

Level 6 Product Design and Development Engineer

Interim End-Point Assessment Plan

For use with end-point assessments during 2018 - 2020

Table of Contents	Page
1. Introduction	3
2. Summary of a Typical Apprenticeship Journey	4
3. On-Programme Training and Development	5
4. Readiness for the End-Point Assessment (Gateway)	5-6
5. Components of the End-Point Assessment	7-8
6. Specification of the End-Point Assessment Components	8-11
7. Roles and Responsibilities	11-14
8. Internal and External Quality Assurance	14-15
9. Implementation	15
10. Grading	16
11. Retakes and Resits	16
12. Final Assessment Decision	17
13. Professional Engineering Institution Recognition	17
Annex A. End-Point Assessment Methods Mapping	
Annex B. Grading Criteria	

1. Introduction.

This document sets out the requirements and process for the end-point assessment of the Level 6 Product Design and Development Engineer standard. All apprenticeship standards must include an independent end-point assessment to assess the apprentices occupational competence specified in the standard.

This document is designed for employers, apprentices, training providers and End-Point Assessment Organisations and is based on the Level 6 Product Design and Development Engineer apprenticeship standard.

The duration of the Level 6 Product Design and Development Engineer apprenticeship is typically 66 to 72 months depending on prior qualifications and relevant experience.

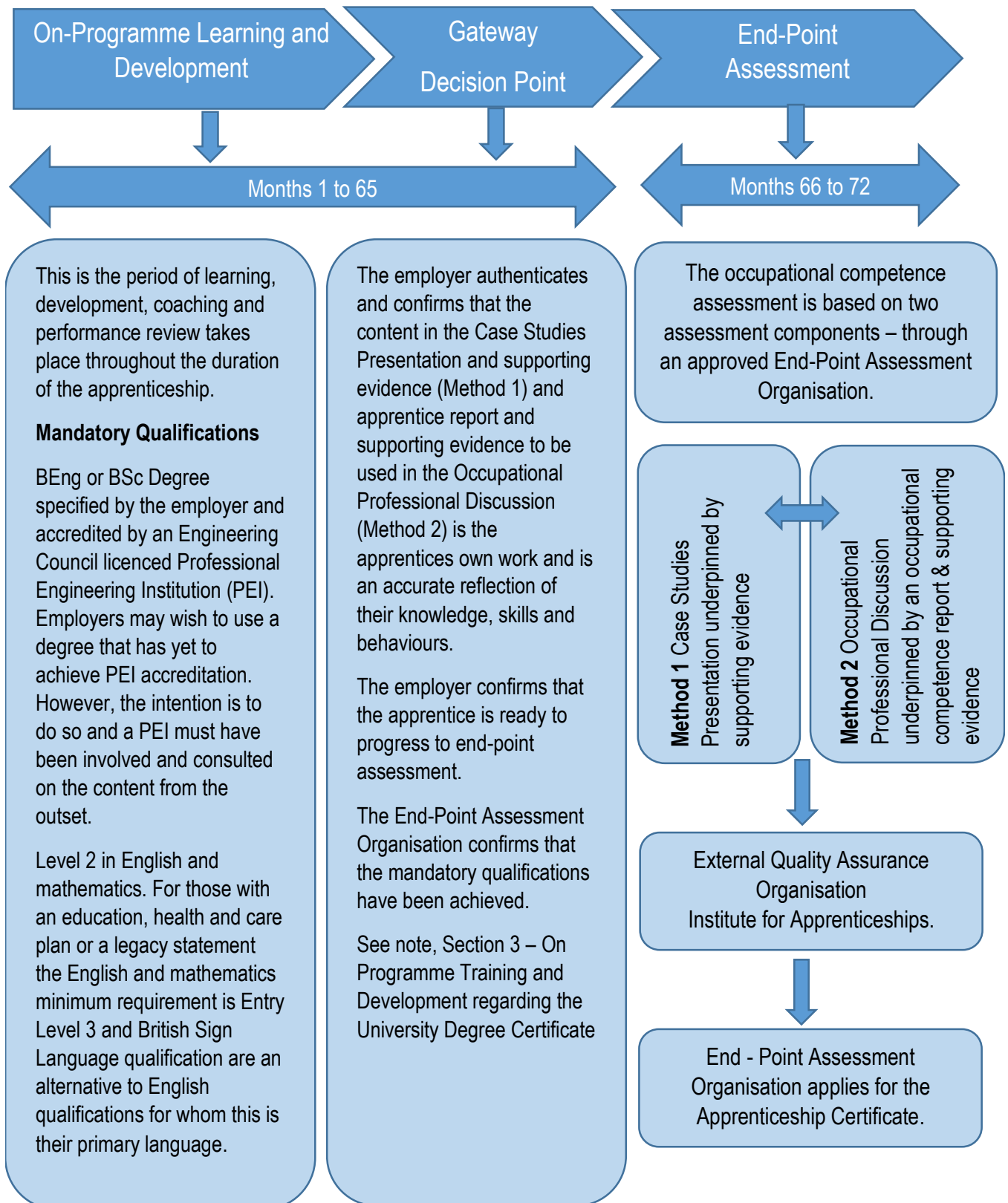
This assessment plan has been designed to confirm that:

- The apprentices meet the knowledge, skills, and behaviours as defined within the standard.
- The end-point assessment is appropriate, valid, reliable and consistent.
- The process adds value to both the apprentice and employer.

The approach to assessment has adopted the following broad principles;

- It should encourage continuing professional development (CPD). This may involve registration with a professional body on successful completion of the end-point assessment.
- It should position the apprenticeship as a starting point for a career and encourage apprentices to explore progression opportunities.
- The end-point assessment must have independence and successful completion will lead to final certification of the apprenticeship and demonstrate that the apprentice is fully competent and can work safely as a Product Design and Development Engineer.

2. Summary of a Typical Apprenticeship Journey - Level 6 Product Design and Development Engineer.



3. On-Programme Training and Development.

The employer and training provider are responsible for ensuring that the apprentice has the opportunity to develop the required knowledge skills and behaviours required for occupational competency during the on-programme training of the apprenticeship. It is recommended that continuous progress reviews should be used to check the apprentice's knowledge, skills and behaviours in-line with the standard as well as the specified grading criteria detailed in Section 10 and Annex B. The apprentice must also achieve the mandated qualifications.

Note.

With regards to the award of the Degree Certificate. If the University Exam Board has not confirmed the specific grade awarded at the gateway decision point, the University can confirm in writing on headed paper that the Degree has been achieved and will be certificated. This will allow the apprentice to proceed to the end-point assessment process.

4. Readiness for the End-point Assessment. (Gateway)

The independent end-point assessment is synoptic, as it takes an overview of an apprentice's occupational competence. It is important, therefore, that this should only take place when the employer is confident that the apprentice has met all the knowledge, skills and behaviours as set out in the standard and is performing competently in their job role. Readiness for end-point assessment is confirmed once the employer is satisfied the apprentice has demonstrated occupational competence against all the knowledge, skills and behaviours specified in the standard, completed the portfolio of evidence and achieved the mandated qualifications.

- Employer specified BEng/BSc degree and accredited by an Engineering Council licenced Professional Engineering Institution (PEI). Employers may wish to use a degree that has yet to achieve PEI accreditation. However, if the intention is to do so and a PEI must have been involved and consulted on the content from the outset.
- Level 2 in English and mathematics. (For those with an education, health and care plan or a legacy statement the English and mathematics minimum requirement is Entry Level 3 and British Sign Language qualifications are an alternative to the English qualifications for whom this is their primary language).
- The apprentice can then progress to the end-point assessment via the apprenticeship gateway (decision point).

Supporting Evidence for Method 1 (Case Studies Presentation) and Method 2 (Occupational Professional Discussion).

Prior to the end-point assessment the apprentice will have collated naturally occurring evidence (from the on-programme period) from their workplace backed up by relevant company processes and procedures. This evidence will a) enable the apprentice to showcase specific work related projects/tasks that they have completed on their own during the apprenticeship, to standards required by their employer; and b) demonstrate how they have achieved occupational competence as set out in the Level 6 Product Design and Development Engineer standard. The supporting evidence must include relevant and sufficient evidence to cover all the knowledge, skills and behaviours as detailed in

Annex A, in order to demonstrate competent performance generated from employer directed work based projects/tasks achieved during their apprenticeship and must include:

- Specific records of the work undertaken by the apprentice including any quality/compliance records, reports or documents produced as part of the work activity.

together with:

- Evidence of the way the apprentice carried out the activities to meet the requirements of the standard, such as technical expert observations.
- Company related academic reports/assignments to support the attainment and achievement of underpinning knowledge requirements (where applicable).

Each project/task must be authenticated by the apprentice's line manager or other competent person designated by the employer confirming the project/tasks completed by the apprentice met the employer requirements in terms of **Safety, Quality, Performance and Time**.

The supporting evidence can include other relevant documentation such as technical training courses, company policies and procedures that supports the attainment of the skills, knowledge and behaviours required for occupational competence as set out in the standard and **must** be available during the end-point assessment.

Notes.

It is important that the apprentice carefully selects the projects/tasks and evidence to be used to support the achievement of the knowledge, skills and behaviours set out in Annex A. It is not about the volume of evidence but the quality of evidence that aligns to and covers the relevant knowledge, skills and behaviours at least once but no more than three times.

The employer must have authenticated the apprentices supporting evidence at the gateway stage to confirm the evidence is the apprentices own work and is an accurate reflection of the apprentice's knowledge, skills and behaviours.

The end-point assessor must review the supporting evidence prior to the end-point assessment. This can be done either on the day the end-point assessment takes place or another day prior to the end-point assessment, that is agreed with the employer. In certain circumstances, depending on the nature of the business/department where the apprentice is employed, the evidence/documentation may not be allowed to leave the premises and/or certain cases information in the evidence may be required to be redacted for confidentially reasons. The End-Point Assessment Organisation and their assessors may also be required to sign a confidentially/non-disclosure agreement with the apprentice's employer.

This will enable the end-point assessor to start to review and formulate relevant, specific and targeted questions to be used during the end-point assessment from a bank of pre-prepared questions developed by the End-Point Assessment Organisation and cross referenced to the knowledge, skills and behaviours set out in the Level 6 Product Design and Development Engineer standard.

5. Components of the End-Point Assessment.

The two end-point assessment methods will assess the apprentices overall occupational competence against the knowledge, skills and behaviours detailed in the Level 6 Product Design and Development Engineer standard as set out in Annex A. The overall apprenticeship grade and criteria to be applied by the End-Point Assessment Organisations is set out in Section 10 and Annex B.

The assessment will also be an opportunity for the end-point assessor to:

- Clarify any points and/or probe the apprentice on any of the knowledge, skills and behaviours in the standard.
- Explore particular areas of work and understand how they were carried out, along with any issues/problems that the apprentice encountered and how these were resolved.
- Confirm and validate that the evidence is the apprentices own work.
- Make a final decision about occupational competence and the grade to be awarded.

There are **two** assessment components, which are managed by the End-Point Assessment Organisation. These are:

Assessment Component	Weighting	Conducted by whom	Grading Outcomes
Method 1. Case Studies Presentation	50%	End-Point Assessment Organisation	<p>For apprentices that complete their apprenticeship in 2018 & 2019</p> <p>1. Fail 2. Pass</p> <p>For apprentices that complete their apprenticeship from September 2020</p> <p>1. Fail 2. Pass 3. Distinction</p>
Method 2. Occupational Professional Discussion	50%	End-Point Assessment Organisation	<p>For apprentices that complete their apprenticeship in 2018 & 2019</p> <p>1. Fail 2. Pass</p> <p>For apprentices that complete their apprenticeship from September 2020</p> <p>1. Fail 2. Pass 3. Distinction</p>

The Case Studies Presentation (Method 1) must be completed before the Occupational Professional Discussion (Method 2).

The end-point assessment should take place ideally within six months from the employer confirming the apprentice is ready for end-point assessment (via the gateway, decision point).

As well as the supporting evidence collated by the apprentice and authenticated by the employer, the end-point assessor must review the Case Studies Presentation (Method 1) and the apprentice's occupational competence report to be used in the Occupational Professional Discussion (Method 2) prior to the end-point assessment taking place. This can be done either on the day the end-point assessment takes place or another day prior agreed with the employer, particularly where multiple apprentices require end-point assessments on the same day. This will enable the end-point assessor to start to review and formulate relevant, specific and targeted questions to be used during the end-point assessment from a bank of pre-prepared questions developed by the End-Point Assessment Organisation and cross referenced to the knowledge, skills and behaviours set out in the Level 6 Product Design and Development Engineer standard.

6. Specification of the End-point Assessment Components.

6.1 Method 1. Case Studies Presentation.

The Case Studies Presentation will give the apprentice the opportunity to identify specific and exemplar work-based projects/tasks that they have successfully completed that will allow them to showcase and demonstrate the practical application of the knowledge and skills and behaviours detailed in the standard and set out in Annex A. The Case Studies Presentation will be followed by a question and answer session led by their designated end-point assessor.

The Case Studies Presentation covering work-based projects/tasks should meet the following criteria:

- Based on a projects/tasks designated by the employer such as the apprentices line manager or departmental team leader/supervisor and within scope of the role of a Product Design and Development Engineer.
- The Case Studies Presentation and supporting evidence must be based on projects/tasks from the on-programme period and be available prior to the gateway to allow the employer to authenticate its content.
- Cover, where applicable any issues, challenges or problems encountered and present their ideas/solutions.
- Supported by relevant evidence and/or documentation such specific work outputs, work records or other documentation including any quality/compliance data/records produced as part of the work activity.
- Where the work based projects/tasks involved team input/activities the employer must authenticate the apprentices work as part of the gateway and confirm the Case Studies Presentation and supporting evidence is an accurate reflection of the apprentice's involvement.
- States and provides evidence how the work based projects/tasks outcomes were completed to the required standard in order to be able to claim that the relevant knowledge, skills and behaviours have been achieved.
- Covers the knowledge, skills and behaviours listed in Annex A as being assessed by the Case Studies Presentation.
- The apprentice must make sure the presentation and supporting evidence is available throughout the duration of the Case Studies Presentation so that it can be referenced during the presentation and subsequent questioning by the end-point assessor.

- The apprentice should have a minimum of two weeks' notice of their Case Studies Presentation date and time.
- The Case Studies Presentation is expected to be 50 +/- 5 minutes in duration. The Case Studies Presentation will be followed by a question and answer session which will be 25 +/- 5 minutes in duration. The question and answer session will provide the opportunity for the end-point assessor to seek clarification and probe for further detail/evidence as required.
- The End-Point Assessment Organisation will develop a bank of core questions which can be used and contextualised by the end-point assessor during the Case Studies Presentation. The end-point assessor will also develop their own specific and targeted questions after reviewing the presentation and supporting evidence to further explore competence against the knowledge, skills and behaviours specified in the standard. The End-Point Assessment Organisation will use a structured template for the end-point assessor to use during the presentation, to provide robustness, consistency and fairness with a clear and auditable mechanism for providing feedback to the apprentice.
- The grade criteria for achieving a Fail, Pass or Distinction in the Case Studies Presentation is itemised in Section 10 and Annex B.
- The Case Studies Presentation can be recorded (audio or video) if all parties are in agreement. Where permission is not given it is permissible for another end-point assessor to be present to scribe/document evidence presented and record the response to questions. Where a second end-point assessor is used to act as a scribe they must not be involved in any assessment decision and must be independent i.e has had nothing to gain from the outcome of the assessment and has had no direct involvement in the day to day training and development of the apprentice during the on-programme phase of apprenticeship.
- The Case Studies Presentation will be conducted face to face or via live video link (where a live video link is used the End-Point Assessment Organisation must guarantee the integrity of the assessment process).
- The Case Studies Presentation will be conducted in a 'controlled environment', i.e. a quiet room, away from the normal work area.
- It is recommended that there will need to be a break of 45 +/- 5 minutes between the Case Studies Presentation and the Occupational Professional Discussion to allow the end-point assessor to record notes and make the assessment decision. It will also allow the apprentice and end-point assessor to prepare for the Occupational Professional Discussion.
- The apprentice will be informed of the end-point assessor's overall assessment/grading decision as soon as possible after both assessment methods have been completed. This may be after the End-Point Assessment Organisation has moderated the decisions made by assessors.
- A technical expert from the employer can attend the Case Studies Presentation if they are requested to do so by the End-Point Assessment Organisation in order to provide the end-point assessor with any relevant technical support, advice and guidance such as confirming company policies, procedures, processes, providing context on technical information or on emerging technologies. Any information provided by the employer technical expert must only be at the request of the end-point assessor who has the final say over the assessment and grade awarded. The employer technical expert must not provide evidence on behalf of the apprentice.

6.2. Method 2. Occupational Professional Discussion.

Prior to the end-point assessment the apprentice will produce an occupational competence report that sets out how they have achieved occupational competence in each of the following Knowledge, Skills and Behaviours (KSBs) as set out in **Annex A: K1, K2, K3, K4, S1, S2, S6, S7, S8, B1, B2, B6, B10, B11, B12 and B13**. The occupational competence report for each of the KSBs should not exceed **250** words, **4000** words for the total report. The occupational competence report will make reference to supporting evidence which will be used during the Occupational Professional Discussion. The occupational competence report and supporting evidence must be based on examples from the on-programme period and be available prior to the gateway, to allow the employer to authenticate its content.

The Occupational Professional Discussion is an interactive process, which will enable the end-point assessor to further assess the apprentice's occupational competence. It is a structured and formal discussion between the apprentice and the end-point assessor, drawing upon the apprentice's occupational competence report and supporting evidence/documentation of how the apprentice has performed during the apprenticeship when undertaking employer directed work based projects/tasks during their apprenticeship.

The End-Point Assessment Organisation will develop a bank of core questions which can be used and contextualised by the end-point assessor during the Occupational Professional Discussion. The end-point assessor will also develop their own specific and targeted questions after reviewing the occupational competence report and supporting evidence to further explore competence against the knowledge, skills and behaviours specified in the standard. The End-Point Assessment Organisation will use a structured template for the end-point assessor to use during the Occupational Professional Discussion, to provide robustness, consistency and fairness with a clear and auditable mechanism for providing feedback to the apprentice.

The requirements for the Occupational Professional Discussion are:

- It covers the knowledge, skills and behaviours listed in Annex A as being assessed by the Occupational Professional Discussion.
- The apprentice should have a minimum of two weeks' notice of the date and location of the Occupational Professional Discussion.
- The Occupational Professional Discussion will be 90 +/- 5 minutes in duration.
- The apprentice must make their occupational competence report and supporting evidence available throughout the duration of the Occupational Professional Discussion so that it can be referenced during the discussion and subsequent questioning by the end-point assessor.
- The Occupational Professional Discussion will be conducted face to face or via live video link (where the End-Point Assessment Organisation have the facilities available and can guarantee the integrity of the assessment).
- The Occupational Professional Discussion will be conducted in a 'controlled environment', i.e. a quiet room, away from the normal work area.
- The Occupational Professional Discussion can be recorded (audio or video) if all parties are in agreement. Where permission is not given it is permissible for another end-point assessor to be

present to document evidence presented and record the response to questions. Where a second end-point assessor is used to act as a scribe they must not be involved in any assessment decision and must be independent i.e has had nothing to gain from the outcome of the assessment and has had no direct involvement in the day to day training and development of the apprentice during the on-programme phase of apprenticeship.

- A technical expert from the employer can attend the Occupational Professional Discussion if they are requested to do so by the End-Point Assessment Organisation in order to provide the end-point assessor with any relevant technical support, advice and guidance such as confirming company policies, procedures, processes, providing context on technical information or on emerging technologies. Any information provided by the employer technical expert must only be at the request of the end-point assessor who has the final say over the assessment and grade awarded. The employer technical expert must not provide evidence on behalf of the apprentice.
- The grade criteria for achieving a Fail, Pass or Distinction in the Occupational Professional Discussion is itemised in Section 10 and Annex B.
- The apprentice will be informed of the end-point assessors overall assessment decision as soon as possible after both assessment methods have been completed. This may be after the End-Point Assessment Organisation has moderated the decisions made by assessors.

7. Roles and Responsibilities.

Ensuring independence is key to the validity and robustness of the end-point assessment. Although employers and training providers are involved in the on-programme training and assessment, providing opportunities for the apprentice to generate the required evidence against the knowledge, skills and behaviours and supporting the apprentice to prepare for the end-point assessment, the actual end-point assessment process including the development and use of assessment documentation and grading decision is managed and administered by the independent End-Point Assessment Organisation. The end-point assessor cannot have previously been involved in the 'on-programme' training of the apprentice.

7.1 End-Point Assessment Organisations.

End-Point Assessment Organisations are responsible for appointing and managing their end-point assessors and for ensuring that assessments are;

- Fair
- Valid
- Reliable
- Consistent

End-Point Assessment Organisations wishing to offer end-point assessment services for this apprenticeship, must: be registered on the Education and Skills Funding Agency Register of End-Point Assessment Organisations (RoEPAO). They must also:

- Ensure end-point assessors meet the criteria outlined in this plan including occupational and assessment expertise.
- Deliver the end-point assessment outlined in this plan.

- Be able to demonstrate a detailed understanding of the occupational role profile.
- Provide adequate information, advice and guidance documentation to enable apprentices, employers and providers to prepare for the end-point assessment.
- Use appropriate assessment recording documentation to ensure all apprentices are assessed fairly and consistently based on the grading criteria detailed in Section 10 and Annex B. The assessment documentation should also provide a clear and auditable mechanism for providing assessment decision feedback to the apprentice.
- Develop appropriate processes and procedures to justify the outcome of an end-point assessment, including appeals, re-takes/re-sits and complaints procedures.
- Ensure there are no unnecessary barriers, cognitive or physical, to an apprentice attending and completing the end-point assessments. Assessments and assessment environments must be designed to be accessible to all apprentices and be in line with the Equality Act.
- Provide, as required, appropriate assessor training to ensure assessment and grading decisions are based on best practice models.
- Have the capacity and capability to offer, where requested, information, advice and guidance for apprentices, employers and/or training providers to support the preparation for the end-point assessment.
- Develop banks of core questions for use in the Case Studies Presentation and Occupational Profession Discussion. They must be of sufficient size to prevent predictability and be reviewed regularly (at least once a year) to ensure the core questions are fit for purpose.

End-Point Assessment Organisations must maintain high quality systems and processes, which validate and continuously review end-point assessor's experience, skills and competence. They must also maintain a system that allows individual end-point assessments and the end-point assessor's decision, to be externally quality assured and verified by an External Quality Assurance provider.

End-Point Assessment Organisations must have processes and procedures in place with their end-point assessors, which set out clearly what is expected of them in this role. These processes and procedures must be understood by all parties involved in the assessment of the apprenticeship. The final decision on end-point assessment grade of Fail, Pass or Distinction grade lies solely with the end-point assessor and the End-Point Assessment Organisation.

7.2 The End-Point Assessor

End-point assessors are responsible for conducting the end-point assessment of the apprenticeship and are appointed and managed by an End-Point Assessment Organisation. The end-point assessor must be someone who has nothing to gain from the outcome of the assessment and has had no direct involvement in the day-to-day training and development of the apprentice during the on-programme phase of apprenticeship. When conducting an end-point assessment, the end-point assessor is acting on behalf of the relevant End-Point Assessment Organisation, and is subject to the auditing procedures set by them.

End-point assessors will be subject to rigorous quality assurance, and must take part in regular training and standardisation/moderation activities specified by the End-Point Assessment Organisation.

The following key principles are mandatory for end-point assessors:

7.2.1 End-Point Assessor Occupational requirements.

End-Point Assessors must:

Have in depth knowledge and understanding of the apprenticeship standard, relevant assessment plan and the end-point assessment process including the grading criteria specified in Section 10 and Annex B.

Have current and relevant knowledge and skills of the occupational area and level they are assessing, including the knowledge and skills specified in the standard, which has been gained through industry experience.

Be suitably qualified and experienced in undertaking assessment of occupational competence in line with best practice models. End-point assessors may have achieved relevant qualifications in assessment practice such as the Level 3 Award in Assessing Competence in the Work Environment.

End-Point Assessment Organisations may use new end-point assessors who are in training/development. However, all assessment decisions must be countersigned by a fully qualified and experienced assessor who also has the required technical knowledge and skills of the occupational area being assessed.

7.2.2 Assessment Practice.

End-Point Assessors from the End-Point Assessment Organisation must:

- Comply with the standardised assessment procedures and processes as set out by the End-Point Assessment Organisation including assessment practice, appeals, declaring any conflicts of interest and adhering to any client confidentiality requirements and data/information protection regulations.
- Attend regular standardisation/moderation meetings, depending on demand, but typically there should be opportunities for meetings to take place twice a year. As a minimum there must be one standardisation/moderation meeting per year.
- Share best practice in assessment through a range of appropriate methods, such as email, meetings, events, presentations, workshops and/or social media.
- Have sufficient resource to carry out the role of the end-point assessor including time for planning and preparation activities.

7.2.3 Continuous Professional Development. (CPD)

End-point assessors must regularly update their occupational expertise, sector knowledge in the areas being assessed to ensure currency of skills, knowledge and behaviours. This should be achieved through planned CPD, appropriate to their individual development needs. A record of this should be maintained through an up-to-date CPD log. Examples of CPD could be (but not limited to):

- External employer visits.
- Achievement of new or updated training or qualifications, including both technical and assessor qualifications.
- Attendance at seminars and/or conferences.
- Attendance at development days.

7.3 Employer.

The employer will support the apprentice throughout the apprenticeship helping them to reflect on their performance throughout the period of on-programme training and development. They will ensure the apprentice prepares and collates the necessary evidence to demonstrate occupational competence against the requirements of the apprenticeship standard and will authenticate and confirm that the content in the Case Studies Presentation and supporting evidence (Method 1) and occupational competence report and supporting evidence to be used in the Occupational Professional Discussion (Method 2) is the apprentices own work and is an accurate reflection of the apprentices knowledge, skills and behaviours.

They will also ensure that the apprentice is prepared for the end-point assessment (Case Studies Presentation and Occupational Professional Discussion) and will formally confirm to the End-Point Assessment Organisation that the apprentice is ready for end-point assessment. The employer will also liaise with their selected End-Point Assessment Organisation with regards to the scheduling, timing and location of the assessments, ensuring that any facilities and resource requirements such as Power Point projectors/screen and interview rooms are fit for purpose and take into account any security and confidentiality (personal and/or business) requirements.

7.4 Training Provider.

The training provider may be consulted by the employer when determining readiness for end-point assessment but is not involved in the actual end-point assessment of apprentices.

8. Quality Assurance.

8.1 Consistency.

Independent end-point assessment is a culmination of a planned training and development journey resulting in external independent assessment that confirms or not that the apprentice has met the apprenticeship standard. As such the process and procedure for carrying out an end-point assessment must be quality assured to ensure consistent, reliable and valid judgements.

8.2 Internal Quality Assurance.

Internal quality assurance is the responsibility and carried out by the approved End-Point Assessment Organisation and involves ensuring that individual end-point assessments are undertaken correctly and consistently including the standardisation and reporting of the outcomes of the end-point assessment. It must:

- Ensure there are robust processes in place to deliver end-point assessments to the required standard and that they are appropriate for the occupation.
- Train all end-point assessors to ensure they assess consistently against the requirements of the standard, including the opportunity to attend standardisation workshops annually.
- Apply robust internal quality assurance and verification processes to the end-point assessments.

Internal quality assurance must be completed by an appropriately qualified person, and that person must not have been involved in any aspect of the delivery or end-point assessments of the apprenticeships they are quality assuring. It is recommended that between 10% and 20% of assessment decisions are moderated depending on the experience of the assessor.

8.3 External Quality Assurance.

The Institute for Apprenticeships will conduct the external quality assurance for the Level 6 Product Design and Development Engineer standard.

9. Implementation.

9.1 Affordability.

The cost and practicalities of the assessment process have been a key consideration in the development of the end-point assessment plan due to the range and type of businesses likely to deliver this apprenticeship. Both large and small employers alike must manage the cost of apprenticeship training and development and prepare the apprentice for the end-point assessment. Whilst the end-point assessment needs to be robust, valid and reliable the assessment needs to be affordable and not take away vital funding to support the training and development of apprentices for all, irrespective of the size of the employer and the number of apprentices they recruit.

As part of the negotiation process between the employer and End-Point Assessment Organisation, to ensure transparency and value for money, the employer can ask the End-Point Assessment Organisation for a detailed cost breakdown of the costs to deliver the end-point assessment.

9.2 Accessibility and Manageability.

The practicalities and accessibility of the end-point assessments have been considered during the development of this assessment plan to ensure that the assessments are equally accessible to large and small employers across a range of employers and for all apprentices. End-Point Assessment Organisations must ensure there are no unnecessary barriers to an apprentice completing the end-point assessments. End-point assessments and assessment environments must be designed to be accessible for all apprentices and be in line with the Equality Act.

End-Point Assessment Organisations must work with employers to manage end-point assessments in a way that minimises the impact on the employers' business activity.

On demand end-point assessment should be offered by the End-Point Assessment Organisation or on a quarterly basis as a minimum, this will give employers and apprentices access to end-point assessments on a regular basis and allow adequate time for preparation. This will also give End-Point Assessment Organisations adequate time to plan assessments to ensure they are manageable, feasible and cost efficient.

End-point assessment should ideally be undertaken within a six month period following the employer gateway decision point.

This end-point assessment plan accommodates apprentices that will complete their apprenticeship in 2018 and 2019, where a Fail or Pass grade will apply and for apprentices that complete their apprenticeship from September 2020 where a Fail, Pass and Distinction grade will apply.

10. Grading.

- Assessment Methods 1 and 2 have been equally weighted and apprentices must achieve a Pass in all Knowledge, Skills and Behaviours as a minimum requirement for the apprenticeship certificate to be awarded. A Fail in any Knowledge, Skills and Behaviours will mean the apprentice will be offered a resit or re-take. See section 11.
- See Annex B – End-Point Assessment Grading criteria and grade boundaries for the following grades Fail, Pass and Distinction.
- Apprentices that enter the EPA period in 2018 and 2019 must achieve at least a Pass in all Knowledge, Skills and Behaviours to be awarded an overall Pass.
- Apprentices that enter the EPA period from September 2020 must achieve at least a Pass in all Knowledge, Skills and Behaviours in both Assessment Methods to be awarded an overall Pass. To be awarded a Distinction, apprentices must achieve Distinction in at least 3 criteria in each of the Knowledge, Skills and Behaviours in both Assessment Methods

11. Re-sits and Re-takes.

Apprentices awarded a Fail in one or both assessment methods will be offered the opportunity to take a re-sit or re-take. See Annex B for the grade criteria for Methods 1 and 2. A re-sit does not require further learning, whereas a re-take does. In the case of a re-sit, little or no further work will be required on the Case Studies Presentation and supporting evidence (Method 1) and the occupational competence report and supporting evidence (Method 2). Apprentices should have an agreed action plan to prepare for the re-sit/re-take. If requested the employer can invite their Training Provider to be part of the development of any action plans for a re-take.

The employer determines when the end-point assessment re-sits/re-takes must be completed following the formal receipt from the End-Point Assessment Organisation that the apprentice has not passed either or both of the end-point assessment methods.

It will be the responsibility of the employer to determine the number of times the apprentice can re-sit/re-take the end-point.

The maximum grade awarded to a re-sit/re-take will be Pass, unless the End Point Assessment Organisation identifies exceptional circumstances accounting for the original grade of Fail.

Method 1. Case Studies Presentation.

Grade Outcome	Re-sit/Re-take Criteria
Fail - Re-take required	A fail in B1, any Skill or in 2 or more of the Knowledge and/or Behaviours criteria
Fail – Re-sit required	A single fail in Knowledge or Behaviour criteria

Method 2. Occupational Professional Discussion.

Grade Outcome	Re-sit/Re-take Criteria
Fail – Re-take required	A fail in B1, any Skill or in 2 or more of the Knowledge and/or Behaviours criteria
Fail – Re-sit required	A single fail in Knowledge or Behaviour criteria

12. Final Assessment Decision.

The final assessment decision on occupational competency and the grade of Pass, Fail and Distinction will be made by the End-Point Assessment Organisation taking into account the decision/recommendations made by their end-point assessor.

13. Professional Engineering Institution Recognition.

On completion of the apprenticeship and supported by the required experience and evidence the apprentice may apply to a relevant Professional Engineering Institution licenced by the Engineering Council for professional recognition at the appropriate level such as Engineering Technician (EngTech) or Incorporated Engineer (IEng) subject to meeting any requirements set by the Professional Engineering Institution. For more details on the requirements and application process go to the Engineering Council website at www.engc.org.uk

Annex A - End-Point Assessment Methods Mapping.

The following table provides an overview of the requirements detailed within the **Level 6 Product Design and Development Engineer** standard and where they are covered by each end-point assessment component.

	Knowledge – The apprentice must be able to demonstrate an understanding of:	Assessment Method
K1	Mathematics and science for engineers	Occupational Professional Discussion
K2	Materials and manufacture	Occupational Professional Discussion
K3	Mechanical, electrical and electronic principles and applications	Occupational Professional Discussion
K4	Statics and dynamics	Occupational Professional Discussion
K5	How to undertake and apply business-led projects	Case Studies Presentation
K6	Engineering operations and business management	Case Studies Presentation
K7	Applying advanced technology techniques	Case Studies Presentation
	Skills – The apprentice must be able to:	Assessment Method
S1	Comply with statutory and organisational safety requirements and demonstrate a responsible and disciplined approach to risk mitigation, avoidance and management.	Case Studies Presentation and Occupational Professional Discussion
S2	Effectively use, interpret and evaluate a range of engineering data sources and documentation	Occupational Professional Discussion
S3	Organise work efficiently and effectively by managing engineering resources when completing tasks	Case Studies Presentation
S4	Use computer software packages to assist with engineering activities	Case Studies Presentation
S5	Carry out Project Management activities	Case Studies Presentation
S6	Establish design briefs, presenting and discussing technical proposals	Occupational Professional Discussion
S7	Manage and control product design changes	Occupational Professional Discussion
S8	Support team feasibility design reviews	Occupational Professional Discussion
S9	Demonstrate technical and commercial management by planning and managing tasks & resources	Case Studies Presentation
	Behaviours – The apprentice must be able to demonstrate the following:	Assessment Method
B1	Safety mindset. The importance of complying with statutory and organisational health, safety and risk management requirements and the implications if these are not adhered to	Case Studies Presentation and Occupational Professional Discussion

B2	Strong work ethic: Has a positive attitude, motivated by engineering; dependable, ethical, responsible and reliable.	Occupational Professional Discussion
B3	Logical approach: Able to structure a plan and develop activities following a logical thought process, but also able to quickly “think on feet” when working through them.	Case Studies Presentation
B4	Problem solving orientation: Identifies issues quickly, enjoys solving complex problems and applies appropriate solutions. Has a strong desire to push to ensure the true root cause of any problem is found and a solution identified which prevents further recurrence.	Case Studies Presentation
B5	Quality focus: Follows rules, procedures and principles in ensuring work completed is fit for purpose and pays attention to detail / error checks throughout activities.	Case Studies Presentation
B6	Personal responsibility and resilience: Motivated to succeed accountable and persistent to complete task.	Occupational Professional Discussion
B7	Clear communicator: Uses a variety of appropriate communication methods to give/receive information accurately, and in a timely and positive manner.	Case Studies Presentation
B8	Team player: Not only plays own part but able to work and communicate clearly and effectively within a team and interacts/ helps others when required. In doing so applies these skills in a respectful professional manner.	Case Studies Presentation
B9	Applies Lean Manufacturing Principles: Demonstrates continuous improvement in driving effectiveness and efficiency	Case Studies Presentation
B10	Adaptability: Able to adjust to different conditions, technologies, situations and environments.	Occupational Professional Discussion
B11	Self-Motivation: A ‘self-starter’, who always wants to give their best, sets themselves challenging targets, can make their own decisions.	Occupational Professional Discussion
B12	Willingness to learn: Wants to drive their continuous professional development	Occupational Professional Discussion
B13	Commitment: Able to commit to the beliefs, goals and standards of their own employer and to the wider industry and its professional standards.	Occupational Professional Discussion

Annex B - Grading Criteria - Method 1 - Case Studies Presentation

Ref	Descriptors	Fail Criteria F	Pass Criteria P	Distinction Criteria D
K5	How to undertake and apply business-led projects	Knowledge insufficient to effectively contribute to business led projects	Contributes knowledge of project management to business led design and development projects	And... <u>understands</u> how to lead a project balancing timing, quality, cost and delivery considerations
K6	Engineering operations and business management	Grasp of engineering operations and business management activities is vague	Understands and can contextualise the range of core business activities required during a cycle of design and development.	And... explains how these can be applied to predict / resolve potential problems
K7	Applying advanced technology techniques	Does not demonstrate required knowledge of appropriate technological techniques	Demonstrates knowledge of advanced engineering techniques application within a design and development context	And ...identifies how advanced techniques minimise the potential for disruption or solve engineering problems
Ref.	Descriptors	Fail Criteria F	Pass Criteria P	Distinction Criteria D
S1	Comply with statutory and organisational safety requirements and demonstrate a responsible and disciplined approach to risk mitigation, avoidance and management	Does not demonstrate compliance with statutory and organisational safety requirements and didn't demonstrate responsible and disciplined approach to risk mitigation, avoidance and management	Demonstrates the importance of compliant, disciplined and responsible behaviours in complying with Statutory and Organisational health, safety and risk management requirements and implications if these are not adhered to (Pass Grade Only)	
S3	Organising work efficiently and effectively by managing engineering resources when completing tasks	Does not demonstrate ability to effectively contribute to organising work	Contributes in the organisation of work plans, monitoring, evaluating progress and providing feedback in order to complete tasks.	And...takes a lead role in the organisation of engineering resources
S4	Using computer software packages to assist with engineering activities	Does not demonstrate required application of appropriate software packages	Uses appropriate hardware/software packages to assist in the design process, data capture, verification, evaluation and presenting results	And...establishes design, construction of methods and key criteria for verification of design performance in the creation of computer models.
S5	Carrying out Project Management activities	Does not demonstrate ability to effectively carry out project management activities	Contributes to project management activities	And... <u>leads</u> projects, balancing ongoing timing, quality, cost and delivery considerations right through to successful completion

S9	Demonstrating technical and commercial management by planning and managing tasks and resources	Does not demonstrate technical and commercial management when planning and managing tasks and resources	Demonstrates technical management capabilities when planning and managing tasks and resources	And...some commercial management capabilities when planning and managing tasks/ resources
Ref.	Descriptors	Fail Criteria F	Pass Criteria P	Distinction Criteria D
B1	Safety mindset	Does not demonstrate compliant, disciplined and responsible Health and Safety behaviours	Demonstrates the importance of compliant, disciplined and responsible behaviours in complying with Statutory and Organisational health, safety and risk management requirements and implications if these are not adhered to (Pass Grade Only)	
B3	Logical approach	Does not structure a plan and develop activities logically	Structure a plan, develops and follows a logical thought process	And Thinks quickly on feet
B4	Problem solving orientation	Is willing to leave engineering problems unresolved	Identifies engineering issues/problems quickly, enjoys solving problems and applies appropriate solutions.	And...drives to the root cause of problems and finds solutions preventing recurrence
B5	Quality focus	Does not routinely follow quality rules procedures and principles	Follows quality rules, procedures and principles ensuring work completed is fit for purpose	And...pro-actively seeks out and identifies quality issues
B7	Clear communicator	Does not demonstrate appropriate behaviours when communicating	Open & honest, clear communicator. Uses appropriate communication methods.	And...uses a wide range of appropriate communication methods in a timely and positive manner whilst actively listening to others.
B8	Team player	Does not demonstrate appropriate teamwork related behaviours	Not only plays own part but works and communicates clearly and effectively within a team in a respectful and professional manner so that the information given is accurate	And... helps and encourages others when required
B9	Apply lean manufacturing principles	Does not demonstrate a continuous improvement mind-set	Applies lean manufacturing principles: continuous improvement in driving effectiveness and efficiency	And...takes a lead role in driving lean/continuous improvement activities

Annex B – Grading Criteria - Method 2 - Occupational Professional Discussion

Ref	Descriptors	Fail Criteria F	Pass Criteria P	Distinction Criteria
K1	Mathematics and science for engineers	Knowledge insufficient in one or both disciplines	Contributes to the business with knowledge in Mathematics and Science	And... knows how to apply situations that require an advanced understanding of mathematics and science over a broad range of methods
K2	Materials and manufacture	Fails to demonstrate the required level of understanding in Materials and Manufacturing principles	A comprehensive understanding in manufacturing methods and sound knowledge in operating with appropriate materials	And... explains how these can be applied/utilised to enhance product and design needs
K3	Mechanical, electrical and electronic principles and applications	Does not demonstrate required knowledge of appropriate Mechanical, Electrical and Electronic techniques	Demonstrates knowledge of advanced techniques/application within a design and development context	And ... identifies how advanced knowledge can be applied/utilised in problem rectification and the training and development of others
K4	Statics and dynamics	Knowledge in Statics and dynamics is limited and apprentice struggles to contribute effectively	Is fully conversant with and can explain in detail the requirements and complexities of static and dynamic engineering systems	And... can apply superior knowledge by leading in the development of advanced processes and procedures
Ref.	Descriptors	Fail Criteria F	Pass Criteria P	Distinction Criteria D
S1	Comply with statutory and organisational safety requirements and demonstrate a responsible and disciplined approach to risk mitigation, avoidance and management	Does not demonstrate compliance with statutory and organisational safety requirements and didn't demonstrate responsible and disciplined approach to risk mitigation, avoidance and management	Demonstrates compliance with statutory and organisational safety requirements and demonstrates a responsible and disciplined approach to risk mitigation, avoidance and management (Pass Grade Only)	
S2	Effectively use, interpret and evaluate a range of engineering data sources and documentation	Does not demonstrate ability to effectively contribute in the evaluation of data and documentation	Uses, interprets and evaluates a broad range of data sources and documentation	And... identifies key information and offers realistic recommendations and solutions

S6	Establish design briefs, presenting and discussing technical proposals	Unable to effectively establish design briefs, deliver presentations or contribute in discussing technical proposals	Establishes design briefs. Presents and discusses technical proposals	And.. leads with advanced abilities in design principles, copyright and intellectual property issues
S7	Manage and control product design changes	Shows little or insufficient ability to effectively manage or control product design change	Follows a systematic approach to design change analysis and control, contributing as a result	And.. Operates unsupervised or in a leading capacity in directing design change processes
S8	Supporting team feasibility design reviews	Fails to demonstrate ability or capacity to contribute in supporting feasibility design reviews	Evaluates, designs and identifies improvements to support feasibility reviews	And... Demonstrates a willingness and advanced capability in leading or managing specific elements of the feasibility review
Ref.	Descriptors	Fail Criteria F	Pass Criteria P	Distinction Criteria D
B1	Safety mindset	Does not demonstrate compliant, disciplined and responsible Health and Safety behaviours	Demonstrates the importance of compliant, disciplined and responsible behaviours in complying with Statutory and Organisational health, safety and risk management requirements and implications if these are not adhered to (Pass Grade Only)	
B2	Strong work ethic	Fails to demonstrate satisfactory work ethic or commitment	Demonstrates a positive attitude, motivated by engineering; dependable, ethical, responsible and reliable	And... Encourages others by leading by example and promoting and explaining the benefits of a strong work ethic
B6	Personal responsibility and resilience	Shows little or no levels of sustained personal responsibility	Provides a strong demonstration in taking personal responsibility with a determined and resilient approach to attaining successful outcomes and results	And... Volunteers or requests to take on leading roles in challenging and demanding situations offering direction and guidance
B10	Adaptability	Struggles to adapt or operate out of comfort zone over a range of Situations, Environments and Technologies (SET)	Displays strong characteristics in adaptability and capacity to adjust to suit specific operational requirements	And... .Actively seeks out new SETs and provided encouragement and support to those who struggled to adjust
B11	Self-motivation	Fails to display sufficient levels of self-motivation, sustained self-starting or ability in making own decisions	Displays clearly recognisable levels of self-motivation, enthusiasm and a clear desire to perform at their best either as an individual or as part of a team	And...by inspiring, encouraging and coaching others to adopt similar levels of self-motivation and drive
B12	Willingness to learn	Rarely or reluctantly takes advantage of new learning opportunities to further develop their abilities and knowledge	Willing to learn and further develop skills and knowledge on a regular basis	And... actively sources opportunities or training courses to further enhance own abilities and knowledge levels
B13	Commitment		Clearly displays strong levels of commitment, embracing employer beliefs and aspiring to the same goals and standards	And...Actively researches how to engage with a relevant Professional Engineering

		Shows little or no commitment to employer beliefs, goals and standards		Institution in order to gain professional recognition at the appropriate level, such as Incorporated Engineer.
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