake

[2] Project control, estimating, planning, scheduling or cost control delivery.

work that meets the requirements of the EPA. These requirements include demonstration of competence of the KSBs assigned to this assessment method.

The employer will ensure it has a real business application.

The assignment is undertaken after the apprentice has gone through the gateway process. The employer will ensure the apprentice has sufficient time and the necessary resources, within this period, to plan and undertake the technical work-based assignment.

Whilst completing this work the apprentice should be subject to their usual workplace supervision arrangements.

The apprentice will compile their report and presentation and submit them to the EPAO after a maximum of 12 weeks from the EPA start date.

Delivery

This assessment method includes 2 components:

Component 1: a technical work-based report

Component 2: a related presentation and questioning.

The apprentice and employer must refer to the EPAO's specification and the grading descriptors outlined in this EPA plan to ensure that the technical work-based assignment, both the report and associated presentation, are pitched appropriately for a level 6 apprenticeship and technically focused. This provides an opportunity for the apprentice to demonstrate competence of the KSBs assigned to this assessment method.

This technical work-based assignment must be based on a critique of either a live or closed project and have one of the following themes:

1. project recovery
2. improved project delivery

This assignment work is mostly desk-based work and includes research and stakeholder engagement and must cover the following:

- technical and engineering principles – critique and evaluate the interpretation of the technical or engineering basis of the project controls work and how this has been used to underpin the project controls delivery
- project governance, project controls procedures and methods that meet the requirements of the organisational or business strategy – evaluate how the organisational and business strategies and employer organisation management systems have been taken into account in the delivery of project controls
- Net Carbon Zero and environmental sustainability – review how the drive to net zero and/or improved environmental sustainability has been considered and supported within the project controls context, identify any additional opportunities
- data assurance and integrity - critique of underlying assumptions, the validity, integrity and validation of data and technical appropriateness alongside a review of the underlying assumptions and their inherent risks
- data analytics and data-centric execution – evaluate coding structures, dataflows, data analytics and the potential for modifications to innovate and improve project decision making

- data modelling and forecasting – evaluate forecasting and statistical analysis techniques used and model different scenarios, interpret actual or potential outcomes and make recommendations
- communication and stakeholder skills – critique the approaches to communication and stakeholder engagement in the source project and demonstrate effective communication of the technical work-based assignment through the report and presentation
- assurance and continuous improvement – appraise the assurance techniques applied and critique the application of continuous improvement

Component 1 Technical work-based report

The technical work-based report should be in the form of an electronic document.

The technical work-based report will include:

1. Report scope and technical background:
    - objective of this review
    - the commercial and/or business context in which the work is being delivered
    - technical or engineering background that underpins the project controls work being reviewed
    - project control context i.e. scope and boundaries of this review

2. Description of the work that has been undertaken, methods and research.
    - what research has been done
    - what analysis has been done of the source project
    - stakeholders consulted
    - assurance / benchmarking undertaken.

3. Outcome and recommendations (with justification)

The report has a word limit of 6,000 words. A tolerance of plus or minus 10% is allowed. Appendices, references, diagrams etc. are excluded from this total.

The report must also include an appendix containing:

- mapping of the report, presentation and supporting evidence against the KSBs being assessed by this assessment method
- a statement from the employer confirming that the technical work-based report and presentation is the apprentice's own work
- a statement from the employer authenticating the project outcomes

The apprentice must complete their technical work-based report and submit this to the EPAO a maximum of 12 weeks after the EPA gateway was passed.

The technical work-based report will be reviewed and assessed by two independent assessors. The independent assessors will review the report in a timely manner, as determined by the EPAO, and without extending the EPA unnecessarily. The EPAO may,

on occasion, seek technical advice from a specialist technical expert (this may be from the employer) to ensure understanding of the apprentice's EPA submission and responses, e.g. to check company procedures and processes or to authenticate recommendations if the sector the apprentice is based in is very specialist.

The independent assessors will have equal responsibility in reviewing the technical work-based report. The use of two independent assessors will enable the provision of balance to the assessment and bring in greater breadth and depth of technical expertise to the questioning and discussion with the apprentice, elucidating more accurate final grading decisions for this assessment method. The independent assessors will grade the technical work-based report holistically, together with the other components of this assessment method. No assessors can be from the employer, to maintain independence and to ensure there is no conflict of interest.

Assessment method 1

Component 2: Presentation and questioning

Delivery

A presentation and questioning involves the apprentice delivering a presentation based on their technical work-based report, followed by questioning from both independent assessors. This may be conducted either face to face or via online conferencing.

The presentation content must be completed after the gateway, and a copy of the final version submitted to the independent assessors on the day of the presentation and questioning. The apprentice's delivery of the presentation, as well as the content of the presentation is marked.

The presentation must focus on the apprentice's technical work-based report and cover:

- background
- summary of what they did and why
- how they achieved what they did
- what they concluded
- their recommendations

The purpose of the questioning is to:

- verify that the technical work-based assignment is the apprentice's own work
- seek clarification on the report or presentation
- assess the depth and breadth of KSBs allocated to this assessment method
- test the communication skills and resilience of the apprentice under questioning

The apprentice must be given four weeks' notice of the presentation date and the independent assessors must have a minimum of four weeks to review the technical work-based project report and presentation prior to the presentation date.

The presentation and questioning must last for 60 minutes.

Typically, the presentation will last for 15 minutes and the questioning for 45 minutes. The lead independent assessor has the discretion to increase the time of the presentation and questioning by up to 10% to allow the apprentice to complete their last answer.

To deliver the presentation, the apprentice must have access to audio-visual equipment (if required) that facilitates presentations. The apprentice needs to notify the EPAO a week in advance of the presentation of any technical requirements for the presentation component.

The apprentice must be given the opportunity to prepare themselves prior to the start of the presentation (uploading presentation, etc), before the assessment starts.

The apprentice will be questioned by the two independent assessors who reviewed the report. The aim of the questioning is to replicate a project board experience where the apprentice will be faced with appropriate levels of challenge to their presentation and conclusions to test their ability to be resilient under pressure. This reflects the reality of the role.

The independent assessors will assess the content of the presentation and also the delivery of the presentation – looking at the apprentice's delivery style, clarity and communication skills (as required in the standard). Similarly, the independent assessors will assess the apprentice's response to questioning.

The independent assessors must use the full time available for questioning to allow the apprentice the opportunity to evidence occupational competence at the highest level available.

The independent assessors must ask a minimum of 5 questions at the end of the presentation. They may ask follow-up questions where clarification is required.

Independent assessors must use their EPAO's question bank as a source for questions and are expected to use their professional judgement to tailor those questions appropriately. Independent assessors are responsible for asking suitable follow-up questions in line with the EPAO's training and standardisation process.

KSBs met and answers to questions, must be recorded by the independent assessors, for the quality assurance purposes of the EPAO. The independent assessors will discuss apprentice performance and agree the final grading for this assessment method. If the two independent assessors cannot agree on the apprentice's performance and grading, then all assessment evidence must be submitted to the EPAO to moderate. The EPAO will make the final decision on the grade to award.

The evidence from the technical work-based report and presentation and questioning will be assessed holistically.

The technical work-based assignment with report, presentation and questioning must be subject to the EPAO's moderation processes, therefore a moderator may be present during the presentation and questioning.

Assessment location

EPAOs must ensure that the presentation and questioning elements are conducted in a suitable controlled environment. It must be face to face and can either be in person or virtual. In either case the environment should be quiet, free from distraction and external influence. This venue may be either:

- an employer's premises
- a suitable venue selected by the EPAO

Specific requirements that must be in place: audio-visual equipment (if required) that facilitates presentations.

If video conferencing is used, all parties must have a suitable internet connection to allow for a clear connection and streaming of the presentation and questions using cameras. Also the EPAO must have processes in place to verify the identity of the apprentice and ensure the apprentice is not being aided.

Question and resource development

A 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 (at least once a year) to ensure that it, and its content, are fit for purpose. The questions relating to the underpinning KSBs, must be varied yet allow assessment of the relevant KSBs. Independent assessors must use the question bank as a source for questions and are expected to use their professional judgement to tailor those questions appropriately. Independent assessors are responsible for asking suitable questions in line with the EPAO's training and standardisation process.

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

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

- assessment specifications
- grading guidance
- question bank (for independent assessors only, not for wider distribution)
- assessment recording documentation
- guidance document for employers and apprentices on the process / timescales for the assessment as well as a description of the purpose
- guidance document for independent assessors on how to carry out the assessment

Assessment method 2: Professional discussion underpinned by a portfolio

Overview

This assessment method has one component.

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. A professional discussion is a two-way discussion which involves both the independent assessor and the apprentice actively listening and participating in a formal conversation. It gives the apprentice the opportunity to make detailed and proactive contributions to confirm their competency across the KSBs mapped to this method. It will include the questions that will assess the KSBs assigned to this assessment method and the apprentice may use their portfolio to support their responses.

The rationale for this assessment method is:

- it allows for assessment of KSBs that do not occur on a predictable or regular basis
- it is cost effective, as it can be conducted remotely to reduce travelling time
- it enables assessment of an in-depth understanding of the KSBs
- it can draw upon the portfolio of evidence and can effectively determine the authenticity of that supporting evidence
- it can effectively assess those skills and behaviours that require probing questions to explore the reasons for the apprentice's ideas or actions
- it can be recorded to aid moderation and internal/external quality assurance

The EPAO may, on occasion seek technical advice from a specialist technical expert (this may be from the employer) to ensure understanding of the apprentice's portfolio of evidence and to support the independent assessor's preparation for the professional discussion e.g. to check company procedures and processes or to authenticate recommendations if the sector the apprentice is based in is very specialist.

Delivery

The independent assessor will conduct and assess the professional discussion.

The professional discussion must last for 90 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.

During this method, the independent assessor must combine questions from the EPAO's question bank and those generated by themselves.

The purpose of the questions will be to assess the following themes:

- safe and ethical working practices
- use of software and IT to enable effective delivery of project control
- creation of project controls plan(s) and baseline for control
- application of change control
- stakeholder management and interaction
- risk and assumption management and analysis
- contractual and commercial know-how to underpin control
- estimating practice
- planning and scheduling practice
- cost control practice
- progress and performance management of project delivery
- leadership for project control requirements

The professional discussion will be conducted as outlined below:

- EPAOs must make arrangements for the professional discussion with the apprentice's employer
- apprentices must be given at least four weeks' notice of the date and time of the professional discussion
- the independent assessor should have a minimum of fifteen working days to review the portfolio of evidence

- questions should be open. The independent assessor must ask a minimum of fifteen questions. Additional follow up questions are allowed, to seek clarification and to make a judgement against the grading descriptors
- independent assessors must use the question bank as a source for questions and are expected to use their professional judgement to tailor those questions appropriately. Independent assessors are responsible for asking suitable questions in line with the EPAO's training and standardisation process
- apprentices must have access to their portfolio of evidence during the professional discussion. Apprentices can refer to and illustrate their answers with evidence from their portfolio of evidence, however the portfolio of evidence is not directly assessed
- apprentices are expected to understand and use relevant occupational language that would be typical of a competent person in this occupation
- KSBs met and answers to questions, must be recorded by the independent assessor for external quality assurance processes

The independent assessor will make all grading decisions.

Assessment location

The professional discussion should take place in a quiet room, free from distractions and influence. 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.
The professional discussion can take place in any of the following:

- employer's premises
- a suitable venue selected by the EPAO, for example a training provider's premises

Question and resource development

A 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 (at least once a year) to ensure that it, and its content, are fit for purpose. The questions relating to the underpinning KSBs, must be varied yet allow assessment of the relevant KSBs. Independent assessors must use the question bank as a source for questioning and are expected to use their professional judgement to tailor those questions appropriately. Independent assessors are responsible for generating suitable questions in line with the EPAO's training and standardisation process.

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

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

- assessment specifications
- grading guidance
- question bank (for independent assessors only, not for wider distribution)
- assessment recording documentation

- guidance document for employers and apprentices on the process / timescales for the assessment as well as a description of the purpose
- guidance document for independent assessors on how to carry out the assessment

Reasonable adjustments

The EPAO must have in place clear and fair arrangements for making reasonable adjustments to the assessment methods for the EPA 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.

Grading descriptors

Assessment method 1: Technical work-based assignment with report, presentation and questioning

Fail - does not meet the pass descriptors

Themes for KSBs	Pass Must attain all pass descriptors	Distinction Must attain all pass and all distinction grade descriptors
Technical and engineering principles (K5, S4)	Critiques how the source project has taken technical or engineering project information from different sources to identify and know the correct data and elements to monitor and control to ensure the basis for any project controls recommendations are credible. This critique should include a review of and interpretation of technical project documents (such as scopes of work and engineering drawings etc.) in order to evaluate the data and elements selected as the basis for monitoring and control. Evaluates the technical appropriateness of the elements used as the basis for project controls' recommendations and verifies their credibility. **(K5, S4)**	
Organisational and business strategies, project governance and processes (K1, K2, K3, S1)	Explain how (in the source project) the organisational and business strategies have been taken into account in the delivery of project controls and evaluate how the project controls procedures and methods being used have taken the employer organisation management systems into account **(K1, K2, K3)** Determine and critique how this has been done and recommend adaptions or refinements, as appropriate **(S1)**	
Carbon Zero and environmental sustainability (K10, S10, B2.1)	Evaluates how the source project content that they have reviewed considers the environmental impact of the project's activities and identifies ways in which changes to the project controls work could contribute to the drive towards net carbon zero and minimise negative impacts on environmental sustainability. **(K10, S10)**	Demonstrates that they have played a leading role in researching and identifying how in their role, they can take action to improve the drive towards net zero

	Within this evaluation, demonstrates how they have taken into account the need to progress environmental outcomes and demonstrates resilience when dealing with the interview **(B2.1)**	/environmental sustainability. Justifies the actions that can be taken, outlining the net zero or environmental impact of the actions recommended and the reliability of how positive this can be. **(K10, S10, B2.1)**
Data assurance and integrity (K12, S12, B7)	Analyses the data and data reports used within the source project to challenge the integrity and validate them: • scrutinises the approaches used to gather the data including the timeliness of the data and if the data has been used consistently and accurately • evaluates the assumptions behind the data and explores if these, and the inherent risks associated with them, are valid • reviews steps taken to ensure the validity and integrity of data and data reports Evaluates alternative approaches to the data assurance identified as being used within the source project in order to challenge, verify and validate the data reports and data within the source project to ensure its integrity, timeliness and technical appropriateness **(K12, S12, B7)**	Demonstrates an in-depth understanding of the importance of data assurance and extrapolates the evaluation of a range of effective techniques for the benefit of the organisation and future project control delivery. Demonstrates insight into the importance of assumptions and why managing these is so fundamental to effective project controls and can lead to improved project delivery**.(K12, S12, B7)**
Data analytics and data-centric execution (K6, K13, S3, S5, S15)	Critique the breakdown and coding structures used to underpin control within the source project. Evaluates the coding structures used in the source project and appraises the technology available in their organisation then, proposes how the coding structures could be integrated into existing dataflows and technology to improve project control data collection, tracking and analysis. Research data flow systems, and the one that underpins the source project and identifies how new technology could be integrated into it to improve data processing and therefore PC delivery and how the coding underpins this **(K6, S3, S5)**	

	Evaluates the different approaches to data analysis used within the source project, summarising the benefits of each, and why and how this has impacted on decisions and recommendations. Proposes different data analytical techniques to benefit project control delivery on the source project, such as automating repetitive processes or improving data quality or extracting deeper insights and, validates the related data analysis that would come from this in order to ensure correct interpretation against which effective decisions can be made. **(K13, S15)**	
Data modelling and forecasting (K23, K28, K29, S22, S26 B4)	Models the potential for approved efficiency against time, cost and quality ('what-if' scenarios and impact analysis) using the source project data, reviews the outcomes and makes recommendations that would optimise delivery through improved efficiency against time, cost and quality. (**K23 S22)** Evaluates both the forecasting and statistical analysis techniques used within the source project to forecast cost and schedule out-turns, considering the technical and sector requirements and related assumptions and metrics used. Selects and uses forecasting techniques and combines this with statistical analysis and productivity analysis to create and model different scenarios on the source project to: • for a closed project: reforecast likely out-turns, identify where early warning signs could have been picked up in order to pre-empt issues. • for a live project: forecast likely out-turns and identify early warning signs to pre-empt issues Analyse their application of engineering knowledge and how they took into account the technical and sector requirement, justifying the techniques selected. Creates and justifies recommendations based on the forecasting and statistical analysis **(K28, K29, S26, B4)**	
Communication and stakeholder	Critiques the approaches to communication used in the source project and identifies	Models and justifies improved communication

skills (K14, S27, B5, B6)	ways to improve the communication in future projects to ensure stakeholders are influenced to make informed decisions. Communicates the outcomes of their critique of the source project in a way that would influence key decision-makers and colleagues – clearly demonstrating the use of different communication approaches in the delivery of the work-based technical assignment review and recommendations. Justifies their own conclusions and recommendations from their critique and appraisal of the source project and communicates these with integrity and confidence. Responds to feedback and challenging questions on these recommendations with assertiveness and confidence as well as professionally and objectively (by reference to evidence) **(K14, S27, B5, B6)**	approaches – able to clearly and impartially explain how the modified approach would have a greater impact than the ones used in the source project and justify this. Articulates the outcomes and recommendations from the critique of the source project – objectively, logically in a persuasive and engaging manner. Demonstrates an in-depth understanding of the project control data and what it is saying about the project – pinpoints the key elements in the presentation **(K14, S27, B5, B6)**
Assurance and continuous improvement (K21, K31, S29, B9)	Appraises assurance techniques used in the source project including benchmarking, comparisons to historical data, published data and other projects and explains how they were applied to assure for example estimated schedules, cost estimates or cost forecasting. **(K21)** Summarises how their critique of the source project has reflected continuous improvement including how: - it captures good practice and lessons learned from experience - it evidences they are keeping up to date with new technology and ways of working - they are going to use it to drive forwards continuous improvement. **(K31 S29 B9)**	Applies the recommendations they have identified to the review project and then critiques the outcome – making recommendations on how what they have identified can improve project control delivery within their company and what actions can, realistically be taken to do this. Provides a clear and realistic continuous improvement action plan that would benefit their company. Demonstrates insight into how assurance and continuous improvement is applied to improve the delivery of project control. **(K21, K31, S29, B9)**

Assessment method 2: Professional Discussion underpinned by portfolio

Fail – does not meet pass descriptors

Themes for KSBs	Pass Must attain all pass descriptors	Distinction Must attain all pass and all distinction grade descriptors
Shows safe and ethical working practices (K9, S9, K11, S11, B1, B2.2)	Explains how they apply their knowledge of HSE relative to the industry and project controls activities, with awareness of how it impacts on project control schedules and costs and ensuring that the schedule and resourcing for a project meets the requirements of regulations (including CDM and safety) and can be delivered in accordance with the requirements i.e. ensure everything is in place to ensure the project can be delivered safely, including: - national and industrial health, safety and environmental standards and legislation - the obligations of safety in design - CDM (construction, design and management) regulations. **-** promoting a health and safety culture that demonstrates a personal commitment to personal safety and the safety and wellbeing of others. **(K9, S9, B1)** Explains the principles of the following within their workplace: • codes of conduct and duty of care • corporate social responsibility • equality • diversity and inclusivity. And provides evidence of how they have led by example when undertaking their project controls' work in accordance with: • ethics • codes of conduct • duty of care **(K11, S11, B2.2)**	

Demonstrates use of software and IT to enable effective delivery of project control (K4, S2)	Provides evidence of using software to deliver other themes and justifies the selection of the software package that they used for the task and evaluates the benefits, attributes, limitations of the software used. **(K4 S2)**	
Creation of project controls plan(s) and the baseline for control. (K7, K8, S6, S7)	Evaluates the purpose and content of project control plans and provides evidence of when they have led the creation of a comprehensive project controls plan and reporting frameworks, explaining: • how they identified the right contextual elements to track • the working assumptions they used and justifies how this ensures the • generation of meaningful controls data • the achievement of project controls deliverables in line with project objectives. **(K7, S6)** Evaluates how they led the strategy for the development and maintenance of the baseline for control, with reference to applying strategic principles and how they took into account the scope definition, schedule, risk and cost throughout the life cycle **(K8, S7)**	
Application of change control (K17 and S8)	Justifies the project control change procedures they have implemented and enforced, taking account of how these procedures may vary in owner/contractor organisations. Explains how they evaluate evidence to decide if a change is within scope, the impact of the change in a commercial-sense and whether to make recommendations or implement the change in a manner that reflects its scale. **(K17, S8)**	
Stakeholder management and interaction (S13, B8 and B11)	Analyses when they: • developed an estimate or a schedule or a project control plan • or delivered controls information and recommendations and evaluates: • how they identified the stakeholders	Critiques how they overcame barriers by adapting and modifying their communication style and method to stakeholders and is able to appraise these actions – identifying what persuasive actions they

	• how they modified their communication style and method for different stakeholders and for what purpose • how they collaborated and interacted with stakeholders across the project and built co-operative relationships • how they adapted their stakeholder interaction in different and evolving circumstances and encouraged a team effort (**S13, B8 and B11)**	undertook and how this has provided a foundation for co-operative relationships for the future **(S13, B8, B11)**
Risk (K15, K16, S14)	Evaluates how they undertake quantitative and qualitative analysis of risks and when they have lead reviews of risks and related assumptions – identifying: • when they have used different analysis techniques and why • the methodologies and considerations they have used for mitigating risks • how they have used a consistent basis for project risks when integrating cost and schedule and the associated contingency calculations • when they have reviewed and questioned risks and related assumptions in the risk register – appraising their presence and relevance (**K15, K16, S14)**	Critiques the different risk analysis techniques that they have used and the approach they have taken. Critically evaluates their approach to assumption management. Debates the factors they considered when undertaking analysis and reviewing risks and assumptions. Justifies the decisions they took, clearly extrapolating the process and demonstrating objective interpretation and prioritisation of the internal and external factors that influence the project risks and assumptions. (**K15, K16, S14)**
Contractual / commercial (K18, K19, S16, S17, B3)	Compares different types of contracts and their legal principles. Evaluates how they have identified and applied legal and contractual requirements to: • subcontract/supplier deliverables relevant to project control so that subcontractor/supplier performance can be monitored through project control • in the auditable creating, recording, sharing and storing of project controls content • to fulfil legal, audit and contractual requirements and maximise profitability **(K18, S16, B3)**	

	Defines how they created project controls content to inform invitations to tender and how they have evaluated tenders and bid processes received **(K19, S17)**	
Estimating (K20, S18, S19)	Justifies their approach to preparing an estimating framework and making recommendations on classes of estimate to meet project needs at different project stages. Includes justification of the different methodologies and classes of estimate and the pros and cons and degrees of certainty and uncertainty of the resultant estimating outcomes. **(K20, S18)** Justifies the selection and application of the estimating technique for estimates (cost, time and resource) they have prepared including explanation of the following related activities: • estimate assurance • cost risk analysis • basis of estimate (justifying the risks, assumptions, probabilities, uncertainties and contingencies used order to provide a sound basis for decision making) **(S19)**	
Planning and scheduling (K22, S20, S21)	Explains and verifies their approach to having prepared a planning and scheduling strategic framework and made recommendations on different levels of plans and schedules to meet different project needs for example, milestones or detailed engineer schedules. **(S20)** Justifies how they have created credible, achievable control schedules at different levels including an explanation of the following activities: • resource loading • application of relevant assumptions and contingency • schedule assurance • schedule risk analysis • related basis of schedule (that includes and justifies the risks, assumptions, probabilities, uncertainties,	

	contingencies, dependencies and constraints). (**K22**, **S21)**	
Cost control (K24, K25, S23)	Describes approaches to cost engineering practice and analyses how they have applied them to: • recast an estimate • set a budget baseline • cost control hierarchy • budget transfers and other budget variances • select and apply techniques to capture actual commitment and expenditure (with appropriate use of accruals) • integrate cost and schedule data to develop project cashflow projects and assessments of the value of work done over time **(K24, S23**) Describes financial controls as relevant to project control, including taxation, cashflow, accruals, payment terms. The monitoring and reporting of supplier and contractor commitments and expenditures. **(K25)**	
Progress and performance management (K26, K27, S24, S25)	Demonstrates how they have monitored and controlled project progress and performance by evaluating how they established a progress baseline against which they then: • applied techniques to monitor and measure progress (including rules of credit, pros and cons and earned value analysis) • applied analysis techniques (e.g. earned value analysis) and as a result identified trends and variances • applied analysis techniques that they can justify as appropriate for the size and complexity of the project • assessed the potential impact of the variances or trends identified • explained the progress measurement, identified trends or variations and their related potential impact to different stakeholders and the project, portfolio or programme manager. **(K26, K27, S24, S25)**	Articulates how they turned their analysis of progress against the baseline and the results they found into justifiable potential impacts, objectively and persuasively. **(K27)** Critically evaluates the use of analytical techniques to measure progress and performance management against baseline. **(K26)**
Leadership	Illustrates how they have applied different leadership strategies and styles to steer team	Compares the different leadership, coaching and

(K30, S28, B10)	members* to meet project control requirements in accordance with organisational core values and specific guidelines and, gives details, with examples, when they have: • mentored and coached • motivated • developed them **(K30, S28)** Recounts examples of when they have taken responsibility for their personal and professional development in a way that provides evidence of their commitment to learning, improvement of themselves, providing and receiving feedback and a commitment to professional standards. **(B10)** *Team members includes those across project controls functions such as Project Controls Technicians	mentoring styles they have used and analyses how they chose the most effective method to ensure their team members were successful in meeting project control requirements. **(K30, S28)**

Overall EPA grading

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

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

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

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

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

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

Technical work-based assignment with report, presentation and questioning	Professional Discussion	Overall grading
Fail	Any grade	Fail
Any grade	Fail	Fail
Pass	Pass	Pass
Pass	Distinction	Merit

Distinction	Pass	Merit
Distinction	Distinction	Distinction

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 at the employer's discretion. The apprentice's employer will need to agree that either a re-sit or re-take is an appropriate course of action.

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

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

An apprentice who fails one or more assessment methods, and therefore the EPA in the first instance, will be required to re-sit or re-take the failed assessment method(s) only.

The timescales for a re-sit/re-take is agreed between the employer and EPAO. A re-sit is typically taken within two 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 four months of the EPA outcome notification.

If the apprentice fails the technical work-based assignment assessment method, they will be required to amend the report and / or presentation in line with the independent assessor's feedback. The apprentice will be given 6 weeks to rework and submit the amended report and presentation. The independent assessors will have 4 weeks to review the report and presentation and the apprentice will have 10 days' notice of the presentation and questioning date.

All assessment methods must be taken within a six-month period, otherwise the entire EPA will need to be re-sat/re-taken.

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

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

Roles and responsibilities

Role	Responsibility
Apprentice	As a minimum, apprentices should: • participate in and complete on-programme training to meet the KSBs as outlined in the occupational standard for a minimum of 12 months • undertake 20% off-the-job training as arranged by the employer and training provider • understand the purpose and importance of EPA • undertake the EPA including meeting all gateway requirements
Employer	As a minimum, employers should: • select the EPAO and training provider • work with the training provider (where applicable) to support the apprentice in the workplace and to provide the opportunities for the apprentice to develop the KSBs • arrange and support a minimum of 20% off-the-job training to be undertaken by the apprentice • decide when the apprentice is working at or above the occupational standard and so is ready for EPA • ensure that all supporting evidence required at the gateway is submitted in accordance with this EPA plan • remain independent from the delivery of the EPA • confirm arrangements with the EPAO for the EPA (who, when, where) in a timely manner (including providing access to any employer-specific documentation as required, for example company policies) • ensure that the EPA is scheduled with the EPAO for a date and time which allow appropriate opportunity for the KSBs to be met • ensure the apprentice is well prepared for the EPA • support the apprentice in identification of the work-based technical assignment and access to the data, information and stakeholders needed to complete the assignment • ensure the apprentice is given sufficient time away from regular duties to prepare for and

	complete all post-gateway elements of the EPA, and that any required supervision during this time (as stated within this EPA plan) is in place • where the apprentice is assessed in the workplace, ensure that the apprentice has access to the resources used daily. • pass the certificate to the apprentice • offer the EPAO specialist technical expert support, if required by the EPA, (generally in respect of sector issues)
EPAO	As a minimum, EPAOs should: • conform to the requirements of this EPA plan and deliver its requirements in a timely manner • conform to the requirements of the Register of End-Point Assessment Organisations (RoEPAO) • conform to the requirements of the external quality assurance provider (EQAP) for this apprenticeship standard • understand the occupational standard • make all necessary contractual arrangements, including agreeing the price of the EPA • develop and produce assessment materials including specifications and marking materials (for example mark schemes, practice materials, training material) • appoint suitably qualified and competent independent assessors • appoint administrators (and invigilators where required) to administer the EPA as appropriate • provide training for independent assessors in terms of good assessment practice, operating the assessment tools and grading • provide adequate information, advice and guidance documentation to enable apprentices, employers and training providers to prepare for the EPA • arrange for the EPA to take place, in consultation with the employer and apprentice • where the apprentice is not assessed in the workplace, ensure that the apprentice has access to the required resources and liaise with the employer to agree this if necessary • develop and provide appropriate assessment recording documentation to ensure a clear and auditable process is in place for providing assessment decisions and feedback to all relevant stakeholders

	• have no direct connection with the apprentice, their employer or training provider. In all instances, including when the EPAO is the training provider (i.e. HEI), there must be no conflict of interest • have policies and procedures for internal quality assurance (IQA), and maintain records of regular and robust IQA activity and moderation for external quality assurance (EQA) purposes • deliver induction training for independent assessors, and for invigilators and/or markers (where used) • undertake standardisation activity on this apprenticeship standard for all independent assessors before they conduct an EPA for the first time, if the EPA is updated and periodically as appropriate (a minimum of annually) • manage invigilation of apprentices in order to maintain security of the assessment in line with the EPAO's malpractice policy • verify the identity of the apprentice being assessed • use language in the development and delivery of the EPA that is appropriate to the level of the occupational standard • provide details of the independent assessor's name and contact details to the employer • have and apply appropriately an EPA appeals process • request certification via the Apprenticeship Service upon successful achievement of the EPA
Independent assessor	As a minimum, an independent assessor should: • have the competence to assess the apprentice at this level and hold any required qualifications and experience in line with the requirements of the independent assessor as detailed in the IQA section of this EPA plan • understand the occupational standard and the requirements of this EPA • have, maintain and be able to evidence up to date knowledge and expertise of the subject matter • deliver the end-point assessment in-line with the EPA plan • comply with the IQA requirements of the EPAO

	• have no direct connection or conflict of interest with the apprentice, their employer or training provider; in all instances including when the EPAO is the training provider (i.e. HEI) • attend induction training • attend standardisation events when they begin working for the EPAO, before they conduct an EPA for the first time and a minimum of annually on this apprenticeship standard • assess each assessment method, as determined by the EPA plan, and without extending the EPA unnecessarily • assess against the KSBs assigned to each assessment method, as shown in the mapping of assessment methods and as determined by the EPAO, and without extending the EPA unnecessarily • make all grading decisions • record and report all assessment outcome decisions, for each apprentice, following instructions and using assessment recording documentation provided by the EPAO, in a timely manner • use language in the development and delivery of the EPA that is appropriate to the level of the occupational standard • identify and use, if required, additional technical expertise to ensure sound assessment
Training provider	As a minimum, the training provider should: • work with the employer and support the apprentice during the off-the-job training to provide the opportunities to develop the knowledge, skills and behaviours as listed in the occupational standard • conduct training covering any knowledge, skill or behaviour requirement agreed as part of the Commitment Statement (often known as the Individual Learning Plan). • monitor the apprentice's progress during any training provider led on-programme learning • advise the employer, upon request, on the apprentice's readiness for EPA • remain independent from delivery of the EPA. Where the training provider is the EPA

	(i.e. a HEI) there must be procedures in place to mitigate against any conflict of interest
Specialist technical expert	As a minimum, specialist technical experts should: • have no direct connection or conflict of interest with the apprentice, or training provider; in all instances, including when the EPAO is the training provider (i.e. HEI) • provide technical support, advice and guidance such as confirming company policies, procedures, processes, providing context on technical information, sector information or on emerging technologies • provide information only at the request of the independent assessors who have the final say over the assessment and grade awarded • not provide information on behalf of the apprentice, ask the apprentice questions or influence the apprentice or the assessment judgement in any way • not amplify or clarify points made by the apprentice.

Internal Quality Assurance (IQA)

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

- appoint IQA Assurers who are competent to assure the end-point assessment and who meet the following minimum requirements:
    - IQA Assurer VQ or prior VQ iterations
    - evidence of continued professional development
- have effective and rigorous quality assurance systems and procedures that ensure fair, reliable and consistent assessment across employers, places, times and independent assessors
- appoint independent assessors who are competent to deliver the end-point assessment and who meet the following minimum requirements:
    - have occupational experience at lead or senior level within project control[3]
    - can provide current evidence of 5 years of continued professional development or alternatively equivalent 5 years of occupational experience at a senior level (within the last 10 years)
    - have thorough practical knowledge of what constitutes effective performance and good working practices in the occupational context
    - are trained in competency-assessment methods with any recognised assessor qualification at level 3 or above
    - it is desirable but not essential that assessors:
        - are professionally registered, preferably at Chartered level, with a relevant professional organisation
        - and/or have an appropriate technical qualification or degree (vocational qualification or industry accepted equivalent)
- operate induction training for independent assessors, markers and invigilators.
- provide training for independent assessors in terms of good assessment practice, operating the assessment tools and grading
- where appropriate:
    - provide ongoing training for markers
    - provide ongoing training for invigilators
- undertake standardisation activity on this apprenticeship standard for all independent assessors:
    - before they conduct an EPA for the first time
    - if the EPA is updated
    - periodically as appropriate (a minimum of annually)
- conduct effective moderation of assessment decisions and grades
- conduct appeals where required, according to the EPAO's appeals procedure, reviewing and making final decisions on assessment decisions and grades
- approve the selection of a technical expert in each case where this is required for the end-point assessment.

[3] And/or the related disciplines of estimating, planning, scheduling, cost control.

Value for money

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

- using an employer's venue for the professional discussion underpinned by a portfolio of evidence and the presentation and questioning.
- using video conferencing for the professional discussion underpinned by a portfolio of evidence.
- the possibility of scheduling more than one assessment method on the same day

Professional body recognition

This standard aligns with the following professional recognition: ACostE (Association of Cost Engineers) at ICostE

Mapping of knowledge, skills and behaviours (KSBs)

Assessment method 1: Technical work-based assignment with report, presentation and questioning

Knowledge
K1: Organisational and business strategies: and how these impact on the strategy for project control and its execution
K2: Principles of project control including the principles of the project life cycle; and the role project control plays in the governance of a project.
K3: Project control procedures and methods including employer organisation management systems that are critical to project control for example: quality control, configuration management, document and version control.
K5: Underlying engineering/manufacturing principles including the principles of reviewing and interpreting technical project documents such as scopes of work and engineering drawings.
K6: Breakdown and coding structures: purpose, creation and use for accurate control. Their relevance in the creation of data models to help feed integrated and intelligent reporting and insights; familiarisation with standard coding structures and how they are used to underpin data flow systems as well as underpin the use and integration of new technology into project controls delivery including BIM
K10: The environmental impact of a project's activities, how it could contribute to the drive towards net carbon zero and how to minimise negative impacts on environmental sustainability, within the context of the role.

K12: Data assurance: approaches to gathering data; ensuring the validity and integrity of data (consistent, quality, technical controls information); and how to review the assumptions used to establish the data, as well as the inherent risks associated with these assumptions.
K13: Analysis techniques: different approaches to data analysis, the benefits of each, what the analytics are indicating and why and how this may impact on decisions and recommendations.
K14: Approaches to communicating with different stakeholders in order to influence key decision-makers and colleagues.
K21: Assurance techniques including benchmarking, comparisons to historical data, published data and other projects and how to apply them for example to assure estimated schedules, cost estimates and cost forecasting
K23: Modelling techniques ('what-if' scenarios and impact analysis) used to optimise the potential for improved efficiency against time, cost and quality and for improved project outcomes.
K28: Approaches to using statistical analysis, productivity and performance analysis.
K29: Forecasting techniques used to forecast cost and schedule out-turns, and the use of predictive statistical analysis techniques and engineering knowledge to generate accurate forecasts of work to complete in sufficient time for action to be taken.
K31: Continuous improvement including how to: capture good practice and lessons learned from experience; keep up to date with new technology and ways of working and drive forwards continuous improvement.
Skills
S1: Determine and implement (adapt/refine) the project controls procedures, methods and systems incorporating the relevant employer organisation management systems and procedures for example quality, data management and security, document and version control and record keeping.
S3: Application of and the integration of, software and IT systems to enhance the level of data processing. For example, the use of technology including BIM.
S4: Technical and engineering principles: interpret technical information from different sources, identify and know the correct data and elements to monitor and control to ensure the basis for any recommendations are credible; review and interpret technical project documents (including scopes of work and engineering drawings etc.).
S5: Breakdown and coding structures: develop and implement coding structures as well as critiquing technical coding and breakdown structures to ensure they provide a basis for project control.
S10: Identify opportunities within their remit in projects to contribute to net carbon zero and environmental sustainability, and then take action to minimise the environmental impact of the project
S12: Data assurance: challenge, verify and validate data reports and data to ensure their integrity, timeliness and technical appropriateness.
S15: Identify opportunities to use data analysis techniques to benefit project controls' delivery such as automating repetitive processes or improving data quality or extracting deeper insights and, validate the related data analysis to ensure correct interpretation against which effective decisions can be made.

S22: Model the potential for improved efficiency against time, cost and quality, review and make recommendations.
S26: Select and use the most appropriate forecasting techniques, considering the technical and sector requirements and related assumptions and metrics used. Combine statistical analysis skills with engineering knowledge to create and model different scenarios to reforecast likely out-turns and create recommendations.
S27: Communicate and justify own conclusions and recommendations for example for project recovery or to lead to improved project delivery by influencing and, when necessary, challenging key stakeholders to make informed decisions. Key stakeholders include the project manager, portfolio manager or programme manager when necessary.
S29: Apply continuous improvement approaches for example using emerging technologies and lessons learnt from previous projects.
Behaviours
B2.1: Demonstrating resilience and taking account of the need to progress environmental outcomes.
B4: Pre-emptive: Foresees events and issues that might impact project performance.
B5: Integrity: Challenges areas of concern and acts with assertiveness and confidence.
B6: Impartial: Responds to feedback and challenging questions professionally and objectively by reference to evidence.
B7: Accountable: Takes responsibility for the accuracy and integrity of project controls reporting and recommendations.
B9: Innovation: Learns from innovative solutions and seeks out new ideas to deliver improvements.

Assessment method 2: Professional Discussion underpinned by portfolio

Knowledge
K4: The benefits, attributes, limitations and use of project controls related software used for key tasks such as planning and scheduling, cost management, cost and risk analysis, estimating, progress and performance monitoring and reporting.
K7: Project Control Plans and reporting frameworks - their purpose and content and how they underpin the generation and reporting of meaningful controls data.
K8: Strategic principles of creating and managing the project controls baseline (including scope definition, schedule, risk and cost), throughout the project life cycle.
K9: HSE knowledge relative to the industry and project controls, including related national and industrial health, safety and environmental standards and legislation, the obligations of safety in design and CDM (construction, design and management) regulations.
K11: Principles of ethical conduct, diversity and inclusion, including codes of conduct and duty of care, corporate social responsibility, equality, diversity and inclusivity in the workplace.
K15: The principles of risk management and the risk process; different risk analysis techniques; the methodologies and considerations for mitigating risk.

K16: Approaches to integrating cost and planning with a consistent basis for project risks and opportunities including cost and schedule risk analysis and associated contingency calculations.
K17: Project control change management and control: the principles of project control change procedures; how these procedures may vary in owner/contractor organisations, and when and how to use and apply them including project closeout procedure(s).
K18: Commercial matters: different types of contracts and their legal principles; contractual requirements and how they impact on project controls and the auditable recording, sharing, and storing of information.
K19: Key principles of invitations to tender received and bid responses.
K20: Estimating techniques and application (cost, time and resources): different methodologies for estimating including approaches to various estimating outcomes, pros and cons and degree of certainty/uncertainty for each; approaches to creating an estimating framework and basis of estimate.
K22: Planning and scheduling practice: different planning and scheduling techniques; how to create schedules to all levels; understanding, maintaining and establishing the impacts of schedule constraints; and the principles of resource loading.
K24: Cost engineering practice: approaches to the creation of budget baselines and estimate recasting; cost control hierarchy; budget transfers and other budget variances.
K25: Financial controls as relevant to project control, including taxation, cashflow, accruals, payment terms. The monitoring and reporting of supplier and contractor commitments and expenditures.
K26: Techniques for monitoring and measuring progress including rules of credit and performance including earned value analysis, their pros and cons and what key points to share with different stakeholders.
K27: Progress and performance measurement: how to establish a progress baseline and identify trends/variances using different analysis techniques.
K30: Leadership: strategies to, lead, coach, motivate and develop members of the team; different leadership styles.
Skills
S2: Use project controls related software and IT systems for tasks such as: planning and scheduling, cost management, cost and risk analysis, estimating, progress and performance monitoring and reporting; identify and select the right software package for the task.
S6: Lead the creation of comprehensive project control plans and reporting frameworks that identify the right contextual elements to track and the working assumptions to use, to generate meaningful controls data, ensuring that project controls deliverables are achievable and in line with project objectives.
S7: Lead the preparation of the strategy for the development and maintenance of the baseline for control taking into account scope definition and schedule, risk and cost (ensuring alignment between cost and schedule using the coding structures).
S8: Implement and enforce project control change procedures, judge against evidence and decide if a change is within or without scope, evaluate its impact commercially and make recommendations or implement the change in a manner that reflects its scale.
S9: Ensure that project control work is undertaken in accordance with HSE regulations and requirements including applying knowledge of HSE with awareness of how it impacts on project control schedules and costs and ensuring that the schedule and resourcing for a

project meets the requirements of regulations (including CDM and safety) and can be delivered in accordance with the requirements i.e. ensure everything is in place and accounted for to ensure the project is delivered safely.
S11: Undertake project control work in accordance with ethics, codes of conduct and duty of care.
S13: Identify stakeholders across the project for example: those to work with when developing estimates, schedules, and plans and those to deliver controls information and recommendations to. Modify communication style and method to stakeholders, for example to gather information needed.
S14: Risk management and analysis: undertake quantitative and qualitative analysis of risks; and lead regular reviews of risks and related assumptions in the project risk register such as questioning their presence and relevance in order to underpin the management of the project risk register.
S16: Commercial matters: identification and application of subcontract/supplier deliverables to project control in order to provide the ability to monitor subcontractor/supplier performance and create, record and store project controls content in support of legal and contractual requirements.
S17: Create project controls content to inform tenders and evaluate invitations to tender received and bid responses.
S18: Prepare an estimating framework and make recommendations on classes of estimate to meet project needs at different project stages.
S19: Use an evidence-based approach to select and apply the most suitable estimating technique for the purpose and undertake estimate assurance, cost risk analysis, prepare related detailed basis of estimate narrative(s) that are evidenced and explanatory - setting out the risks, assumptions, probabilities, uncertainties and contingencies in order to provide a sound basis for decision making.
S20: Prepare planning and scheduling strategic framework(s) and make recommendations on different levels of plans and schedules to meet different project needs for example, milestones or detailed engineer schedules.
S21: Use an evidence-based approach to create credible, achievable control schedules, applying relevant assumptions and contingency and undertaking schedule assurance, schedule risk analysis and compile a related basis of schedule that is explanatory, setting out the risks, assumptions, probabilities, uncertainties, contingencies, dependencies and constraints.
S23: Apply cost engineering practice to: recast the estimate and set the budget baseline and; select and apply proven cost control techniques to capture actual commitment and expenditure data with appropriate use of accruals; and integrate cost and schedule data to develop project cashflow projections and assessments of value of work done over time.
S24: Monitor and control project progress and performance by establishing a progress baseline and selecting and applying the right analysis techniques (for example, earned value analysis) for the size and complexity of the project.
S25: Identify variations from the progress baseline and assess their potential impact, explain the variations to the project, portfolio or programme manager.
S28: Steer across project controls functions in accordance with organisational core values and specific guidelines; mentor and coach team members such as Project Controls Technicians to meet project control requirements.

Behaviours
B1: Safety: Promotes and adopts a safety culture within the organisation, demonstrating a commitment to personal safety and the safety and wellbeing of others.
B2.2 Leadership: leads by example, acting responsibly, and ethically, taking account of the need to progress ethical, social and economic outcomes.
B3: Commercially astute: Recognising when to leverage the contract commercial terms to maximise profitability for example how the commercial agreements generate cost and revenue streams for the organisation and how this links to generation of profit.
B8: Collaboration interacts within a wide, multi-disciplinary project team, building co-operative relationships. Encourages team effort and promotes an interdependent culture.
B10: Personal & professional development: Takes responsibility for personal learning and professional development. Demonstrates commitment to learning and improvement of themselves, providing and receiving feedback and with a commitment to professional standards.
B11: Adaptable: able to adapt to evolving circumstances.