

Technical Report Route Guidance

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Introduction

The Technical Report Route (TRR) is for engineers who want to become ICE Members (MICE) at Incorporated Engineer (IEng) or Chartered Engineer (CEng) level but who do not have the academic qualifications they need to apply directly for the Incorporated Professional Review (IPR), Incorporated Infrastructure Professional Review (IIPR) which allows registration as a Member and as an Incorporated Engineer with the postnominals IEng MICE, or for the Chartered Professional Review (CPR), Chartered Infrastructure Professional Review (CIPR) which allow registration as a Member and as a Chartered Engineer with the postnominals CEng MICE. In addition, those who pass a CPR / CIPR with ICE are also awarded the title Chartered Civil Engineer / Chartered Infrastructure Engineer.

If you wish to apply to become a Member (MICE) at Technician (EngTech) level, please read our [Technician Professional Review guidance](#).

The TRR lets you use the knowledge you have gained through your professional experience to show that you have the required academic competencies and professional abilities needed for the membership level you are applying for.

The level of membership you can apply for depends on your professional experience and competence, and also on your understanding of relevant engineering principles. We suggest that you have a minimum number of years' experience, depending on the academic qualifications you have, if any, before you make a TRR application. The [table](#) in the following section provides a useful guide.

The Technical Report Route has two main stages:

- Stage 1 – Initial assessment
- Stage 2 – Professional Review which includes
 - Professional Review application (including a Technical and an Experience Report)
 - Academic Presentation and Interview (90mins) and Professional Interview (60mins)
 - A written Communication Task (60-90mins)

This document provides detailed guidance for the whole process.

If you have any queries about the application process, please contact the Professional Reviews team on +44 (0)207 665 2344 or via email trr@ice.org.uk.

If you need guidance on preparing for the TRR process, find your local contact at www.ice.org.uk/nearyou to find out how we can help or email membership@ice.org.uk or call +44 (0) 121 227 5948. If you are based in Hong Kong, please email membership@icehk.org.hk.

Membership Number or non-member account

Before you apply, you will need an ICE membership number. If you don't already have one, please create a non-member account by [registering on our website](#). This will enable you to make payments online and access information on our website tailored to your particular interests. You will find your membership or account number within the "My Profile" section in your MyICE account.

What experience do I need?

Below is an indication of the minimum years ICE anticipates that you would normally need to have worked in civil engineering to get the required underpinning knowledge. But you should note that this is only a guide – it is the experience and knowledge you have gained that's important, not the length of time you have spent in the profession.

Chartered Engineer (CEng) level	Incorporated Engineer (IEng) level
Seven years' experience plus: <ul style="list-style-type: none">▪ A BEng (Hons) degree (accredited with further learning for CEng), or▪ An engineering degree (or similar degree with sufficient technical basis of an equivalent standard), or▪ An equivalent overseas degree, or▪ An IEng-accredited degree	Five years' experience plus: <ul style="list-style-type: none">▪ An HND/HNC (accredited with further learning for IEng), or▪ An equivalent qualification
10 years' experience plus: <ul style="list-style-type: none">▪ A foundation degree or▪ HND/HNC or▪ An overseas qualification of equivalent standard	10 years' experience plus: <ul style="list-style-type: none">▪ National Diploma/National Certificate, or▪ An approved NVQ, or▪ An equivalent overseas qualification
15 years' experience plus: <ul style="list-style-type: none">▪ No appropriate qualifications	15 years' experience plus: <ul style="list-style-type: none">▪ No appropriate qualifications

Stage 1 - Initial assessment

The purpose of stage 1 is to enable ICE to assess your initial application and determine your eligibility to proceed to stage 2. You must show that your professional experience is sufficient in a CV and must supply a summary of the proposed content of your technical report (which will be submitted at Stage 2). The CV and report summary will be assessed by ICE to ensure that you have sufficient professional experience and that your proposed technical report will cover the right areas for your academic review at stage 2.

Application Content

Before submitting your stage 1 application, you must pay the stage 1 application fee [online](#) (please note that this is non-refundable). The stage 1 application should include:

- [A completed Technical Report Route Stage 1 Initial Assessment application form](#)
- Written confirmation of mentor support
- A 750-word summary of your proposed technical report
- A two-page CV
- Evidence of your academic qualifications (if applicable)

There are more details below regarding each aspect of the application which must be submitted by email to trr@ice.org.uk as a single PDF no greater than 5MB. You must ensure that the font size is appropriate e.g., Arial 11 and that the pdf is printable and can be read in black and white.

You must submit this by one of the deadlines listed on our [website](#), you will receive an automated response to confirm your application has been received. ICE will check your application for completeness and contact you to acknowledge receipt within 10 working days and, if necessary, request any missing documents. We will not be able to continue processing your application until the information has been received.

Mentor Support

To apply for the Technical Report Route, you must have a mentor to support you. They should read this guidance document and they must provide a short note for you to include in your stage 1 application to confirm that they are acting as your mentor.

They will play an important role at all stages of the process. They need to make sure your report summary and your technical report show that you have an appropriate understanding of how to apply engineering principles, and that you have demonstrated the required professional attributes in your CV and in your experience report, and that your continuing professional development (CPD) documents meet the required submission standards. Your mentor will also help you prepare

for the Academic and Professional Interviews. The TRR mentor does not need to be a member of ICE or to be formally appointed by ICE in the mentor role, but if they are an ICE member at the appropriate level, they could act as one of your [sponsors for stage 2](#).

Technical report summary

For Stage 1 you must submit a 750-word summary of your proposed technical report for approval. To be able to write this summary we recommend that you must first produce a detailed content plan or a good first draft of your technical report.

The Technical Report itself should be an ordered and critical account of your technical competencies and must give details of a technical aspect (or aspects) of civil engineering practice in which you have played a major part. It should not include examples of your professional competence – e.g. your management skills or your commercial awareness – as these will be covered in your CV at stage 1 and then at stage 2 in your experience report. The Technical Report must show how your knowledge meets the academic competencies in [Appendix A](#) and how you resolved technical problems using engineering principles such as those in [Appendix B](#), it should also cover the Understanding and Practical Application of Engineering attribute which can be found in [Appendix C](#).

The technical report summary must explain clearly in 750 words how your proposed technical report will demonstrate your knowledge, understanding and application of specific scientific and engineering principles. The summary must state how your report will show that you have achieved the required academic level, from aspects of projects you have worked on. More details on the requirements for the technical report are included in the [technical report section](#) of this guidance document.

Your TRR mentor must sign the technical report summary to show they were consulted when you were preparing it.

Two-page CV

Your CV should show your personal details, academic qualifications, if any, and describe your professional roles and responsibilities on jobs you have worked on. We are particularly interested in work you have done in the last five years.

Try to include examples of problems you have encountered, unusual or extensive experience you have gained, and lessons you have learned. You need to show in your CV that your experience will allow you to demonstrate you meet all the attributes of the grade applied for (see [Appendix C](#)).

Academic qualifications

If a non-member, or if not already provided to ICE, you need to provide certified copies of any academic qualifications you have listed. This must be a 'true copy of the original' qualification and should be certified like a passport picture by a senior member of your employing company, an ICE member, or a college tutor. If the qualifications are not in English, certified translations must be provided.

The person signing the certificate should write the following on the copy of the certificate: "I confirm this to be a true copy of this applicant's qualification"

Signature:

Print name:

Employing organisation/University/College:

Position:

Contact telephone number or email:

ICE Membership number (if applicable):

We may contact your university, college, or professional institution to verify your qualification. You give us permission to do so by signing your initial assessment application.

Result of Stage 1 - Initial Assessment

We will email you within 6 weeks of receipt of your documents, to tell you if you can proceed to stage 2 or to request more information. This might include a request to submit extra technical and professional information, or we may need to discuss something with your TRR mentor, before you can proceed. If the result is that you are not immediately approved to proceed to stage 2 you will be told what to do next.

After your initial assessment is approved, you have one year to from the date of your letter to send us your stage 2 application. Refer to the professional review dates and application deadlines on the [ICE website](#). If you do not apply within the year, you will need to start the stage 1 application process again.



Stage 2 – Academic and Professional Review

As mentioned previously, Stage 2 includes the following:

- an application
- the Academic and the Professional Review
- the written Communication Task

Details of the requirements for the stage 2 application and of the review day are provided in the following sections.

Your application

Applying for your Professional Review

Professional Review dates, sponsors and application deadlines can be found [here](#), you can also see when Professional Review sessions are being offered online or in-person. You will be able to indicate your preference when you complete your application.

If you are applying as an infrastructure engineer, please note that we will do our best to match you to your preferred session, but the lead times for matching you to reviewers could be longer depending on your particular engineering discipline.

In-person Professional Reviews

ICE runs both online and in-person reviews: online offers greater flexibility and supports carbon savings, while in-person reviews are part of reviewer training and development and are vital to the integrity of the reviews programme.

You will be able to indicate your preference when applying, but we may need to allocate you to the other interview format depending on the reviewers you are matched with.

We recognise some candidates will have specific individual requirements and we will of course do our best to meet any such needs. Please see [Appendix D](#) on individual requirements if the latter applies.

Please note that, as part of ICE's commitment to minimising its carbon footprint, our default position is that we will not accept requests from candidates who need to fly to attend an in-person review session.

Making your submission

If you are a **civil engineering candidate**, please submit your application through the [Professional Reviews upload portal](#).

You must confirm your sponsors have submitted their statement of support and that all items on are included in your application before you upload it.

After your application is submitted, you will receive an automated response on screen confirming your application was uploaded.

If you experience issues with the portal, please call us on +44 (0) 207 665 2344 or email professional.reviews@ice.org.uk.

If you are an **infrastructure engineering candidate**, please send your application via email to infrastructure@ice.org.uk. If you have any questions, please call us on + (44) 207 665 2344 or email professional.reviews@ice.org.uk

ICE will check your application for completeness and contact you to acknowledge receipt within 10 working days and, if necessary, request any missing documents, you will have 48hrs to provide the missing information. We will not be able to continue processing your application until the information has been received. To avoid delays, please ensure that all of the items on the application checklist are included with your application.

You will be given approximately 4 weeks' notice of your review date and time in a review notification letter which will also include the names of your reviewers the letter will also include the timing of your Communication Task. Under no circumstances should you contact your reviewers directly.

A pre-assessment of your reports will also then be undertaken by your reviewers. If they agree one or both of your reports are not of a satisfactory standard, your review will be deferred and details of why it is not satisfactory and what you must do next will be provided by the Professional Reviews team. Once you have addressed the reviewer's comments, your review will be rearranged.

Full details of the online review process can be found in our [online review guidance](#).

Conflict of interest

Your reviewers should not be connected to either you or your employer. If you know one of your reviewers or feel there may be a conflict of interest, you should let us know immediately on +44 (0) 207 665 2344 or at professional.reviews@ice.org.uk

Your reviewers will also have been given the opportunity to identify any conflicts prior to you being notified of who they are.

Admission Procedure

After your application is acknowledged [your name](#) will be published on the ICE website for a minimum of 28 days in accordance with [Admission Procedure 3](#).

Sponsors

You must select two sponsors to support your application and confirm your suitability for membership.

Your sponsors must meet certain requirements, so it's important that you also read the guidance in the statement of support as it provides details on who is eligible to be a sponsor and what they are required to do. You will then need to ask those you have selected to complete a [statement of support](#) and upload it to the [sponsors portal](#) by the appropriate [deadline](#) and before you submit your stage 2 application. You must ensure your sponsors' uploads have been completed before you apply.

You will need to select one sponsor to be your lead sponsor. This person has additional responsibilities and plays a particularly important role in the success of your application.

Your lead sponsor

- Must be an ICE Member or Fellow and registered with the Engineering Council at the same grade or higher than the one you are applying for
- Has a duty to act as your mentor during the Professional Review application process
- Should be familiar with the current ICE Professional Review process and the standards you are required to meet

Your lead sponsor should, for example, provide constructive criticism of your report, provide advice on the presentation, and arrange practice interviews.

Your second sponsor must be professionally qualified at the same grade or higher than the one you are applying for with one of the organisations listed in the table on the [statement of support](#).

Your mentor could be one of your sponsors if they are appropriately professionally qualified.

Application Content

Before uploading your application, you must pay the stage 2 application fee online (please note that this is non-refundable). The application should include:

- A completed [Stage 2 Technical Report Route](#) application form
- A technical report (up to 10,000 words)
- An experience report (up to 2000 words)
- CPD records – development action plan (DAP) and personal development record (PDR)
- Evidence of any individual requirements - if applicable

The application must be a single PDF no greater than 15MB in size. Where possible, you should convert individual documents to PDF electronically, rather than scanning them and you must ensure that the font size is appropriate e.g. Arial 11 and that the PDF is printable and can be read in black and white. More details on the content of the stage 2 application follow.

Stage 2 Application form

You should complete all sections of the application form, which also includes a section for information on any individual requirements and unspent convictions.

Engineering expertise employment types

You must select only one from the list of technical expertise and one from the list employment types on the application form, this helps ICE with the selection of your reviewers.

Infrastructure engineering description

If applying as an Infrastructure Engineer, you must also select one from the list of engineering descriptions. You should also provide a brief summary of your report, this helps ICE with the selection of your reviewers.

Individual Requirements

If there are individual requirements that you would like taken into account at your Professional Review you must state these when you apply– for example, if you have a hearing impairment or if there are commercial or security restrictions on what you can discuss about a particular project you've worked on. You can find out more in [Appendix D](#).

If you wish to speak to a member of staff in confidence regarding your requirements, please email professional.reviews@ice.org.uk and we will arrange a time to speak to you.

Unspent convictions

No person with an unspent conviction relating to a serious criminal offence¹ will be admitted to any grade of membership unless there are special circumstances that show beyond reasonable doubt that the person is a fit and proper person to be admitted to membership of the Institution.

If you have an unspent conviction relating to a serious criminal offence, please complete the criminal convictions form which must also be signed by your sponsors, and submitted with your application, a member of staff will contact you directly and in confidence.

Your technical, experience report and appendices

You should include cover pages for your reports which have the following:

- A title e.g. Technical Report for IEng MICE March 2021; Experience Report for IEng MICE March 2021; Technical Report for CEng MICE, May 2021, Experience Report for CEng MICE, May 2021
- A recent photo of you
- Your name, signature, and membership number
- The lead sponsor's name, signature, and membership number

The technical report

Your technical report should be an ordered and critical account of your technical competencies, as set out in your report synopsis. Your report should not exceed 10,000 words (body text only), although 5,000 words is normally sufficient for applicants to set out the key aspects of their technical competence.

Your technical report must give details of a technical aspect (or aspects) of civil engineering practice in which you have played a major part. It must show how you resolved technical problems.

Using engineering principles such as those in [Appendix B](#), and how your knowledge meets the academic competencies in [Appendix A](#).

The technical report is deemed to cover the Understanding and Practical Application of Engineering attributes which can be found in [Appendix C](#). It should not include examples of your professional competence – for example, management skills and commercial awareness – as this will be covered in your experience report.

You should include the successes and failures in relation to the application of engineering principles, and the lessons you learned. If appropriate, appendices can be used for supporting details.

¹ "Serious Criminal Offence" means an offence involving dishonesty or deception or any offence punishable by a Court of competent jurisdiction by a term of imprisonment of 12 months or more (whether or not any custodial sentence is in fact imposed).

Your appendices should include no more than 3 sides of A3 and 12 sides of A4.

- You should
 - Include hyperlinks to link the appendices with the relevant text in the main body of the report (and back), they should not link to documents outside of your application
 - Use colour where necessary – for example, images and drawings

It's up to you and your TRR mentor to structure the report to suit your experience. It should have a professional layout with table of contents and of appendices, and could include items like tables of figures, lists of abbreviations etc which are not included in the word count. Hyperlinks should be used to link between the report sections, but not to items outside the application itself.

The experience report

Your experience report should demonstrate your professional competence – i.e. attributes 2 to 7. You can find the attributes in [Appendix C](#). Your experience report should be no more than 2000 (body text only) words. Brief appendices may be used to illustrate the attributes 2 - 7.

Your appendices should include no more than 3 sides of A3 and 12 sides of A4.

- You should
 - Include hyperlinks to link the appendices with the relevant text in the main body of the report (and back), they should not link to documents outside of your application
 - Use colour where necessary – for example, images and drawings

Continuing professional development (CPD) records

You are required to demonstrate you are maintaining your competence in line with ICE's [CPD Guidance](#). ICE expects to see at least 30 hours effective learning recorded per year. If you do not have this, you must provide a very robust explanation in your submission, and be able if asked by your reviewers, to show how you have maintained your competence. You must submit CPD documents as follows.

- A development action plan (DAP) which details your objectives for the next 12 months.
- Your personal development record (PDR) going back a minimum of 3 years from the application date. Note that this must include current formal training related to health safety and welfare (health, safety, and welfare attribute in [Appendix C](#))

CPD records are not included within the above appendices page limits or the report word count.

For more information on how best to plan and record your CPD, please read our [CPD guidance](#).

Deferring your Professional Review

You may request the deferral of your Professional Review at any time after submitting your application. For the full procedure and conditions which apply to deferring your Professional Review, please see [Appendix E](#).

The Technical Report Route Review Day

Your academic and professional competence will be assessed by two senior reviewers. The Review Day has three main parts:

- An [Academic Presentation and Interview](#) with your reviewers (up to 90mins)
- A [Professional Interview](#) with your reviewers (up to 60 mins)
- A [written communications](#) task invigilated by ICE staff (60-90mins)

Unless you have opted to wait for a physical venue, your review will be held online via MS Teams. For more details see our [online review guidance](#). To be successful both reviewers must be satisfied on the day, that you have met the academic competencies and all the member attributes at the required level. You must pass the Academic Interview before proceeding to the Professional Interview, note that there may be an observer at your review, and you will be notified on the day that this is the case. They will not participate in your review.

Academic Interview

The Academic Interview lasts around 90 minutes. The aim of the Academic Interview is to find out whether your experience has given you the same level of academic competence in your technical area as someone with the required educational base.

First, you must give a presentation of up to 30 minutes, based on your technical report. Your presentation should expand on aspects of your report, rather than simply repeat information in it. You are encouraged to use visual aids to illustrate your presentation. You will be able to present these onscreen via MS Teams as per the online review guidance. If your review is held in a physical venue, you will deliver your presentation seated across the table with visual aids no larger than A3 and you are permitted to use a laptop computer but note that an external power supply will not be provided.

If you take longer than 30 minutes your reviewers may stop you so that the interview can proceed. Your reviewers will then ask you a series of questions about the information in your technical report. The interview will last around 60 minutes.

After your Academic Interview, your reviewers will adjourn for up to 30 minutes to determine whether you have satisfied the educational base for the grade of membership and level of

Engineering Council registration you have applied for. If your review is online, you should re-join the review at the time given in your review notification letter, if you are attending the review in person you will be called back into the interview room and your reviewers will tell you whether or not you have been successful at the academic interview. If you have been successful, you will continue on to the Professional Interview.

If you have been unsuccessful, your reviewers will provide you with feedback and the process will end, we will also provide formal written notification of their reasons no later than 6 weeks after your review.

Professional Interview

The Professional Interview lasts around 60 minutes and is based on your experience report. A further presentation is not required. This interview is your opportunity to show in discussion with your reviewers that you have the professional competence and attributes required for the grade of membership you have applied for (see [Appendix C](#)). If you are already a member at Incorporated Engineer (IEng) level, you will only be assessed against the attributes at Chartered (CEng) level.

You need to be aware that engineering activity can have impacts on the environment, commerce, society, and individuals. You therefore need the skills to manage your activities and to be aware of the various legal and ethical constraints under which you are expected to operate.

Due to the subject matter of your application, there may be a requirement for a third reviewer to be present at the review to provide specialist knowledge

All mobile devices must be switched off prior to the start of the interview. The recording of the interview is prohibited.

Communication Task

You will be set a written Communication Task by your reviewers. This will generally take place after your interview, and you will be informed of the timing of this in your notification letter. The Communication Task will be based on current issues within the industry and you will be expected to respond as an engaged civil engineer, not a technical expert.

The aim of the Communication Task varies slightly:

- At IPR/IIPR, the objective is to ascertain that you can produce straightforward documents without assistance from others, and you have the ability to report factual information clearly, you will have 60 minutes to complete the task. You will be set two question and you will

have to answer one, you will have to produce your response as a technical memo or technical note etc.

- At CPR/CIPR and CPRP/CIPRP, the aim is to test your ability to take a piece of information, digest it, organise your thoughts and present them logically and clearly, you will have 90 minutes to complete the task. You will be set two scenarios, and you will have to choose one to respond to, you will also be given a style in which to provide your response, e.g. a blog post, a letter to a government office/local residents group, a news article etc.

You will be given instruction on the day on how to upload your response as a PDF or word.doc to a secure site, the upload must be completed within 15 minutes of the end time of your Communication Task. There will be an ICE staff invigilator present in case of any technical issues. If you opted for an online review and chose to do a handwritten response, you will need to have facilities ready to quickly scan this for upload. If attending a venue, ICE staff will be available to give instructions.

Further details can be found in the [Communication Task guidance](#).

Organised discussion groups can help develop your writing skills and encourage debates between engineers. Your Regional Support Team, Membership Recruitment Team or regional representative can give you more information about discussion groups.

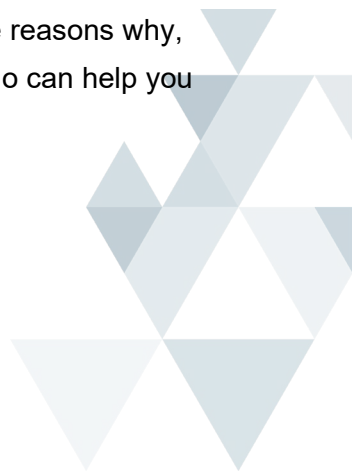
Find your local contact at www.ice.org.uk/nearyou or please email membership@ice.org.uk or call +44 (0) 121 227 5948. If you are based in Hong Kong, please email membershiphk@ice.org.hk.

Results

We will let you know your result by email no later than 6 weeks after your review. The reviewers must be satisfied that you have demonstrated competence for all attributes at both the academic and professional interview to be successful. Providing you select the tick-box on the application form, your name, if successful, will be published on [ICE's website](#) five days after the result has been issued and will subsequently appear on the 'New Civil Engineer' website.

If you are unsuccessful you will be provided with the reviewers' comments as to the reasons why, and this will help you to discuss your result with your lead sponsor and ICE staff who can help you prepare for a future review.

Appeals



Candidates have the right to appeal where they feel there was an error in the review process, or in cases of unforeseen events. Appeals must be received within two months of the date stated on your result letter. Appeals after this date will not be considered.

If you plan to appeal, we recommend that you read our [appeals guidance](#) and contact your Membership Team as listed below:

- Please email membership@ice.org.uk or call +44 (0) 121 227 5948
- If you are based in Hong Kong, please email membership@icehk.org.hk

Re-sitting

If you are unsuccessful at the Academic Interview you will need to undertake the whole Review process again. You should therefore prepare in the same way you did for your original Review starting from Stage 2 unless you are changing the content of your Technical Report, in which case you will need to start from Stage 1.

If you were successful at the Academic Interview but unsuccessful at the Professional Interview you will need to follow the process from Stage 2. There will be no Academic Interview, just a Professional Interview and a Communication Task.

No information regarding a previous application will be made available to your Reviewers.



Appendix A - Academic competencies to be demonstrated at Review

Incorporated engineer (IEng)

1. Science and mathematics:

Demonstrate a knowledge of the mathematics & science behind the engineering principles underpinning civil engineering.

Select and apply appropriate computational and analytical techniques to solve broadly-defined problems using current technologies to develop solutions that can be substantiated taking into account the limitations of the techniques

2. Engineering Analysis

Apply knowledge of the mathematical, scientific and engineering principles in the systematic approach to analysing, modelling and designing solutions to broadly-defined problems².

Select and evaluate technical literature as well as using first principles, workshop skills and computer aided tools identifying the limitations of both the data and the techniques employed.

3. Engineering practice

Demonstrate a knowledge and understanding of relevant materials, processes and products recognising their limitations. Select and apply information from technical literature, appropriate international and national standards, codes of practice and industry standards to substantiate solutions to civil engineering problems.

² Addressing “broadly-defined problems” will involve consideration of applicable health & safety, diversity, inclusion, cultural, societal, environmental, and commercial matters, codes of practice and industry standards, and the mitigation of security risks.

Additional competencies required for Chartered Engineer (CEng) level

1. Science and mathematics

Demonstrate a comprehensive knowledge and understanding of the mathematics, science and engineering principles underpinning civil engineering.

Select and apply appropriate computational and analytical techniques to solve complex problems using existing as well as knowledge of new developments to achieve solutions that can be substantiated taking into account uncertain or incomplete information.

2. Engineering Analysis

Apply comprehensive knowledge of the mathematical, scientific, and engineering principles in the systematic approach to defining problems, identifying constraints, and designing solutions to complex problems³ that evidence some innovation.

Be able to critically evaluate technical papers, laboratory data, research, or other literature applicable to the solution of complex problems.

3. Engineering practice

Demonstrate a knowledge and understanding of the practical application of relevant materials, processes and products recognising their limitations. Select and apply information from technical literature, appropriate international and national standards, codes of practice and industry standards to substantiate solutions to civil engineering problems.

³ Addressing “complex problems” will involve consideration of applicable health & safety, diversity, inclusion, cultural, societal, environmental and commercial matters, codes of practice and industry standards, and the mitigation of security risks.

Appendix B - Examples of engineering principles

When producing the technical report and its summary, you must identify engineering principles involved in your specific field of work and demonstrate how they were used to solve problems.

Here are some examples:

1. General

- Loading and the use of partial safety factors to find service and ultimate design loads
- Forces and equilibrium
- Establishment of compression, shear, bending, torsion, buckling and deflection in members
- Stress and strain and use of partial safety factors to find design strengths etc.

2. Geotechnics

- Establishment of soil shear strengths, settlement, active/passive pressures, or pore water pressure
- Stability of slopes and embankments
- Pressures developed in soil masses under different types of foundation
- Principle of flotation of structures and seepage under structures etc.

3. Foundations

- Calculation of pressure distribution beneath foundations, transmission of pile loads to strata and effect of pile interaction
- Stability of excavations, de-watering, and performance of cofferdams etc.

4. Reinforced and pre-stressed concrete

- Design principles and modes of failure of beams and slabs
- Rigid frame structure concept and transmission of horizontal forces to foundations
- Alternative use of shear walls or bracing
- Stability and design to prevent progressive collapse
- Causes and estimation of loss of pre-stress
- The principles used to design cantilevered retaining walls etc.

5. Steel structures

- Design principles and modes of failure of beams and columns
- The principles of rigid frame and simple frame construction and transmission of horizontal forces to the foundations through frame action or bracing
- Plastic hinge formation in portals
- Composite action between beams and slabs
- Performance and use of bolted or welded joints etc.



6. Hydraulics

- Fluid pressures on surfaces, buoyancy
- Flow through pipes and channels, friction, headlosses, turbulence, siltation
- Flow over weirs
- Design of pipe networks
- Application of SUDS etc.

7. Transportation

- Principles of transportation modelling – for priority junctions, roundabouts, signalled junctions
- Algorithms used to develop network models – trip generation modal split, distribution, assignment, microsimulation
- The basics of junction and highway design, road-safety analysis, signal control

8. Highways

- The principles of pavement design, from CBR to road surface friction course
- Highway and junction design: vertical and horizontal curvature, super-elevation, drainage, sight distances, safety features of highways and highway design

9. Construction

- Criteria for plant and equipment selection
- Pressures on formwork, scaffold, and temporary works design principles
- Engineering principles involved in design of temporary works such as foundations and roads
- Concrete mix design and quality control processes
- Soil testing etc.



Appendix C – IEng/CEng MICE attributes

This appendix presents the Institution of Civil Engineers' standards of professional competence and commitment for civil engineers who wish to register as Incorporated Engineers (IEng) or Chartered Engineers (CEng).

Introduction

ICE's purpose has always been, and remains, to improve lives by ensuring the world has the engineering capacity and infrastructure systems it needs to allow our planet and those who live on it, to thrive.

ICE's standards of professional competence and commitment (the 'Attributes') enable our professionally qualified members to act on that purpose: addressing the needs of both society and business, deploying the most appropriate engineering methods and technologies, solving complex challenges, enhancing welfare, health and safety, and working with the environment. Going further, ICE recognises the extraordinary challenge of the **Climate Emergency** as a very necessary central cultural feature in the development and work of civil engineers; and uses the **United Nations' Sustainable Development Goals (UNSDGs)** as a framework for addressing that extraordinary challenge. Therefore, it is essential for ICE members to understand how the work they do can have a positive (and sometimes negative) impact on delivering the goals. Members should consider their impact on the UNSDGs throughout the entire project lifecycle and ensure that it is a fundamental factor in all decision making.

The sections below present the ICE Attributes for those sitting an Incorporated Professional Review (IPR) / Incorporated Infrastructure Professional Review (IIPR), a Chartered Professional Review Progressive (CPRP) / Chartered Infrastructure Professional Review Progressive (CIPRP)⁴, or a Chartered Professional Review (CPR) / Chartered Infrastructure Professional Review (CIPR). In each case they are presented in seven areas of professional competence and commitment, contextualising Engineering Council's Standard for Professional Engineering Competence and Commitment (UK-SPEC), and covering:

- Understanding and Practical Application of Engineering
- Management and Leadership
- Commercial Ability
- Health, Safety and Welfare
- Sustainable Development
- Interpersonal Skills and Communication
- Professional Commitment

⁴ i.e. for those who are already IEng MICE and seeking registration as a Chartered Civil / Infrastructure Engineer



A professional engineer will be able to demonstrate their competence in all of the areas listed, but the depth and extent of their experience and competence will vary with the nature and requirements of their role.⁵

Incorporated Professional Review (IPR) / Incorporated Infrastructure Professional Review (IIPR)

Understanding and Practical Application of Engineering

- Maintain and extend knowledge of engineering theory and practice, and how technology assists its application
- Solve engineering problems using a sound theoretical approach, based on evidence, and contribute to continuous improvement
- Identify, review, and select techniques, procedures and methods to undertake engineering tasks
- Contribute to the design and development of engineering solutions, implement those solutions, and evaluate their effectiveness in the context of the whole project life cycle
- Exercise sound independent engineering judgement

Management and Leadership

- Plan the work and resources needed to enable effective implementation of engineering tasks and projects
- Manage the planning and organisation of tasks and resources
- Manage teams or technical specialisms
- Assist others to meet changing technical and managerial needs
- Manage quality processes and contribute to quality improvements

Commercial Ability

- Manage, prepare, and control costs/budgets of engineering tasks or projects
- Use sound knowledge of statutory and commercial frameworks within their own area of responsibility and have an appreciation of other commercial arrangements

Health, Safety and Welfare

- Demonstrate a sound knowledge of legislation, hazards and safe systems of work
- Manage risks
- Manage health, safety and welfare within their own area of responsibility
- Contribute to improvements in health, safety, and welfare

Sustainable Development

- Understand the principles of sustainable development and apply them in work

⁵ As a prospective professional civil engineer, you must have a sound knowledge and understanding of the construction process together with the activities connected to it. You must have an appreciation of, and be able to identify and manage, risks to all those engaged and affected by the design, construction, operation, use, maintenance, and demolition of any works. For those whose experience includes the construction process, site experience will ordinarily be required

- Manage engineering activities that contribute to sustainable development and the United Nations Sustainable Development Goals (UNSDGs)

Interpersonal Skills and Communication

- Communicate well with others at all levels including effective use of English orally and in writing⁶.
- Discuss ideas and plans competently and with confidence.
- Demonstrate effective personal and social skills.
- Demonstrate awareness of diversity and inclusion.

Professional Commitment

- Understand and comply with the ICE Code of Conduct
- Understand the ethical issues that may arise in their role and carry out their responsibilities in an ethical manner
- Plan, carry out and record Continuing Professional Development necessary to maintain and enhance competence in their own area of practice
- Identify the limits of their personal knowledge and skills
- Engage with ICE activities

Chartered Professional Review Progressive (CPRP) / Chartered Infrastructure Professional Review Progressive (CIPRP)

Understanding and Practical Application of Engineering

- Engage in the creation and/or introduction of new, advancing or improved techniques and technology
- Take an active role in the identification and definition of requirements, challenges, risks, and opportunities and undertake appropriate investigation and action
- Undertake the design, development and implementation of engineering solutions and evaluate their effectiveness in the context of the whole project life cycle

Management and Leadership

- Manage (organise, direct and control), programme or schedule, tasks and resources
- Lead or influence teams / technical specialisms, understanding the limits of their skills and knowledge
- Develop others to meet changing technical and managerial needs
- Demonstrate continuous quality improvement and promote best practice

Commercial Ability

- Manage, prepare and control costs/budgets of a significant engineering task or project

⁶ This will be demonstrated by your submitted report and completion of a written communications test as part of the Professional Review

- Demonstrate sound judgement on statutory, contractual and commercial issues in relation to own area of responsibility

Health, Safety and Welfare

- Demonstrate leadership by promoting good practice and improvements in health, safety, and welfare

Sustainable Development

- Take a professional and responsible role in improvements that support sustainable development and reduce resource demand, set in the context of a whole project life cycle

Interpersonal Skills and Communication⁷

- Communicate new concepts and ideas to technical and non-technical stakeholders
- Proactively manage diversity and inclusion

Professional Commitment

- Exercise sound holistic independent judgement and accept responsibility

⁷ Please note: All assessments and reviews for Engineering Council registration will be conducted in English, subject to the provisions of the Welsh Language Act 1993. This will also be demonstrated by your submitted report and completion of a written communications test as part of the Professional Review.

Chartered Professional Review (CPR) / Chartered Infrastructure Professional Review (CIPR)

Understanding and Practical Application of Engineering

- Maintain and extend knowledge of engineering theory and practice, and how technology assists its application.
- Solve engineering problems using a sound theoretical approach, based on evidence, and contribute to continuous improvement.
And engage in the creation and/or introduction of new, advancing or improved techniques and technology
- Identify, review and select techniques, procedures and methods to undertake engineering tasks.
And take an active role in the identification and definition of requirements, challenges, risks, and opportunities and undertake appropriate investigation and action
- Contribute to the design and development of engineering solutions, implement those solutions, and evaluate their effectiveness in the context of the whole project life cycle.
And undertake the design, development and implementation of engineering solutions and evaluate their effectiveness in the context of the whole project life cycle.
- Exercise sound independent engineering judgement

Management and Leadership

- Plan the work and resources needed to enable effective implementation of engineering tasks and projects.
And manage (organise, direct and control), programme or schedule, tasks and resources
- Manage the planning and organisation of tasks and resources.
And lead or influence teams / technical specialisms, understanding the limits of their skills and knowledge.
- Manage teams or technical specialisms
And develop others to meet changing technical and managerial needs.
- Assist others to meet changing technical and managerial needs
And demonstrate continuous quality improvement and promote best practice.
- Manage quality processes and contribute to quality improvements.





Commercial Ability

- Manage, prepare and control costs/budgets of engineering tasks or projects.
- Use sound knowledge of statutory and commercial frameworks within their own area of responsibility and have an appreciation of other commercial arrangements.

And manage, prepare and control costs/budgets of a significant engineering task or project.

And demonstrate sound judgement on statutory, contractual and commercial issues in relation to own area of responsibility.

Health, Safety and Welfare

- Demonstrate a sound knowledge of legislation, hazards and safe systems of work
- Manage risks.
- Manage health, safety and welfare within their own area of responsibility.
- Contribute to improvements in health, safety and welfare.

And demonstrate leadership by promoting good practice and improvements in health, safety and welfare.

Sustainable Development

- Understand the principles of sustainable development and apply them in work.
- Manage engineering activities that contribute to sustainable development and the United Nations Sustainable Development Goals (UNSDGs).

And take a professional and responsible role in improvements that support sustainable development and reduce resource demand, set in the context of a whole project life cycle.

Interpersonal Skills and Communication

- Communicate well with others at all levels including effective use of English⁸, orally and in writing⁹.
- Discuss ideas and plans competently and with confidence.
- Demonstrate effective personal and social skills.
- Demonstrate awareness of diversity and inclusion.

And communicate new concepts and ideas to technical and non-technical stakeholders.

And proactively manage diversity and inclusion.

⁸ Please note: All assessments and reviews for Engineering Council registration will be conducted in English, subject to the provisions of the Welsh Language Act 1993.

⁹ This will be demonstrated by your submitted report and completion of a written communications test as part of the Professional Review

Professional Commitment

- Understand and comply with the ICE Code of Conduct.
- Understand the ethical issues that may arise in their role and carry out their responsibilities in an ethical manner.
- Plan, carry out and record Continuing Professional Development necessary to maintain and enhance competence in their own area of practice.
- Identify the limits of their personal knowledge and skills.
- Engage with ICE activities.

And exercise sound holistic independent judgement and accept responsibility.



Appendix D - Individual requirements

ICE is committed to making reasonable adjustments to our Professional Review process to accommodate specific individual requirements.

Individual requirements may include disabilities, specific learning difficulties (such as dyslexia), temporary conditions, and security clearance, or you are unable to attend your Professional Review on a certain date or time, or to travel to an in-person review.

Each application will be considered on a case-by-case basis in light of the applicant's needs. However, you need to tell us about your requirements in your application form. We will also need to see any evidence, e.g., certified documents or statements, which should be submitted at time of making your application.

Disability or sensory impairment

In line with the Equality Act 2010, we will make whatever 'reasonable adjustments' are required for candidates with a disability, such as dyslexia, speech impairment or sensory loss, for example. Our Equality and Diversity Policy ensures everyone receives the same opportunities during the Professional Review process.

Listed below are some examples of reasonable adjustments made

- Giving extra time at the different elements of the Professional Review (up to 25%)
- Providing a scribe
- Providing a private room if sitting an in-person Professional Review

However, this is just an example and ICE staff will contact you and discuss your own individual requirements prior to your Professional Review day, adjustment will:

- Not give the candidate an unfair advantage
- Reflect the candidate's normal way of working and
- Be based on the individual needs of the candidate

You can speak to a member of staff in confidence regarding your requirements, please email professional.reviews@ice.org.uk and we will arrange a time to speak to you.

In-person Professional Reviews

We recognise some candidates will have either a preference or a specific requirement for an in-person review. Therefore, we schedule a fixed number of reviews in different locations throughout the year and will seek to meet candidates' preferences, subject to venue and reviewer availability.

Please note that, as part of ICE's commitment to minimising its carbon footprint, our default position is that we will not accept requests from candidates who need to fly to attend an in-person review session.

Security-mindedness and security clearance

You should consider whether information in your review application should be omitted or reduced in its level of detail due to security reasons. However, there's no reason why this should detract from the quality of your report.

If your application is affected by security issues, you should consider the following suggestions:

- Make your report non-site specific – for example don't state that the facility was e.g. the Sellafield site or on the Hinkley site or that the asset serves a critical function to the site or country, or is or was vulnerable to various threats
- Don't state building numbers or names – it's sufficient to say e.g. 'nuclear facility' or 'nuclear store'
- Remove site and building names from drawings or snapshots of models
- Don't include photographs or other images which reveal the location of buildings and facilities
- Avoid stating, or showing in drawings or extracts from models, technical details (such as wall thickness) which may reveal security-sensitive information

If you work on a security-sensitive project, we recommend that your organisation's information security manager (and also the asset owner's/client's) reads your Professional Review application and approves the content before submitting.

Familiarise yourself with the Engineering Council's [guidance note](#) on Security (published May 2016).

You should also let us know if you believe your reviewers need security clearance.

Use of laptop computers

If you are completing your Professional Review and Communication Task online then you can use your own laptop or computer to do so. You will need a stable internet connection capable of running the video call using MS Teams.

If your Professional Review is in-person then you need to bring your own laptop computer to complete the Communication Task, unless advised otherwise by ICE.

We won't be able to help if you experience technical problems with your own equipment. If there's a problem, speak to the ICE staff member present if in person; or if online contact your assigned ICE staff member immediately. Depending on the severity of the technical problems you'll be

given extra time to complete the Communication Task. In exceptional circumstances, you can submit work that has been partly hand-written and partly done on computer.

You will only be allowed to refer to 2 sides of A4 (hard copy) as reference material, you will not be allowed to use any other reference material or access any other information. Copy and pasting from your reference material is not permitted, it is to be used to refer to only. The font size should be what is used in your working day and should be easily readable if printed.

The use of the internet, artificial intelligent (AI) software tools, search engines, contacting another person or accessing other devices, on your computer or any mobile devices is not permitted during the Professional Review and Communication Task, except to access the MS Teams meetings, the login email from ICE, and the Communication Task page required to carry out the Communication Task.

If your Reviewers or invigilator notice that you are using unauthorised materials, they will ask you to stop and a note will be recorded.

Plagiarism

Plagiarism is presenting the work of others as your own. This means using words or ideas, for example, without the permission of the original author or authors, and without acknowledgement of the original author. Plagiarism should be avoided in all elements of your Professional Review, including your reports, drawings, presentation and the written Communication Task.

Plagiarism is taken seriously by the ICE and samples of academic and experience reports and written Communication Task responses will be selected from each Review and put through the plagiarism detection software.

Should the invigilator have concerns with your behaviour during the Communication Task or if your reviewers raise concerns with the content of your written Communication Task your response will automatically be put through the plagiarism detection software. If this shows significant levels of similarity with any unattributed sources you will be contacted by the ICE and asked to provide an explanation. Your reviewers will be provided with a copy of the plagiarism report and your response. Your reviewers may use this information in the assessment of your written Communication Task or other attributes.

Here are some guidelines to help avoid plagiarism:

- Don't cut and paste material from others
- Where you have directly quoted others, or the work of others, attribute the source fully and, where appropriate, use quotation marks. As a rule of thumb, material derived from others should be considered a quote, unless it's assumed to be common knowledge – for example, standard equations that are in the public domain

Use of outside sources of information

If your Reviewers have concerns that you are obtaining responses to questions by other means (such as artificial intelligent (AI) software tools, search engines, contacting another person or accessing other devices), or are recording the Review, they will make their concerns known to you and these will be reported back to ICE.

Collusion

In the context of the Professional Review, collusion is any agreement to conceal someone else's contribution to your piece of work. The guidance above equally applies to avoiding collusion.

Plagiarism and collusion may lead to a ban on applying for membership or, for existing members, permanent expulsion as an ICE member.

If an allegation of plagiarism or collusion is made relating to your application for membership, your result may be delayed until an investigation has taken place.



Appendix E – Deferring your Professional Review

You may request the deferral of your Professional Review at any time after submitting your application. You should contact ICE immediately if you wish to defer your application at any point.

Please note that if you do defer you will need to make a new application through the ICE Application Portal in line with the dates published on the ICE website and current guidance.

If you contact ICE to defer your Professional Review before receiving details of your Professional Review date then you will not be required to pay the application fee again if you apply within the next 12 months, as your original fee will be applied to the new application. However, if your new application is more than 12 months from the date of deferral, you will be required to pay a new application fee.

If you contact ICE to defer after receiving details of your Professional Review date, then you will be liable for your next application fee. However, ICE may grant an exception to this in the event of exceptional circumstances preventing you from attending your Professional Review. Exceptions are granted for the following three criteria:

- i) Medical
- ii) Bereavement
- iii) Local Emergency

ICE will also consider any situation which falls outside of these criteria if you can show that the deferral was due to circumstances beyond your control.

Evidence is required to qualify for any of the exception criteria noted above, and you will be given 10 working days to supply your evidence for deferral. Failure to supply this evidence will result in the exception not being granted, and you will be liable for your next application fee.

Deferral requests and evidence should be sent to: professional.reviews@ice.org.uk .

ICE will request that you notify your Lead Sponsor regarding your deferral in all cases. It is not required that you notify your Employer.

ICE's decision regarding a deferral will be final.



Our vision

Civil engineers at the heart of society, delivering sustainable development through knowledge, skills and professional expertise.

Core purpose

- To develop and qualify professionals engaged in civil engineering
- To exchange knowledge and best practice for the creation of a sustainable and built environment
- To promote our contribution to society worldwide

Diversity statement

As a membership organisation and an employer, we value diversity and inclusion - a foundation for great engineering achievement

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