

# CIHT Technical Report Guidance

Version number	2026 V1.0
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Date last reviewed	May 2026
Document status	FINAL
Approved by	IRAP
Review Frequency	As required

## Introduction

Technical Report applications for CEng and IEng are assessed against the following five areas of learning, as outlined in the [Accreditation of Higher Education Programmes 4<sup>th</sup> edition](#) (AHEP)

- Science and mathematics
- Engineering analysis
- Design and innovation
- The Engineer and society
- Engineering practice

The purpose of the Technical Report is to demonstrate that you possess an equivalent level of technical knowledge and understanding of scientific and engineering principles as those who hold accredited qualifications which fulfil the Engineering Council's academic benchmark for the level of registration being sought i.e. an integrated Master's degree for CEng. **It is not necessary for you to have carried out such work yourself; but it is crucially important that you display an understanding of the development of designs and the consequent design processes.**

CEng applicants should refer to the M1- M18 learning outcomes on pages 32-37 of [AHEP](#) for further guidance. IEng applicants should refer to the B1- B18 learning outcomes on pages 27-31 of [AHEP](#).

A summary of the key differences between the 'B' and 'M' learning outcomes is provided in **Appendix 1** below.

We highly recommended watching CIHT's [Individual Route webinar](#) prior to starting an application.

## The 3 Stage Assessment

The Technical Report option allows you to demonstrate your knowledge and understanding of engineering principles. It consists of a three-stage process.

### Stage 1 – Synopsis

The synopsis is an outline of what you propose to discuss in your full Technical Report (Stage 2) and may be submitted at any time throughout the year. To help structure your synopsis to the relevant AHEP learning outcomes, you will need to complete the CEng/IEng Synopsis Evidence Forms which are available to download from our website.

The Synopsis Evidence Forms must demonstrate in no more than 1500 words how you propose to fulfil each of the AHEP learning outcomes within your full Technical Report.

You are encouraged to seek the support of a **mentor** to provide you with advice and guidance in preparation for your Technical Report application. [CIHT's Mentoring platform](#) is designed to help

members to connect with potential mentors and find a mentor who can best support you. The platform is only available to CIHT members and the first step is to [register on the CIHT Mentoring platform](#). If you are already signed into the CIHT website you will be automatically signed in, otherwise you just need to enter your CIHT member username and password. As above, applicants are also encouraged to watch our [Individual Route webinar](#) for further guidance.

### What do I need to submit?

The following documentation should be included in your Stage 1 application and sent to [education@ciht.org.uk](mailto:education@ciht.org.uk).

#### Application Form (sent as a separate PDF)

- A completed Stage 1 Technical Report application form signed off by a sponsor who is an Engineering Council registrant at the level being sought, or above. This should be sent as a separate PDF document to your main submission.

#### Main Submission (sent as one continuous PDF file)

- A copy of your initial assessment outcome e-mail
- Your completed Synopsis Evidence Forms
- A copy of your CV. This should cover your relevant academic qualifications as well as your work experience to date.
- CPD record (a minimum of 25 hours per year for **each** of the two years prior to the date of your application). Please also include any CPD undertaken for the year in which you are applying, for information purposes.

### What happens next?

Once you have submitted your Stage 1 application, the Education Team will complete an administrative check to ensure that no documentation is missing. If everything appears to be in order, you will be invited to make payment of the Stage 1 assessment fee online through your MyCIHT account. Once the payment has been processed, your application will be sent to two Individual Route assessors. Applicants are usually notified of their outcome within 4-6 weeks of the date of submission.

### Result

If your synopsis is successful, you will be invited to proceed to the submission of a full Technical Report (Stage 2). The assessors may provide you with some helpful feedback to assist you with the next stage.

If your synopsis is unsuccessful, you will be provided with feedback to explain why you are unable to proceed to Stage 2. You will then have the option of re-submitting your application once you have had an opportunity to address the feedback.

## Stage 2 – Technical Report

If your Technical Report synopsis is approved, you will have **12 months** to submit your full Technical Report which should not exceed 8,000 words. Similar to the synopsis stage, your Stage 2 Technical Report application will be structured and assessed against the AHEP requirements. For each area of AHEP, you need to provide examples of your understanding of engineering knowledge and theory, including a reflection of any lessons learned and highlighting any aspects which you would now approach differently.

### What do I need to submit?

The following documentation should be included in your Stage 2 application and sent to [education@ciht.org.uk](mailto:education@ciht.org.uk).

#### Application Form and Sponsor Authentication Form (sent as a separate PDF)

- A completed Stage 2 Technical Report application form and sponsor authentication form. Your sponsor must be an Engineering Council registrant at the level being sought or above. This should be sent as a separate PDF document to your main submission.

### **Main Submission (sent as one continuous PDF file)**

- Your completed Evidence Forms
- Appendices (maximum of 50 pages)
- Bibliography
- A copy of your CV
- An updated CPD record, demonstrating a minimum of 25 hours per year for each of the previous two years. Please also include any CPD undertaken for the year in which you are applying, for information purposes.

**Appendices:** Your report should include evidence such as reference to designs, drawings, calculations, and any other types of activity or analysis which you have undertaken. Some of this evidence might be contained in appendices and each appendix should be clearly referenced within the relevant sections of the report.

**Bibliography/References:** Design data such as guidelines and standards, as well as any other relevant documentation which is generally available, should be cited and a full bibliography provided in a reference list at the end of the report.

You should avoid simply writing about a project that you have worked on. The formation of an engineer is usually through a variety of projects and experiences and the assessors will expect to see this variety reflected in your Technical Report.

### **Top Tips**

- You should ensure that your Technical Report remains focussed on your approved synopsis and incorporates any feedback provided by your assessors.
- You should aim to write in the first person e.g. 'I decided...' and emphasise your own technical knowledge and the basis on which you made design and other decisions. Phrases such as 'we decided...' should be avoided, but where a decision was group based, you should clearly identify your contributions to the group decision.
- Any illustrative diagrams, tables, drawings, calculations and statistics should be included in an Appendix to the main report to support the development of a point. You must be able to demonstrate your understanding and interpretation of them.
- All appendices should be referenced at the appropriate place in the text within the main report. The appendices should be ordered according to the order in which they are introduced in the text. Each appendix should be clearly and separately titled (e.g. "Appendix A – highway pavement calculations"). Appendices should only include essential additional documentation which provide evidence to support an assertion you are making in the report. Submissions with an excessive bulk of appendices should be avoided and it is recommended that they should ideally consist of no more than 50 sides of A4.

### **What happens next?**

Once you have submitted your Stage 2 application, the Education Team will complete an administrative check to ensure that no documentation is missing. If everything appears to be in order, you will be invited to make payment of the Technical Report assessment fee online through your MyCIHT account. Once payment has been made, your application will be sent to two Individual Route assessors (usually the same assessors who reviewed your synopsis).

Your assessors will carry out a pre-interview assessment to determine if your Stage 2 application is of a satisfactory quality to proceed to a Technical Report interview. The Education Team may agree a provisional interview date/time with you in advance of the pre-interview assessment outcome.

### **Pre-Interview Assessment Outcome**

Following the pre-interview assessment stage, you may be invited to attend a Technical Report interview. If so, the Education Team will proceed with confirming your interview arrangements. In some cases, the assessors may provide you with some feedback to help you prepare for the interview. If the assessors consider that you should not be invited to proceed to an interview,

feedback will be provided to explain this decision. Ineligible Stage 2 candidates will be required to re-submit their Technical Report within 24 months to avoid re-commencing the process from Stage 1.

## Stage 3 – Interview

Technical Report interviews usually last for approximately one hour. At the start of the interview, you will be invited to speak about your career to date for around 5 minutes, highlighting your significant **engineering** achievements. Your interview will be a structured discussion between you and two assessors, who will expect you to demonstrate your range and depth of knowledge and understanding of engineering principles, based on your Technical Report. Please note that interviews are usually held online and you will be expected to explain technical details remotely.

### **What do I need to submit?**

You do not need to submit any further paperwork prior to your Technical Report interview (unless requested to do so by your assessors). However, you should have a copy of your Technical Report to hand to help facilitate the discussion.

### **What happens next?**

Assessment outcomes are reviewed and ratified by CIHT's Individual Route Assessor Panel. The Education Team will inform you of the date of the IRAP meeting in which your recommendation will be considered.

### **Result**

You will be notified of your Technical Report outcome within 6 weeks of your interview date. If you are successful, you will be eligible to apply for Professional Review once you have gained the required breadth and depth of practical experience to demonstrate competence to IEng/CEng level. You will also be eligible to apply for interim registration. Further information about the next steps will be provided to you by the Education Team.

Unsuccessful applicants will receive feedback to help them address the shortfalls in underpinning knowledge and understanding identified by the assessors and prepare for a Stage 2 resubmission. Unsuccessful Stage 3 candidates will be required to re-submit their Technical Report within 24 months to avoid re-commencing the process from Stage 1.

## Appendix 1

**IEng: Broadly-defined** problems involve a variety of factors which may impose conflicting constraints, but can be solved by the application of engineering science and well-proven analysis techniques.

**CEng: Complex problems** have no obvious solution and may involve wide-ranging or conflicting technical issues and/or user needs that can be addressed through creativity and the resourceful application of engineering science.

Area of learning	IEng	CEng
<b>Science and mathematics</b> The study of engineering requires a substantial grounding in engineering principles, science and mathematics commensurate with the level of study.		
Science, mathematics and engineering principles	Apply knowledge of mathematics, statistics, natural science and engineering principles to broadly-defined problems. Some of the knowledge will be informed by current developments in the subject of study.	Apply a <b>comprehensive</b> knowledge of mathematics, statistics, natural science and engineering principles to <b>the solution of complex</b> problems. <b>Much</b> of the knowledge will be <b>at the forefront of the particular subject</b> of study and informed by <b>a critical awareness of new</b> developments and the <b>wider context of engineering</b> .
<b>Engineering analysis</b> Engineering analysis involves the application of engineering concepts and tools to analyse, model and solve problems. At higher levels of study engineers will work with information that may be uncertain or incomplete.		
Problem analysis	Analyse broadly-defined problems reaching substantiated conclusions using first principles of mathematics, statistics, natural science and engineering principles.	<b>Formulate</b> and analyse <b>complex</b> problems to reach substantiated conclusions. This will involve <b>evaluating available data</b> using first principles of mathematics, statistics, natural science and engineering principles, and <b>using engineering judgement to work with information that may be uncertain or incomplete, discussing the limitations of the techniques employed.</b>
Analytical tools and techniques	Select and apply appropriate computational and analytical techniques to model broadly-defined problems, recognising the limitations of the techniques employed.	Select and apply appropriate computational and analytical techniques to model <b>complex</b> problems, <b>discussing</b> the limitations of the techniques employed.
Technical literature	Select and evaluate technical literature and other sources of information to address complex problems.	Select and <b>critically</b> evaluate technical literature and other sources of information to <b>solve</b> complex problems.
<b>Design</b> Design is the creation and development of an economically viable product, process or system to meet a defined need. It involves significant technical and intellectual challenges commensurate with the level of study.		

Design	Design solutions for complex problems that meet a combination of societal, user, business and customer needs as appropriate. This will involve consideration of applicable health and safety, diversity, inclusion, cultural, societal, environmental and commercial matters, codes of practice and industry standards.	Design solutions for complex problems that <b>evidence some originality</b> and meet a combination of societal, user, business and customer needs as appropriate. This will involve consideration of applicable health and safety, diversity, inclusion, cultural, societal, environmental and commercial matters, codes of practice and industry standards.
Integrated/systems approach	Apply an integrated or systems approach to the solution of broadly-defined problems.	Apply an integrated or systems approach to the solution of <b>complex</b> problems.
<b>The engineer and society</b> Engineering activity can have a significant societal impact and Engineers must operate in a responsible and ethical manner, recognise the importance of diversity, and help ensure that the benefits of innovation and progress are shared equitably and do not compromise the natural environment or deplete natural resources to the detriment of future generations.		
Sustainability	Evaluate the environmental and societal impact of solutions to broadly-defined problems.	Evaluate the environmental and societal impact of solutions to <b>complex</b> problems (to include the entire life-cycle of a product or process) and minimise adverse impacts.
Ethics	Identify and analyse ethical concerns and make reasoned ethical choices informed by professional codes of conduct.	Identify and analyse ethical concerns and make reasoned ethical choices informed by professional codes of conduct.
Risk	Use a risk management process to identify, evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activity.	Use a risk management process to identify, evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activity.
Security	Adopt a holistic and proportionate approach to the mitigation of security risks.	Adopt a holistic and proportionate approach to the mitigation of security risks.
Equality, diversity and inclusion	Recognise the responsibilities, benefits and importance of supporting equality, diversity and inclusion.	<b>Adopt an inclusive approach to engineering practice</b> and recognise the responsibilities, benefits and importance of supporting equality, diversity and inclusion.
<b>Engineering practice</b> The practical application of engineering concepts and tools, engineering and project management, teamwork and communication skills. Engineers also require a sound grasp of the commercial context of their work, specifically the ways an organisation creates, delivers and captures value in economic, social, cultural or other contexts.		
Practical and workshop skills	Use practical laboratory and workshop skills to investigate broadly-defined problems.	Use practical laboratory and workshop skills to investigate <b>complex</b> problems.
Materials, equipment, technologies and processes	Select and apply appropriate materials, equipment, engineering technologies and processes.	Select and apply appropriate materials, equipment, engineering technologies and processes, <b>recognising their limitations.</b>

Quality management	Recognise the need for quality management systems and continuous improvement in the context of broadly-defined problems.	Discuss the role of quality management systems and continuous improvement in the context of complex problems.
Engineering and project management	Apply knowledge of engineering management principles, commercial context, project management and relevant legal matters.	Apply knowledge of engineering management principles, commercial context, project and change management, and relevant legal matters including intellectual property rights.
Teamwork	Function effectively as an individual, and as a member or leader of a team.	Function effectively as an individual, and as a member or leader of a team. Evaluate effectiveness of own and team performance.
Communication	Communicate effectively on complex engineering matters with technical and non-technical audiences.	Communicate effectively on complex engineering matters with technical and non-technical audiences, evaluating the effectiveness of the methods used.
Lifelong learning	Plan and record self-learning and development as the foundation for lifelong learning/CPD.	Plan and record self-learning and development as the foundation for lifelong learning/CPD.