END POINT ASSESSMENT PLAN

FOR

RAIL AND RAIL SYSTEMS ENGINEER

LEVEL 5

Contents:

Summary of End Point Assessment

This document sets out the requirements for end-point assessment (EPA) for the **Level 5 Rail and Rail Systems Engineer apprenticeship standard**. It is written for end-point assessment organisations who need to know how EPA for this apprenticeship must operate. It will also be of interest to Rail and Rail Systems Engineer apprentices, their employers and training providers.

Full time apprentices will typically spend 24-30 months on-programme working towards the apprenticeship standard, with a minimum of 20% off-the-job training.

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

As a gateway requirement, apprentices must complete a portfolio of evidence which will be used to support a Vocational Competence Discussion. Apprentices without English and mathematics at level 2 must achieve level 2 prior to taking their EPA. For those with an education, health and care plan or a legacy statement the apprenticeships English and maths minimum requirement is Entry Level 3, and British Sign Language qualifications are an alternative to English qualifications for those whom this is their primary language.

The EPA must be completed over a maximum total assessment time of 14 weeks and one hour (i.e. 14 weeks for the Workplace Project which will be described in more detail later in this plan and one hour Vocational Competence Discussion), within a 16-week period starting once the apprentice has met the Gateway requirements.

EPA must be conducted by an end-point assessment organisation (EPAO) approved to offer services against this standard, as selected by the employer, from the Education & Skills Funding Agency's Register of End Point Assessment Organisations.

The EPA consists of two distinct assessment methods:

- Workplace Project (including a practical element)
- Vocational Competence Discussion (supported by a portfolio of evidence)

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

On-programme (typically 24 - 30 months)	End Point Assessment Gateway	End Point Assessment (16 weeks)	Professional recognition (optional)
Training to develop the occupation standard's knowledge, skills and behaviours Working towards English/maths Level 2 or alternative for those with an education, health and care plan or a legacy statement Preparing a portfolio of evidence	English/maths Level 2 or alternative for those with an education, health and care plan or a legacy statement Agreement that portfolio of evidence is complete Employer satisfied apprentice is consistently working at or above the level of the standard	Workplace Project Vocational Competence Discussion (supported by a portfolio of evidence) Graded fail, pass merit or distinction	The experience gained and responsibility held by the apprentice on completion of the apprenticeship partially contributes to the requirements for IEng.
Rail and Rail Systems Engineer apprenticeship standard			

Diagram 1. Typical Rail and Rail Systems Engineer Apprenticeship Summary

End Point Assessment Overview

Assessment Method	Area Assessed	Assessed by	Grading
Workplace Project	Knowledge, skills and behaviours (as indicated in Annex A)	End Point Assessment Organisation	Fail/Pass/Merit/Distinction
Vocational Competence Discussion	Knowledge, skills and behaviours (as indicated in Annex A)	End Point Assessment Organisation	Fail/Pass/Merit/Distinction

Please note that on-programme assessment does not count toward the EPA/Apprenticeship grade. Performance in the two end-point methods is combined to determine the EPA and Apprenticeship grade of fail, pass, merit or distinction.

The rules of combination for the final grade are straightforward:

- the apprentice will be assigned the lowest grade awarded for any individual assessment component as the final grade.

End Point Assessment Gateway

The EPA should only start once the employer is satisfied that the apprentice is consistently working at or above the level set out in the standard, the pre-requisite gateway requirements for EPA have been met and that they can be evidenced to an EPA organisation. Employers may wish to take advice from their apprentice's training provider(s).

Gateway requirements:

- English and mathematics at level 2 or Apprentices without English and mathematics at level 2 must have achieved level 1 English and mathematics and have taken the tests for level 2. For those with an education, health and care plan or a legacy statement the apprenticeship's English and maths minimum requirement is Entry Level 3, and British Sign Language qualifications are an alternative to English qualifications for those whom this is their primary language.
- portfolio to support the Vocational Competence Discussion must be completed.
- agreement by the apprentice's employer and the EPAO of a work-based project, to be completed by the apprentice during the EPA period. The agreed work-based project start date will mark the start of the apprentice's 14-week period for completion of this assessment method.

Portfolio requirements:

On commencement of the apprenticeship the apprentice must begin to retain a portfolio of evidence which must be finalised before passing through the gateway.

A completed portfolio or evidence is a **compulsory** EPA gateway requirement that underpins the EPA Vocational Competence Discussion component.

Employers/training providers are free to devise their own version of the portfolio of evidence but the portfolio of evidence should typically contain the following information:

- the name of the apprentice
- details of the apprentice's workplace

- a minimum of 8 and a maximum of 10 pieces of evidence to support the knowledge, skills and behaviours of the apprenticeship standard. (Evidence can be provided through a range of sources, for example work reviews, and customer feedback)
- reflection on problems encountered and how they were overcome
- confirmation from the line manager that the tasks were completed to the required standard of the organisation
- document the off-the-job training that has taken place during the on-programme phase, with at least 20% of their employed time off-the-job
- copy of English and mathematics certificates

It is recommended that the employer and apprentice signs off the portfolio of evidence, thereby authenticating that this is the apprentice's work and confirming the demonstration of competence against the knowledge, skills and behaviours (KSBs) across the standard and that the apprentice is ready to take the EPA.

The apprentice must submit their portfolio of evidence to their EPAO when applying for the EPA. An independent assessor will review the portfolio to glean personalised information that will assist the Vocational Competence Discussion component of the EPA. The assessor will review the portfolio prior to the EPA in order to prepare questions. The portfolio itself is not assessed.

Summary of Roles and Responsibilities

Employer	• selects EPAO from the Register of End-Point Assessment Organisations (may be advised by training provider) • confirms all EPA gateway requirements have been met, signs-off to this effect and triggers EPA to the EPAO • confirms arrangements with EPAO for the EPA (who, when and where) • ensures apprentice is aware of the EPA, is prepared and ready, and ensures attendance
Training Provider	• prepares apprentice for EPA during the on-programme phase • may assist employer to select EPAO for EPA • may assist employer to confirm that all EPA gateway requirements are completed prior to EPA (e.g. through demonstrating to the employer results of any on-programme assessments) • may assist employer by making arrangements with the EPAO for the practical aspects of the EPA (who, when, where) • work with the EPAO to arrange for certification

EPAO	• develop and provide all required material and resources required for the EPA • on receipt of 'triggered' EPA request from employer, contact the employer and arrange dates, times and locations for the required EPA • ensure all required material is presented at the EPA venue • provide appropriate and qualified staff to enable completion of all aspects of the EPA • confirm results of EPA to apprentice and employer • communicate resit/retake arrangements, where required • Work with the training provider to arrange for certification • maintain robust internal quality assurance procedures and moderation • fulfil the requirements of the nominated external quality assurance body

The End Point Assessment

The end-point assessment consists of two distinct assessment methods:

1. Workplace Project (including a practical element)
2. Vocational Competence Discussion (supported by a portfolio of evidence)

The end-point assessment must be completed over a maximum period of 16 weeks after the apprentice has met the EPA gateway requirements.

The EPA period commences with the start of first assessment instrument (Project or Vocational Competence Discussion) and will last no longer than 16 weeks in total. This will mean there is 14 weeks for project completion and two weeks allocated to the conducting of the Vocational Competence Discussion (1 hour). This allows the different assessment methods to be done sequentially with the discussion done before or after the project.

The assessment methods can be completed in any particular order, allowing EPAOs flexibility in scheduling and cost-effective allocation of resources.

EPAOs must ensure that the Vocational Competence Discussion (supported by a portfolio of evidence) is conducted in a suitable controlled environment. This must be a quiet room free from distraction and influence. It is anticipated that EPAOs will use the apprentice's employer's premises wherever possible to minimise costs. They may be conducted face-to-face or via an online platform e.g. video-conferencing. EPAOs must ensure appropriate methods to prevent misrepresentation are in place should an online option be used. For example, screen share and 360-degree camera.

Requirements for each assessment method are detailed below.

Assessment Method 1 – Workplace Project (including a practical element that allows for the application and demonstration of skills in a real-life work context)

Key Considerations:

- synoptic assessment of the apprentice's knowledge, skills and behaviours and the application of these skills in a real-life work context within the chosen specialist pathway, e.g. a substantive business challenge associated with a particular task or piece of equipment, an opportunity to improve a workplace process, or critical analysis of a workplace problem that will result in changes to a business operating procedure. More detail on the practical dimension will be present in the fixed set of subject areas for projects in each specialist area (see below).
- undertaken over a 14 week period, post-gateway.
- apprentices must submit a project report to their EPAO within 14 weeks of the agreed project start date.
- the 14-week project work window cannot officially start until the portfolio has been received. Receipt of the portfolio (and other Gateway evidence of requirements) will trigger confirmation of the project focus and official start date.
- identifies, explores and suggests an improvement issue or opportunity that will bring benefit to the business.
- must consist of a written report. The written report must be 4,000 words with a 10% +/- tolerance.
- the written report can contain an annex of data, diagrams, pictures, tables, appendices and other forms of appropriate evidence and information to support the report, and these do not form part of the word count, but the annex must contain a minimum of 8 and a maximum of 10 pieces of evidence relating to the project. Evidence must be accompanied by a statement authenticating the project report as the apprentice's own work and outlining the apprentice's contribution. This should be signed by the apprentice and their employer.
- the written report and appendices should be submitted to the End Point Assessment Organisation as one PDF document.
- the project report should cover the project context, the apprentice's responsibilities, action taken by the apprentice (planning and execution) and results.
- externally marked by an End-Point Assessment Organisation.
- graded as a fail/pass/merit/distinction.

Apprentices will undertake the work-based project over 14 weeks and it will synoptically assess the apprentice's knowledge, skills and behaviours, as detailed in annex A.

All project topics will be agreed in advance with the EPAO, the employer and the apprentice, as described later in this plan.

All projects must demonstrate competence against the application of the technical knowledge and skills of the specialist area, as well as the application of the following core areas of the standard:

- safe and professional working practices and keeping themselves and others safe
- contribute effectively to the delivery of engineering solutions, and delivering engineering solutions effectively
- working knowledge of problem solving, and use creative thinking and problem-solving techniques
- how teams work effectively, and collaborative working practice

The following behavioural aspects will also be covered as core:

- effective communicating and influencing
- act professionally
- promote and exhibit a self-disciplined, self-motivated and motivational approach to work
- works safely, collaboratively
- quality focused

Further information on project topics can be found in the "assessment tools and materials" section of this end-point assessment plan.

The scope of the project will be agreed when all gateway requirements have been met and will involve the apprentice identifying and addressing an improvement issue or opportunity, which could relate to products, processes, quality assurance or the business, that once addressed will bring benefit back to the organisation and/or industry. This will ensure the project has a practical element which reflects the day to day work of a Rail & Rail Systems Engineer. The selected project must be comprehensive, providing scope for the apprentice to show the full range of their knowledge, skills and behaviours as outlined in annex A. It must demonstrate the apprentice has applied what they have learnt, has understood and is able to connect their learning to the organisation's objectives.

The project can focus on an immediate or strategic long-term issue or opportunity and will contain the following (as a minimum):

1. Executive summary
2. Introduction and background
3. Outline of the issue or opportunity
4. Justification for the change
5. Evidence of effective research
6. Analysis of benefits and drawbacks including commercial, contractual and organisational etc.
7. Analysis of risks

8. Summary of the recommendations
9. Consideration of legislation, regulation, industry and organisational policies, procedures and requirements
10. Proposed plan for implementation and stakeholder engagement

The project is expected to draw together the learning from across the standard, including the ability to select and apply knowledge as well as identifying and interpreting complex sets of data, and presenting the proposed solution in an appropriate format, (e.g. demonstrating knowledge requirement 2 "the scientific, technical, engineering, mathematical and design principles)) The written report will be submitted to the EPAO for marking upon completion.

Assessment tools must be developed by the End Point Assessment Organisation to support reliable and consistent delivery of business project assessments, such as, marking criteria/checklists, a business project structure brief and reporting/feedback template/s.

The project will be graded using the criteria and guidance shown in Annex B.

Assessment Method 2 - Vocational Competence Discussion (supported by a portfolio of evidence)

Key considerations:

- the Vocational Competence Discussion will assess the apprentice's knowledge, skills and behaviour as outlined in Annex A
- the assessment criteria and grading criteria applied are shown in Annex B

About the event -

- lasts for 60 minutes with a 10%+/- tolerance
- the apprentice should be given at least one weeks' notice of the assessment date.
- the discussion must take place on a one-to-one basis between an independent assessor from the End Point Assessment Organisation and the apprentice.
- the independent assessor must ask the apprentice 7 open questions in the following areas as outlined in Annex B:
    - Health and Safety – 1 question
    - Professional Working Practices – 1 question
    - Scientific, technical, engineering, mathematical and design skills – 1 question
    - Quality and Continuous Improvement – 1 question
    - Team Working – 1 question
    - Recruitment and Retention - 1 question
    - Continuous Professional Development – 1 question; follow up questions are allowed in each area to seek clarification.
- apprentices may refer to their portfolio when answering the questions.
- apprentices must be given the opportunity to evaluate their portfolio during the discussion i.e. what went well, lessons learnt and recommendations for the future projects.
- the apprentice may bring a copy of the portfolio with them.

- must be carried out in a quiet room free from distractions.
- the vocational competence discussion should be recorded electronically, subject to the apprentice's agreement; where permission is not given it is permissible for another independent assessor to be present to document evidence presented.

Prior to the Vocational Competence Discussion -

- apprentices must submit their portfolio to their EPAO once the Gateway process has confirmed that the portfolio of evidence is complete and ready for submission. The EPA and the Vocational Competence Discussion will be based on this.
- the Portfolio of Evidence (and other Gateway evidence requirements) must be received by the EPAO within 2 weeks of the Gateway process completion. This will trigger confirmation of the EPA process and the start date for the 14-week project work window and 16-week time limit for the entire EPA, during the gateway period.
- the End-Point Assessment Organisation assessor must have reviewed the apprentice's portfolio and prepared questions to form the basis of the discussion.
- EPAOs must develop 'question-set banks' of sufficient size to prevent predictability and review them regularly (at least once a year) to ensure they, and the questions they contain, are fit for purpose.
- EPAOs will develop an assessment specification and guidance, and provide training to standardise approaches to vocational competence discussions across their assessors, ensuring reliable and consistent delivery of the vocational competence discussion. This will include recording documentation.

End Point Assessment - Grading

Independent assessors must individually grade each assessment method – fail, pass, merit or distinction, according to the requirements set out in this plan.

If the apprentice has not evidenced the required knowledge, skills and behaviours then the Standard has not been met and the apprentice will be deemed to have failed.

All assessment methods are equally weighted. Restrictions on grading apply where apprentices re-sit/re-take an assessment method – see re-sit/re-take section below.

An independent assessor must combine the grades of both assessment methods to determine the EPA grade. To achieve an EPA pass, apprentices must achieve a minimum of a pass in each assessment method. To achieve an EPA merit an apprentice must achieve a minimum of a merit in each assessment method, and to achieve a distinction, apprentices must achieve a distinction in each assessment method. See grading combinations table below.

Where more than one independent assessor is involved, the independent assessor responsible for the assessment method completed last will be responsible for combining the grades.

Independent assessors' decisions must be subject to moderation by the EPAO – see internal quality assurance section below. Decisions may not be confirmed until after moderation.

Workplace Project	Vocational Competence Discussion (supported by a portfolio of evidence)	EPA grade
Fail	Fail	Fail
Fail	Pass	Fail
Pass	Fail	Fail
Pass	Pass	Pass
Pass	Merit	Pass
Fail	Merit	Fail
Merit	Fail	Fail
Merit	Pass	Pass
Merit	Merit	Merit
Merit	Distinction	Merit
Fail	Distinction	Fail
Pass	Distinction	Pass
Distinction	Fail	Fail
Distinction	Pass	Pass
Distinction	Merit	Merit
Distinction	Distinction	Distinction

Re-sit and Re-take information

Apprentices who fail one or more EPA method will be offered the opportunity to take a re-sit/re-take. Re-sits/re-takes must not be offered to apprentices wishing to move from pass to distinction. A re-sit does not require further learning, whereas a re-take does.

The apprentice's employer will need to agree that a re-sit/re-take is an appropriate course of action. Apprentices should have a supportive action plan to prepare for the re-sit/re-take.

An individual EPA assessment re-sit/re-take (e.g. Vocational Competence Discussion and/or project) must be completed satisfactorily within six months of the end of the initial EPA period. After six months, apprentices must retake the entire EPA. The time limit for each method will start again and will remain as 16 weeks in total, 14 weeks for completion of the Workplace Project and 1 hour for the Vocational Competence Discussion, within a timescale agreed with the employer and EPAO.

The maximum grade awarded to a re-sit/re-take will be pass, unless the EPAO identifies exceptional circumstances accounting for the original fail.

Professional Body Recognition

This Apprenticeship Standard aligns with the current edition of the UK Standard for Professional Engineering Competence (UK-SPEC). The experience gained and responsibility held by the apprentice on completion of the apprenticeship allows the apprentice to make an application, if they so wish, through a relevant Professional Engineering Institution licenced by the Engineering Council for professional recognition at the appropriate level. The experience gained and responsibility held by the apprentice on completion of the apprenticeship partially contributes to the requirements for IEng. For more details on the requirements and application process go to the Engineering Council website at www.engc.org.uk

End-point Assessment Organisations

Employers must choose an independent EPAO approved to deliver the EPA for this apprenticeship from the Education & Skills Funding Agency's (ESFAs) Register of End Point Assessment Organisations (RoEPAO).

Requirements for End Point Assessment Organisation Assessors

EPAOs must appoint:

- independent assessors to assess and grade the Workplace Project, and the Vocational Competence Discussion (supported by a portfolio of evidence).

EPAO assessors must meet the following requirements (Vocational Competence Discussion):

- be independent of the apprentice, their employer and training provider(s) i.e. there must be no conflict of interest
- hold or be working towards an assessor qualification e.g. A1 and have had training from their EPAO in terms of good assessment practice, operating the assessment tools and grading
- have at least 5-years' of current experience, working in Rail Engineering within the last 3 years at level 5 or above, and have completed a minimum of 3-days continuing professional development (CPD) relevant to Rail Engineering in the last year.
- undertake a minimum of 1-day of EPAO standardisation training per year

In addition to the above, EPAO assessors assessing the Workplace Project must:

- have the specified minimum work experience and CPD requirements as outlined above within the context of the specialist area selected as the context of the project

Quality assurance staff must hold or be working towards quality assurance qualifications. They must be independent of the apprentice, their employer and training provider i.e. there must be no conflict of interest.

Internal Quality Assurance

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

- appoint independent assessors that meet the requirements as detailed in this plan – see above
- provide training for independent assessors in terms of good assessment practice, operating the assessment tools and grading
- have quality assurance systems and procedures that support fair, reliable and consistent assessment across organisation and over time
- operate regular standardisation events (at least two) that enable assessors to attend a minimum of one event per year
- target quality assurance activity at standardising across the generic standard and the specialist pathways
- ensure standardisation is appropriate for the needs of each assessment method
- operate moderation of assessment activity and decisions at least annually, through examination of documentation and observation of activity, with a minimum of 20% percent of each independent assessors assessments moderated
- Provide CPD activities that are appropriate to meeting the development needs of the assessors

Assessment tools and materials

EPA organisations must produce assessment tools and supporting materials for the EPA that follow best assessment practice, as follows:

- suite of specialist pathway specific acceptable project foci to help control consistency and variability in project work. No more than three potential foci from each specialist pathway should be available in each area to help with standardisation. For example, in the Signalling and Control specialism, projects will be targeted at producing appropriate signalling and control solutions for the railway industry based on known and defined concepts and principles and new and novel approaches. Apprentices will be asked to develop and design solutions, undertake work and provide support. It is recommended that EPAOs develop assessment tools in consultation with representative employers; where they do this they must put measures in place to ensure question security

- workplace project marking criteria/checklists, a business project structure brief and reporting/feedback template/s.
- vocational competence discussion marking criteria and checklists
- documentation for recording assessment evidence and decisions
- guidance for independent assessors on conducting the EPA
- guidance for apprentices, and their employers, on the EPA

External Quality Assurance

External quality assurance arrangements will ensure that EPAOs delivering EPA for this apprenticeship operate consistently and in line with this plan.

External quality assurance for this apprenticeship standard will be undertaken by the National Skills Academy for Rail.

Implementation

The following factors should ensure the EPA is affordable:

- Employers premises should be used for EPA venues where possible
- Remote assessment is permissible, reducing travel costs, e.g. video conferencing
- The practical skills test is based on real work completed for the apprentice's employer, adding value to the employer

Volumes: It is anticipated that there will be 30-40 starts in the first year on this apprenticeship and 30 per year once established.

Annex A – Knowledge, Skills and Behaviours to be assessed by each assessment method

Assessment method	Key
Workplace Project	**P**
Vocational Competence Discussion (supported by a portfolio of evidence)	**D**

NB: Where a KSB is shown as being assessed in more than one assessment method, this must be assessed in each method separately. EPAOs should not assume that because it has been met in one method, it no longer needs to be assessed in the other.

Knowledge statement: Core	Assessment method
C/K1. Safe and Professional working practices	**P & D**
C/K2. The scientific, technical, engineering, mathematical and design principles	**P & D**
C/K3. How to contribute effectively to the delivery of rail specific engineering solutions	**P**
C/K4. How strategic decisions are made	**P**
C/K5. Problem solving and continuous improvement	**P**
C/K6. How teams work effectively	**D**
C/K7. How to attract, recruit, develop and retain people	**D**
C/K8. Approaches to partner, stakeholder and supplier relationship management within the rail industry	**P**

Knowledge statement: Specialist

Rail Civils	RC/K1 The requirements, methods and techniques for the installation and maintenance of the track support and track foundation.	**P & D**
	RC/K2 The impact of the railway environment e.g. geotechnics, structures, tunnels, embankments, vegetation and drainage.	**P & D**
Track	T/K1 Rail track geometry requirements, effects of speed, wheel/rail interfaces, requirements/ methods/techniques for installation and maintenance of track and foundations.	**P & D**
	T/K2	**P & D**

	The influences on track layouts from particular aspects of the railway environment, e.g. geotechnical, tunnels, embankments, and drainage.	
Signalling and Control Systems	SC/K1 The requirements, methods and techniques for safe routing, spacing and control of trains e.g. degraded mode, fixed block signalling, and automatic train protection.	**P & D**
	SC/K2 Rules for the operational interfaces of the railway.	**P & D**
Rail Systems Integration	RS/K1 The end to end process for Rail Systems Integration e.g. requirements management, project interface management, safety in the railway system, assurance processes.	**P & D**
Traction and Rolling Stock	TRS/K1 The design and application of Traction & Rolling Stock (T&RS) engineering systems and the various generic types of legacy or modern rolling stock across the whole lifecycle.	**P & D**
	TRS/K2 The design principles used in legacy and modern rolling stock types and their rolling stock sub-systems across or within their T&RS engineering subject matter area(s) (which may be discipline based – e.g. Mechanical, electrical, electronic, etc. or system based – e.g. Structures, Doors, Brakes, traction, Wheel/Rail interface, etc. or a mix of both).	**P & D**
Telecoms, Networks and Digital	TND/K1 The application of telecommunication engineering systems e.g. mobile networks, fixed networks and other services delivered over networks (e.g. CCTV, customer information systems)	**P & D**
	TND/K2 The operating principles in legacy or modern rail telecommunication technologies (e.g. Rail traffic management systems)	**P & D**
Electrical, Mechanical or Building Services	EMB/K1 Thermal imaging, electrical clearance, wiring, bonding and construction processes relating to rail equipment	**P & D**
	EMB/K2 High and low voltage distribution systems, earthing and bonding, isolation and switching, protection and control systems, power generation and circuit analysis.	**P & D**
	EMB/K3 Electrical (e.g. low voltage distribution systems, emergency power supply systems) and mechanical (e.g. heating, ventilation, water, gas supply systems)	**P & D**

Skills statements: Core	Assessment method
C/S1. Keep themselves and others safe	**P**
C/S2. Apply a range of technical skill sets	**P**
C/S3. Deliver Rail & Rail Systems Engineering solutions effectively	**P**
C/S4. Provide input to technical, business planning, finance and commercial meetings	**P**
C/S5. Use creative thinking and problem solving techniques	**P**
C/S6. Lead and support single discipline teams	**P**
C/S7. Manage relationships with a range of stakeholders	**P**

Skills Statements: Specialist

Rail Civils	RC/S1 Apply rail civil engineering skills e.g. structural gauging to support the effective performance and operation of the business.	**P & D**
	RC/S2 Support and provide advice to colleagues within the Rail Civils discipline only.	**P & D**
Track	T/S1 Apply track engineering skills e.g. structural gauging to support the effective performance and operation of the business.	**P & D**
	T/S2 Support and provide advice to colleagues within the Track discipline only.	**P & D**
Signalling and Control Systems	SC/S1 Apply rail signalling and control systems skills e.g. independence of design, alignment to an operating railway, close out of issue logs.	**P & D**
	SC/S2 Produce rail signalling and control solutions for the railway industry based on known and defined concepts and principles and new and novel approaches.	**P & D**
Rail Systems Integration	RS/S1 Take responsibility for assisting in the management and development of integrated designs that shall maintain or improve on the existing safety, reliability, capability, performance, efficiency and maintainability of the railway.	**P & D**
	RS/S2 Undertake systems integration engineering skills to manage project requirements e.g. use requirements software to identify conflicts.	**P & D**

Traction and Rolling Stock	TRS/S1 Provide engineering input in their chosen specialist area(s) in the context of rolling stock design, application, alteration, configuration, operation, maintenance and disposal.	**P & D**
Telecoms, Networks and Digital	TND/S1 Support telecommunication, network and digital engineering design, application, configuration, operation, maintenance or decommissioning and disposal.	**P & D**
Electrical, Mechanical or Building Services	EMB/S1 Undertake standards review, operational practice, approvals and assessment of relevant asset types in line with technical knowledge.	**P & D**

Behaviour statements	**Assessment method**
B1. Communication and influencing skills	**D**
B2. Professionalism	**D**
B3. A self-disciplined, self-motivated and motivational approach to work	**D**
B4. Safe working practice	**P & D**
B5. Collaborative working	**P & D**
B6. A focus on quality	**P**
B7. Continuous Professional Development	**D**

Annex B – Grading Criteria for each assessment component

The Project

Key for Specialist area coverage

Specialist Areas	Code
Rail Civils	RC
Track	T
Signals and control systems	SC
Rail System Integration	RS
Traction and Rolling Stock	TRS
Telecoms, Network and Digital	TND
Electrical, Mechanical or Building Services	EMB

EPAOs should focus on assessing the apprentice against the higher order descriptors outlined in the Pass and Merit/Distinction columns rather than the lower order knowledge, skills and behaviours referenced in the left hand column. By showing competence against the higher order descriptors, it can be assumed that the apprentice is working at or above the level outlined in the standard.

Area of assessment	**Pass Criteria - The apprentice's project must demonstrate that they:**	**Merit/Distinction Criteria** **A successful contribution at MERIT will meet the Pass Criteria in all 8 areas of assessment and meet at least 3 of the 5 Merit/Distinction criteria below.** **A successful contribution at DISTINCTION will meet the Pass Criteria in all 8 areas of assessment and meet all 5 of the Merit/Distinction criteria below.**
HEALTH AND SAFETY **Core:** C/K1; C/S1 and B4 **Specialisms:** RC/K1; RC/K2 T/K1; T/S1 SC/K1; SC/S1	Keep themselves and others safe by working safely, showing professional working practices. Comply with workplace health, safety & environmental practices and regulations, maintaining a safe and secure working environment including rail specific legislation, regulation (e.g. Common Safety Method Risk Assessment (CSM RA)).	

RS/K1; RS/S1 TRS/K1; TRS/S1 TND/K1; TND/S1 EMB/K1; EMB/K2; EMB/S1	Comply with company practices, processes and procedures associated with safety in rail-related work and rail equipment. Challenge unsafe practice and is proactive in resolving those practices. Undertake and document risk assessments and hazard reiews in accordance with company procedures. Receptive to the needs and concerns of others, especially where related to diversity and equality and exercises responsibilities in an ethical manner. Applies a safety first approach for themselves and colleagues; keeps themselves and others safe.	
SCIENTIFIC, TECHNICAL, ENGINEERING, MATHEMATICAL and DESIGN SKILLS, AND DELIVERY OF RAIL SPECIFIC ENGINEERING SOLUTIONS **Core:** C/K1; C/K2; C/K3; C/S1; C/S2 and B4 **Specialisms:** RC/K1; RC/S1 T/K1; T/K2; T/S1 SC/K1; SC/S1 RS/K1; RS/S2 TRS/K1; TRS/S1 TND/K1; TND/K2; TND/S1 EMB/K1; EMB/K2; EMB/K3; EMB/S1	Use at least three forms of scientific, technical, mathematical and design skills in the project work submitted, cognisant of industry procedures, safety and quality requirements, risk and environmental impacts. These should be meaningfully applied, with their role in establishing the solution clearly explained. The scientific, technical, engineering, mathematical of design skills appropriate to the specialism and the nature of the solution should be evidenced as being considered and dismissed or considered and applied. Supporting justification of the decisions must be present.	Demonstrates a broad and deep understanding of the range of skills available by explaining why some are more appropriate and applicable than others citing appropriate criteria used to inform decisions taken. Provides evidence of anticipated technology changes and changes to rail network or systems thinking that will result in changes to business operating processes and/or procedures, showing an awareness of how different solutions may be available in future.
PROBLEM SOLVING AND CREATIVITY **Core:** C/K5; C/K3; C/S3; C/S5	Demonstrates how obstacles or challenges are overcome in establishing the final solution.	

Specialisms: RC/K1; RC/S1 T/K1; T/K2; T/S1 SC/K1; SC/K2; SC/S2 RS/K1; RS/S1; RS/S2 TRS/K1; TRS/S1 TND/K1; TND/K2; TND/S1 EMB/K1; EMB/K2; EMB/K3; EMB/S1	Demonstrates creative thinking and how creativity will be managed and controlled, showing how safety, performance and delivery are enhanced or secured rather than put at risk. Applies project management principles, asset, risk and quality management and assurance systems, processes and techniques.	
COMMUNICATION **Core:** C/K2; C/K3; C/K4; C/K5; C/K8; C/S2; C/S3; C/S4; C/S5 **Specialisms:** RC/K1; RC/S1 T/K1; T/K2; T/S1 SC/K1; SC/K2; SC/S2 RS/K1; RS/S1; RS/S2 TRS/K1; TRS/S1 TND/K1; TND/K2; TND/S1 EMB/K1; EMB/K2; EMB/K3; EMB/S1	Communicates the design and delivery needs and the solution showing how sustainable business benefits have been delivered. Ensure all aspects of the work project will be feasible, supported by reasoned and informed argument, based on realistic and practical considerations, making the design, delivery and solution a viable option. Produce work project which demonstrates a consistent, reasoned and evidenced-based approach that is presented in a way that is logical and straightforward to follow.	Provide an evidence-based argument using ideas and techniques that are at the forefront of the sector. Present a solution that demonstrates insight and shows an appreciation of both the need and the company's ability to respond to the need and benefit from the solution. Develop a persuasive and convincing argument based on insight and command of the subject matter. Produce project recommendations identifying realistic changes that have the potential to impact the wider industry and/or society.
QUALITY CONTROL AND ASSURANCE **Core:** B6 **Specialisms:** RC/K1; RC/S1; RC/S2 T/K1; T/K2; T/S2 SC/K1; SC/K2; SC/S2 RS/K1; RS/K2 TRS/K1; TRS/S1 TND/K1; TND/S1 EMB/K1; EMB/K2; EMB/K3; EMB/S1	Incorporate design, process of development and the solution which are supported by an approach to quality that distinguishes between control and assurance and that is supported by evidence justifying the choices made. Demonstrates compliance with corporate policies including sustainability, ethics, equality and diversity, and how to constructively challenge non-compliance. Demonstrate safety, quality of outcome and performance of solution considerations that are used	

	as factors in influencing decisions about quality control and assurance.	
STAKEHOLDER RELATIONSHIPS **Core:** C/K8; C/S7 and B5 **Specialisms:** n/a	Demonstrate an approach to stakeholder engagement that is built on professional working relationships and is clear about when, what and how information needs to be communicated to secure the necessary stakeholder support. Demonstrates the need to engage internal as well as external stakeholders, and describes how they will deal with supply chain, contractor and any other stakeholders necessary for the successful implementation of the solution within their specialist area.	
PROFESSIONALISM AND COLLABORATION **Core:** C/K8 **Specialisms:** RC/S2 T/S2 SC/S2 RS/S1 TRS/S1 TND/S1 EMD/S1	Demonstrate a level of autonomy, which shows the ability to plan, organise, carry out work to plan, time and resource, knowing when to collaborate and consult. Take steps to reassure those dependent on them and their inputs and outputs.	Demonstrate a high degree of autonomy and their work and collaborative efforts reflect positively on their profession / occupation, their employer and the rail industry.

DECISION MAKING **Core:** C/K4 and B4 **Specialisms:** RC/S2 T/S2 SC/S2 RS/S1 TRS/S1 TND/S1 EMB/S1	Demonstrate self-discipline and collaboration recognising the limits of their authority and how and when to involve others in decisions.	Demonstrate collaboration that shows consultation across a range of stakeholders to inform strategic decision making, both at an individual and collective level.
TEAM WORKING **Core:** C/K8; C/S4; C/S6 and B5 **Specialisms:** RC/S2 T/S2 SC/S2 RS/S1 TRS/S1 TND/S1 EMB/S1	Demonstrate active participation and engagement in team. Provide positive contribution in both leadership and support roles.	Demonstrate empathy, support, clear consultative and decisive behaviours towards others, while meeting targets and commitments and giving assurance to internal and external customers that they have fulfilled their responsibilities.

Project Fail Criteria
The apprentice will be deemed as a 'fail' for the project report element if any of the criteria / descriptors for 'Pass' grade are not met.

The Vocational Competence Discussion

Key for Specialist area coverage

Specialist Areas	Code
Rail Civils	RC
Track	T
Signals and control systems	SC
Rail System Integration	RSI
Traction and Rolling Stock	TR
Telecoms, Network and Digital	TND
Electrical, Mechanical or Building Services	EMB

EPAOs should focus on assessing the apprentice against the higher order descriptors outlined in the Pass and Merit/Distinction columns rather than the lower order knowledge, skills and behaviours referenced in the left hand column. By showing competence against the higher order descriptors, it can be assumed that the apprentice is working at or above the level outlined in the standard.

Area of Assessment	Pass Criteria - During the discussion the apprentice will demonstrate that they:	Merit/Distinction Criteria A successful contribution at MERIT will meet the Pass Criteria in all 7 areas of assessment and meet at least 3 of the 5 Merit/Distinction criteria below. A successful contribution at DISTINCTION will meet the Pass Criteria in all 7 areas of assessment and meet all 5 of the Merit/Distinction criteria below.
HEALTH AND SAFETY **Core:** C/K1; B2 and B4 **Specialisms:** RC/K1; RC/K2; RC/S1 T/K1; T/S1 SC/K1; SC/S1	Provide two different work examples distinguishing between safe and unsafe, good and bad practice. This will involve clearly identifying and articulating the key risks, their monitoring, mitigation or control in both examples given. At least one example must be drawn from the specialist area.	

RS/K1; RS/S1 TRS/K1; TRS/S1 TND/K1; TND/S1 EMB/K1; EMB/K2; EMB/S1		
PROFESSIONAL WORKING PRACTICE **Core:** C/K1; B2; B3 and B4 **Specialisms:** RC/K1; RC/K2; RC/S1 T/K1; T/S1 SC/K1; SC/S1; SC/S2 RS/K1; RS/S1 TRS/K1; TRS/K2; TRS/S1 TND/K1; TND/S1 EMB/K1; EMB/K2; EMB/K3; EMB/S1	Explain what professional working practices are, illustrating their answer with examples from their own work using two examples. They must directly tie in the importance of the professional working practice to the work completed. (At least one example must be drawn from the specialist area).	Reference and discuss the impact of not following professional practice, referencing the potential consequences and risks.
SCIENTIFIC, TECHNICAL, ENGINEERING, MATHEMATICAL AND DESIGN PRINCIPLES, AND DELIVERY OF RAIL SPECIFIC ENGINEERING SOLUTIONS **Core:** C/K2 **Specialisms:** RC/K1; RC/S1 T/K1; T/K2; T/S1 SC/K1; SC/S1 RS/K1; RS/S2 TRS/K1; TRS/S1 TND/K1; TND/K2; TND/S1 EMB/K1; EMB/K2; EMB/K3; EMB/S1	Identify and explain three scientific, technical, engineering, mathematical or design principles in application within both rail generally and specialism. Two of the principles in application must be in their specialist area and one example must be more generic. Each must be supported by illustration of the principles in practice drawn from their portfolio of evidence demonstrating a good understanding of the principles in application. The contribution will be evidence-based and the response to follow up questions or challenge handled confidently.	Demonstrate a clear understanding of and confidence in dealing with complex theoretical principles in application. Provide clear examples of application of theory and be able to lead the discussion from the clear exposition and explanation of theory through to its application in practice.

QUALITY AND CONTINUOUS IMPROVEMENT **Core:** None **Specialisms:** RC/K1; RC/S1; RC/S2 T/K1; T/K2; T/S2 SC/K1; SC/K2; SC/S2 RS/K1; RS/S2 TRS/K1; TRS/S1 TND/K1; TND/S1 EMB/K1; EMB/K2; EMB/K3; EMB/S1	Demonstrate a critical analysis that reflects on the importance of both quality and continuous improvement techniques and processes. This must involve the ability to discuss the strengths, limitations and the positive impacts, as well as an understanding of why they are appropriate. (Identifying at least two important techniques and processes from their specialist area).	Be able to offer more than two quality and continuous improvement techniques and processes, and be able to compare and contrast them. They will be able to explain the relevance and appropriateness of each for their work areas. Demonstrate insightful contextualisation offering relevant theory, artefacts or performance that shows a commitment to quality and continuous improvement. Following critical analysis, makes judgements based on clear evidence that evaluates a range of techniques and improvements, with cognisance of new technological developments and innovation in rail and the impact on future operation of the railway.
TEAM WORKING **Core:** C/K6; B1 and B5 **Specialisms:** RC/S2 T/S2 SC/S2 RS/S1 TRS/S1 TND/S1 EMB/S1	Describes how teams can work effectively, what constitutes collaborative working and can justify why this is important in the occupation. Provides at least one well worked example showing effective team work and collaboration, explaining what enabled the team working and collaborative approach in their specialist area.	
RECRUITMENT AND RETENTION **Core:** C/K7 **Specialisms:** n/a	Outline how to attract, recruit, develop and retain people. Cover all four aspects of the criterion, by explaining the importance of each for the rail industry and pressures the industry faces.	Offers insight into at least two or more of the four areas showing critical awareness and a considered view of the issues as they relate to their area of the rail sector. The apprentice will confidently deal with challenges to their views.

CONTINUOUS PROFESSIONAL DEVELOPMENT **Core:** B7 **Specialisms:** n/a	Outline the continued professional development needed to keep current in terms of knowledge and skills within the occupation CPD.	Demonstrate a clear appreciation of the importance of CPD for the individual as a professional, and for the employer, and can discuss the potential return on investment for both. Articulate how they plan to keep their knowledge and skills up-to-date.

Vocational Competence Discussion Fail Criteria
The apprentice will be deemed as a 'fail' for the professional discussion element if the criteria / descriptors for the 'Pass' grade are not met.