

# COMPETENCE & COMMITMENT STATEMENTS



The Institution for  
Rail Infrastructure  
Engineers

Chartered Engineer (CEng)

The PWI competence and commitment criteria fully comply with UK-SPEC. The PWI require an enhanced focus on safety and candidates must demonstrate their absolute commitment to the application and continuous improvement of staff and system safety.

“A Permanent Way Engineer is one who supports and promotes the advancement of the design, construction and maintenance of railway infrastructure engineering.”

A	Use a combination of general and specialist engineering knowledge and understanding to optimise the application of existing and emerging technology in one or more Permanent Way engineering activity areas.	
A1	Maintain and extend a sound theoretical approach in enabling the introduction and exploitation of new and advancing technology.	
	This could include an ability to:	By, for example:
	<ul style="list-style-type: none"> <li>• Identify the limits of own personal knowledge and skills.</li> <li>• Strive to extend own technological capability.</li> <li>• Broaden and deepen own knowledge base through research and experimentation.</li> </ul>	<ul style="list-style-type: none"> <li>• Engaging in formal post-graduate academic study.</li> <li>• Learning and developing new engineering theories and techniques in the workplace.</li> <li>• Broadening your knowledge of Permanent Way and other railway engineering codes, standards and specifications.</li> <li>• Attending PWI and other related engineering meetings, conferences and seminars.</li> </ul>
A2	Engage in the creative and innovative development of engineering technology and continuous improvement systems.	
	This could include an ability to:	By, for example:
	<ul style="list-style-type: none"> <li>• Assess market needs and contribute to marketing strategies.</li> <li>• Identify constraints and exploit opportunities for the development and transfer of technology within own chosen field.</li> <li>• Promote new applications when appropriate.</li> <li>• Secure the necessary intellectual property rights.</li> <li>• Develop and evaluate continuous improvement systems.</li> </ul>	<ul style="list-style-type: none"> <li>• Leading/managing market research, and product and process research and development.</li> <li>• Leading the development of new engineering systems or services</li> <li>• Promoting the use of new technology to solve engineering problems or improve performance</li> <li>• Taking part in cross-disciplinary working, involving complex projects.</li> <li>• Conducting statistically sound appraisal of data.</li> <li>• Using evidence from best practice to improve effectiveness.</li> </ul>





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<b>B</b>	<b>Apply appropriate theoretical and practical methods to the analysis and solution of engineering problems in one or more Permanent Way engineering activity areas.</b>	
<b>B1</b>	<b>Identify potential projects and opportunities.</b>	
	<b>This could include an ability to:</b>	<b>By, for example:</b>
	<ul style="list-style-type: none"> <li>Establish and help develop solutions to meet users' requirements.</li> <li>Consider and implement new and emerging technologies.</li> <li>Enhance engineering practices, products, processes, systems and services.</li> <li>Use own knowledge of the employer's position to assess the viability of opportunities.</li> </ul>	<ul style="list-style-type: none"> <li>Identifying opportunities for new engineering products, processes and systems.</li> <li>Involvement in the marketing of and tendering for new engineering products, processes and systems.</li> <li>Involvement in the specification and procurement of new engineering products, processes and systems.</li> <li>Setting targets, drafting programmes and action plans.</li> <li>Scheduling activities.</li> </ul>
<b>B2</b>	<b>Conduct appropriate research, and undertake design and development of engineering solutions.</b>	
	<b>This could include an ability to:</b>	<b>By, for example:</b>
	<ul style="list-style-type: none"> <li>Identify and agree appropriate research methodologies.</li> <li>Allocate and manage resources.</li> <li>Develop the necessary tests.</li> <li>Collect, analyse and evaluate the relevant data.</li> <li>Undertake engineering design.</li> <li>Prepare, present and agree design recommendations, with appropriate analysis of risk, and taking account of costs, quality, safety, reliability, appearance, fitness for purpose, security, intellectual property constraints and opportunities, and environmental impact.</li> </ul>	<ul style="list-style-type: none"> <li>Carrying out formal theoretical research.</li> <li>Carrying out applied research on the job.</li> <li>Leading/managing value engineering and whole life costing.</li> <li>Leading design teams.</li> <li>Drafting specifications.</li> <li>Developing and testing options.</li> <li>Identifying resources and costs of options.</li> <li>Producing concept designs, and developing these into detailed designs.</li> </ul>
<b>B3</b>	<b>Manage implementation of design solutions, and evaluate their effectiveness.</b>	
	<b>This could include an ability to:</b>	<b>By, for example:</b>
	<ul style="list-style-type: none"> <li>Ensure that the application of the design results in the appropriate practical outcome.</li> <li>Implement design solutions, taking account of critical constraints, including due concern for safety and sustainability.</li> <li>Determine the criteria for evaluating the design solutions.</li> <li>Evaluate the outcome against the original specification.</li> <li>Actively learn from feedback on results to improve future design solutions and build best practice.</li> </ul>	<ul style="list-style-type: none"> <li>Preparing and presenting reports on the evaluation of the effectiveness of the designs.</li> <li>Managing engineering products, processes, services or systems improvement.</li> <li>Interpreting and analysing the performance of engineering products, processes, services or systems.</li> <li>Determining critical success factors.</li> </ul>



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<b>C</b>	<b>Provide technical and commercial leadership in one or more Permanent Way engineering activity areas.</b>	
<b>C1</b>	<b>Plan for effective project implementation.</b>	
	<b>This could include an ability to:</b>	<b>By, for example:</b>
	<ul style="list-style-type: none"> <li>Systematically review the factors affecting the project implementation including safety and sustainability considerations.</li> <li>Define a holistic and systematic approach to risk identification, assessment and management.</li> <li>Lead on preparing and agreeing implementation plans and method statements.</li> <li>Ensure that the necessary resources are secured and brief the project team.</li> <li>Negotiate the necessary contractual arrangements with other stakeholders (client, subcontractors, suppliers, etc.).</li> </ul>	<ul style="list-style-type: none"> <li>Preparing project scopes or specifications</li> <li>Leading/managing project planning activities.</li> <li>Producing and implementing procurement plans.</li> <li>Carrying out project risk assessments.</li> <li>Collaborating with key stakeholders, and negotiating agreement to the plans.</li> <li>Planning programmes and delivery of tasks.</li> <li>Identifying resources and costs.</li> <li>Negotiating and agree contracts/work orders.</li> </ul>
<b>C2</b>	<b>Plan, budget, organise, direct and control tasks, people and resources.</b>	
	<b>This could include an ability to:</b>	<b>By, for example:</b>
	<ul style="list-style-type: none"> <li>Set up appropriate management systems.</li> <li>Define quality standards, programme and budget within legal and statutory requirements.</li> <li>Organise and lead work teams, coordinating project activities.</li> <li>Ensure that variations from quality standards, programme and budgets are identified and that corrective action is taken.</li> <li>Gather and evaluate feedback and recommend improvements.</li> </ul>	<ul style="list-style-type: none"> <li>Taking responsibility for and control of project operations.</li> <li>Managing the balance between quality, cost and time.</li> <li>Managing contingency systems.</li> <li>Managing project funding, payments and recovery.</li> <li>Satisfying legal and statutory obligations.</li> <li>Leading/managing tasks within identified financial, commercial and regulatory constraints.</li> </ul>
<b>C3</b>	<b>Lead teams and develop staff to meet changing technical and managerial needs.</b>	
	<b>This could include an ability to:</b>	<b>By, for example:</b>
	<ul style="list-style-type: none"> <li>Agree objectives and work plans with teams and individuals.</li> <li>Identify team and individual needs and plan for their development.</li> <li>Reinforce team commitment to professional standards.</li> <li>Lead and support team and individual development.</li> <li>Assess team and individual performance and provide feedback.</li> </ul>	<ul style="list-style-type: none"> <li>Setting the context, assigning tasks and reviewing the performance of team members</li> <li>Carrying out/contributing to staff appraisals.</li> <li>Planning/contributing to the training and development of staff.</li> <li>Gathering evidence from colleagues of the management, assessment and feedback that you have provided.</li> <li>Carrying out/contribute to disciplinary procedures.</li> </ul>



Chartered Engineer (CEng)

<b>C4</b>	<b>Bring about continuous improvement through quality management.</b>	
	<b>This could include an ability to:</b>	<b>By, for example:</b>
	<ul style="list-style-type: none"> <li>Promote quality throughout the organisation and its customer and supplier networks.</li> <li>Develop and maintain operations to meet quality standards.</li> <li>Direct project evaluation and propose recommendations for improvement.</li> </ul>	<ul style="list-style-type: none"> <li>Identifying and applying appropriate quality standards</li> <li>Planning and implementing best practice methods of continuous improvement.</li> <li>Carrying out quality audits.</li> <li>Identifying, implementing and evaluating changes to meet quality objectives.</li> </ul>

<b>D</b>	<b>Demonstrate effective interpersonal skills.</b>	
<b>D1</b>	<b>Communicate in English with others at all levels.</b>	
	<b>This could include an ability to:</b>	<b>By, for example:</b>
	<ul style="list-style-type: none"> <li>Lead, chair, contribute to and record meetings and discussions.</li> <li>Prepare communications, documents and reports on complex matters.</li> <li>Exchange information and provide advice to technical and non-technical colleagues.</li> </ul>	<ul style="list-style-type: none"> <li>Planning, scheduling and chairing meetings</li> <li>Preparing reports, minutes of meetings, letters, programmes, drawings, specifications.</li> <li>Reviewing and providing feedback on the work of others</li> </ul>
<b>D2</b>	<b>Present and discuss proposals.</b>	
	<b>This could include an ability to:</b>	<b>By, for example:</b>
	<ul style="list-style-type: none"> <li>Prepare and deliver presentations on strategic matters.</li> <li>Lead and sustain debates with audiences.</li> <li>Feed the results back to improve the proposals.</li> <li>Raise the awareness of risk.</li> </ul>	<ul style="list-style-type: none"> <li>Preparing and delivering presentations, records of discussions and their outcomes.</li> <li>Responding to tender invitations and presenting engineering proposals</li> <li>Negotiating successful outcomes to technical, commercial or social problems.</li> </ul>
<b>D3</b>	<b>Demonstrate personal and social skills.</b>	
	<b>This could include an ability to:</b>	<b>By, for example:</b>
	<ul style="list-style-type: none"> <li>Know and manage own emotions, strengths and weaknesses.</li> <li>Be aware of the needs and concerns of others, especially where related to diversity and equality.</li> <li>Be confident and flexible in dealing with new and changing interpersonal situations.</li> <li>Identify, agree and lead work towards collective goals.</li> <li>Create, maintain and enhance productive working relationships and resolve conflicts.</li> </ul>	<ul style="list-style-type: none"> <li>Keeping records of meetings.</li> <li>Gathering evidence from colleagues of your personal and social skills.</li> <li>Compiling feedback from your performance or development reviews</li> <li>Taking responsibility for productive working relationships.</li> <li>Applying diversity and anti-discrimination legislation.</li> </ul>



Chartered Engineer (CEng)

<b>E</b>	Demonstrate a personal commitment to professional standards <b>and safety</b> recognising obligations to society, the profession and the environment.	
<b>E1</b>	Comply with relevant codes of conduct.	
	This could include an ability to:	By, for example:
	<ul style="list-style-type: none"> <li>• Comply with the rules of professional conduct of PWI and any other relevant institution.</li> <li>• Lead work within all relevant legislation and regulatory frameworks, including social and employment legislation.</li> </ul>	<ul style="list-style-type: none"> <li>• Contributing to the affairs of the PWI.</li> <li>• Working with a variety of conditions of contract.</li> <li>• Working within company codes of conduct.</li> </ul>
<b>E2</b>	Manage, apply <b>and improve</b> safe systems of work.	
	This <b>must</b> include an ability to:	By, for example:
	<ul style="list-style-type: none"> <li>• <b>Proactively improve safety at every opportunity.</b></li> <li>• Identify and take responsibility for own obligations for health, safety and welfare issues.</li> <li>• Ensure that systems satisfy health, safety and welfare requirements.</li> <li>• Develop and implement appropriate hazard identification and risk management systems and culture.</li> <li>• Manage, evaluate and improve these systems.</li> <li>• Apply a sound knowledge of health and safety legislation.</li> <li>• <b>Lead teams and develop staff to deliver continuous improvement in safety.</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Specifying safe systems of work.</b></li> <li>• <b>Putting safety first during the design, construction, operation and maintenance of equipment and assets.</b></li> <li>• <b>Sharing knowledge, findings and experiences with the supply chain and industry.</b></li> <li>• <b>Leading the industry in terms of innovating and implementing with new safety related technology.</b></li> <li>• <b>Identifying and challenging unsafe activities, assets or equipment.</b></li> <li>• Undertaking formal health and safety training.</li> <li>• Working with health and safety legislation, Railway Group and Line standards, company safety policies and best practice.</li> <li>• Carrying out safety audits.</li> <li>• Identifying and minimising hazards.</li> <li>• Assessing and controlling risks.</li> <li>• Evaluating costs and benefits of safe working.</li> <li>• Delivering strategic health and safety briefings and inductions.</li> <li>• <b>Assessing teams' performance on safety behaviours and work to improve it.</b></li> <li>• <b>Demonstrating a leadership commitment to safety, with clear expectations and success measures.</b></li> </ul>



E3	Undertake engineering activities in a way that contributes to sustainable development.	
	This could include an ability to:	By, for example:
	<ul style="list-style-type: none"> <li>Operate and act responsibly, taking account of the need to progress environmental, social and economic outcomes simultaneously.</li> <li>Use imagination, creativity and innovation to provide products and services which maintain and enhance the quality of the environment and community, and meet financial objectives.</li> <li>Understand and secure stakeholder involvement in sustainable development.</li> <li>Use resources efficiently and effectively.</li> </ul>	<ul style="list-style-type: none"> <li>Carrying out environmental risk and/or impact assessments.</li> <li>Planning and implementing best practice environmental management systems.</li> <li>Working within environmental legislation.</li> <li>Adopting sustainable practices.</li> <li>Achieving positive social, economic and environmental outcomes.</li> </ul>
E4	Carry out and record CPD necessary to maintain and enhance competence in own area of practice.	
	This could include an ability to:	By, for example:
	<ul style="list-style-type: none"> <li>Undertake reviews of own development needs.</li> <li>Plan how to meet personal and organisational objectives.</li> <li>Carry out planned (and unplanned) CPD activities.</li> <li>Maintain evidence of competence development.</li> <li>Evaluate CPD outcomes against any plans made.</li> <li>Assist others with their own CPD.</li> </ul>	<ul style="list-style-type: none"> <li>Keeping up to date with national and international railway engineering issues.</li> <li>Setting personal CPD objectives</li> <li>Maintaining CPD plans and records.</li> <li>Involvement in the affairs of the PWI.</li> <li>Evidence of your development through on-the-job learning, private study, work based and external meetings, courses, PWI and other related institutions' technical seminars and conferences.</li> </ul>
E5	Exercise responsibilities in an ethical manner.	
	This could include an ability to:	By, for example:
	<ul style="list-style-type: none"> <li>Demonstrate achievement of high ideals of professional life.</li> </ul>	<ul style="list-style-type: none"> <li>The application of accuracy and rigour.</li> <li>Demonstrable honesty and integrity.</li> <li>Showing respect for life, law and public good.</li> <li>Practicing responsible leadership: listening and informing.</li> </ul>