

## ATTRIBUTE ACHIEVEMENT FORM – INCORPORATED ENGINEER

Updated to reflect the content of the Sierra Leone Institution of Engineers (SLIE) and Professional Engineers Regulatory Council (PERC) Report on the Competency Requirements for Professional Engineers produced under the Africa Catalyst Program 4 – Support ASPPEng on Sierra Leone - Outcome 4 August 2023.

(Contributors: Ing. Badamasi Savage, Ing. Louise Chaytor, Ing. Owen Davies, Ing. David Tholley and Ing. Shuaibu Bun-Seisay.)

### Introduction

This paper describes how you record how you have achieved the Attributes required for membership of the Sierra Leone Institution of Engineers (SLIE) and registration at the level of Incorporated Engineer (IEng).

The Attributes are regulated by the Professional Engineers Registration Council in Sierra Leone but are consistent with those applied by UK Professional Engineering Institutions (PEIs) and this makes it possible for engineers to develop themselves within the SLIE process and, if desired, to readily transfer the recorded information into the UK PEI Applications for Membership and Registration.

### Demonstrating competence in the member Attributes.

To become a member of SLIE at one of the three levels, you must have had **responsible** and **relevant** experience at a level such that you can clearly demonstrate the relevant Attribute.

Attributes 1 and 2 relate to your fields of work. You must demonstrate a sound understanding of the core engineering principles in those fields. Your level of attainment of the remaining Attributes will be assessed with regard to their relative importance within your work. As a guide to the standards required, an indicative marking matrix is included and the requirement is to achieve more than 50% of the attributes with a score of 3 or 4, the remainder no lower than a score of 2.

Each attribute comprises a range of activities or sub-activities and you must complete all of those specified for your level.

In order to fulfil your obligations to society as a Professional Engineer and to meet a satisfactory level of competency with regard to Health, Safety and Welfare of employees and the public at large, you must have an appreciation of the risks arising from the consequences of your decisions and activities and be able to identify and manage those risks. If your role is in engineering production, construction or field processes then demonstrable operational experience and responsibility will be required in these situations.

## Writing your Statements

### Hints on compilation.

In addition to the attainment of the necessary academic qualifications, the essence of any application for Registration as a Professional Engineer is the requirement to **demonstrate** the appropriate level of competence. Demonstration requires the presentation of scenarios that relate to the Attribute or Attributes in question and explain what you did in response to the issue and how that illustrates your acquisition of competence. It is not enough to merely state that you gained competence, evidence in the form of a record of your thoughts, analyses, evidence-based judgements and actions must be presented.

It is sometimes helpful to start each report with a phrase such as: 'I was tasked to...' or 'I noticed that...' followed by a brief summary of the circumstance and then a statement of your thinking, 'I considered/researched/sought advice/...'. Finally, a statement of your actions, your level of autonomy/supervision, what you achieved and what experience you gained relating to the Attribute.

You should consider the following points when preparing your attribute evidence:

- Write in the First Person – for example: "I worked on the development of a solution to the bearing failure...".
- For each Attribute, give examples from your experience, showing the responsibility you had on a given project.
- Be specific and relevant in the examples within each attribute, using clear technical language describing accurately what you did and why.
- Make sure you show how you've taken responsibility – for example: "My decision was based on my evaluation of the bridge assessment. I took responsibility for the decision to conduct the repairs using a temporary road closure at night rather than a reduced lane speed. The primary reason for my decision was the improved safety that could be achieved by a road closure that in my view outweighed the potential inefficiencies of night work."
- Focus on your personal involvement, the lessons learned, and what you would do differently next time.
- Include dates, the project name and adequate details to show your assessors that your role on this project merits the level of professional qualification you seek.
- Avoid generic statements within your examples such as: "I worked for six months within the rail department using relevant codes and standards." This is non-specific and fails to demonstrate your level of responsibility or anything about your personal competence.

You should aim to give multiple examples (typically 4-6) of your experience to demonstrate your ability within each Attribute. You are aiming to show that you have achieved the attribute in different situations, assisting others as well as working without supervision.

Remember – you need to show the assessors that you've met the competency standard expected of a Professional Engineer at the level you are seeking. Competence is defined as the ability to do something consistently, successfully and efficiently.

## Verification of your Attribute Statements

If possible, your Mentor, SOE or DE should be of the same specialisation as yourself (E.g. Civil, Mining, electrical etc) and qualified to the equivalent level or higher than the level you are applying for.

Your Mentor or SOE must understand the SLIE Procedures and Standards so that they can assess your progress and competence and advise you on your submission. They should also be familiar with your work so that they can verify your Attribute statements in this form.

The document text is password (9154) protected to avoid inadvertent editing but the recording cells in which the Trainee makes their entries, at the bottom of each Attribute, are expandable and not protected.

**Attribute A****Knowledge and Understanding of Engineering.**

**Incorporated Engineers shall use a combination of general and specialist engineering knowledge and understanding to apply existing and emerging technology.**

A1 Have maintained and extended a sound theoretical approach to the application of technology in engineering practice. assists its application

A2 Use a sound, evidence – based approach to problem solving and contribute to continuous improvement.

**Some examples that demonstrate this Attribute.**

- Identifying the limits of your knowledge and skills
- Taking steps to develop and extend personal knowledge of appropriate technology, both current and emerging
- Applying newly gained knowledge successfully in a task or project
- Reviewing current procedures and processes and recommended improvements or changes to reflect best practice
- Developing knowledge needed to work in a new industry area or discipline.
- Applying knowledge and experience to investigate and solve problems arising during engineering tasks and implementing corrective action.
- Identifying opportunities for improvements and how these have been (or could be) implemented
- Using an established process to analyse issues and establish priorities.

**Trainee's Record of Achievement**

[Click here to enter text. Box will expand as you type.\]](#)

**Attribute B****B. Design, development and solving engineering problems**

**Incorporated Engineers shall apply appropriate theoretical and practical methods to design, develop, manufacture, construct, commission, operate, maintain, decommission and recycle engineering processes, systems, services and products.**

B1	Identify, review and select techniques, procedures and methods to undertake engineering tasks
----	---

B2	Contribute to the design and development of engineering solutions
----	---

B3	Implement design solutions for equipment or processes and contribute to their evaluation.
----	---

**Some examples that demonstrate this Attribute.**

- Establishing the engineering steps needed to carry out a task efficiently
- Identifying the available products or processes needed to undertake an engineering task and establishing a means of identifying the most suitable solution
- Preparing technical specifications
- Reviewing and comparing responses to the technical aspects of tender invitations
- Establishing user requirements for improvements
- Contributing to the identification and specification of design and development requirements for engineering products, processes, systems and services
- Identifying operational risks and evaluating possible engineering solutions, taking account of cost, quality, safety, reliability, accessibility, appearance, fitness for purpose, security (including cyber security), intellectual property constraints and opportunities, and environmental impact
- Collecting and analysing results
- Carrying out necessary tests
- Identifying the resources required for implementation
- Implementing design solutions, taking account of critical constraints, including due concern for safety and sustainability
- Identifying problems during implementation and taking corrective action
- Contributing to recommendations for improvement and actively learning from feedback on results

**Trainee's Record of Achievement**

Click here to enter text. Box will expand as you type.

**Attribute C****C. Responsibility, management and leadership****Incorporated Engineers shall provide technical and commercial management.**

C1	Plan the work and resources needed to enable effective implementation of engineering tasks and projects
C2	Manage (organize, direct and control), programme or schedule, budget and resource elements of engineering tasks or projects
C3	Manage teams, or the input of others, into own work and assist others to meet changing technical and management needs
C4	Take an active role in continuous quality improvement

**Some examples that demonstrate this Attribute.**

- Identifying factors affecting the project implementation
- Carrying out holistic and systematic risk identification, assessment and management
- Preparing and agreeing implementation plans and method statements
- Securing the necessary resources and confirming roles in a project team
- Applying the necessary contractual arrangements with other stakeholders (clients, subcontractors, suppliers, etc)
- Operating appropriate management systems
- Working to the agreed quality standards, programme and budget, within legal and statutory requirements
- Managing work teams, coordinating project activities
- Identifying variations from quality standards, programme and budgets, and taking corrective action
- Evaluating performance and recommending improvements
- Agreeing objectives and work plans with teams and individuals
- Reinforcing team commitment to professional standards
- Leading and supporting team and individual development
- Assessing team and individual performance, and providing feedback
- Seeking input from other teams or specialists where needed and managing the relationship
- Ensuring the application of quality management principles by team members and colleagues
- Managing operations to maintain quality standards.
- Evaluating projects and making recommendations for improvement
- Implementing and sharing the results of lessons learned

**Trainee's Record of Achievement**

[Click here to enter text.](#) Box will expand as you type.

**Attribute D****D. Communication and Interpersonal Skills****Incorporated Engineers shall demonstrate effective communication and interpersonal skills.**

D1	Communicate effectively with others, at all levels, in English
D2	Clearly present and discuss proposals, justifications and conclusions
D3	Demonstrate personal and social skills and awareness of diversity and inclusion issues.

**Some examples that demonstrate this Attribute.**

- Contributing to, chairing and recording meetings and discussions
- Preparing communications, documents and reports on technical matters
- Exchanging information and providing advice to technical and non-technical colleagues
- Engaging or interacting with professional networks
- Preparing and delivering appropriate presentations
- Managing debates with audience
- Feeding the results back to improve the proposals
- Contributing to the awareness of risk.
- Knowing and managing own emotions, strengths and weaknesses
- Being confident and flexible in dealing with new and changing interpersonal situations
- Identifying, agreeing and working towards collective goals
- Creating, maintaining and enhancing productive working relationships, and resolving conflicts
- Being supportive of the needs and concerns of others, especially where this relates to diversity and inclusion

**Trainee's Record of Achievement**

[Click here to enter text.](#) Box will expand as you type.

**Attribute E****E. Personal and Professional Commitment****Incorporated Engineers shall demonstrate a personal commitment to professional standards, recognizing obligations to society, the profession and the environment**

E1	Understand and comply with relevant codes of conduct
E2	Understand the safety implications of their role and manage, apply and improve safe systems of work
E3	Understand the principles of sustainable development and apply them in their work
E4	Carry out and record the Continuing Professional Development (CPD) necessary to maintain and enhance competence in their own area of practice
E5	Understand the ethical issues that may arise in their role and carry out their responsibilities in an ethical manner

**Some examples that demonstrate this Attribute.**

- Demonstrating compliance with your Licensee's (SLIE/PERC) Code of Professional Conduct
- Identifying aspects of the Code particularly relevant to your role
- Managing work within all relevant legislative and regulatory frameworks, including social and employment legislation.
- Participating in SLIE Activities.
- Identifying and taking responsibility for your own obligations for health, safety and welfare issues
- Managing systems that satisfy health, safety and welfare requirements
- Developing and implementing appropriate hazard identification and risk management systems and culture
- Managing, evaluating and improving these systems
- Applying a sound knowledge of health and safety legislation, for example: HASAW 1974, CDM regulations, ISO 45001 and company safety policies
- Operating and acting responsibly, taking account of the need to progress environmental, social and economic outcomes simultaneously
- Recognising how sustainability principles, as described in the as described in the UN Guidance on Sustainability can be applied in your day-to-day work
- Providing products and services which maintain and enhance the quality of the environment and community, and meet financial objectives
- Understanding and encouraging stakeholder involvement in sustainable development
- Using resources efficiently and effectively
- Taking action to minimise environmental impact in your area of responsibility
- Undertaking reviews of your own development needs
- Planning how to meet personal and organisational objectives
- Carrying out and recording planned and unplanned CPD activities
- Maintaining evidence of competence development
- Evaluating CPD outcomes against any plans made
- Assisting others with their own CPD
- Understanding the ethical issues that you may encounter in your role
- Giving an example of where you have applied ethical principles.
- Giving an example of where you have applied or upheld ethical principles as defined by your organisation or company

[Click here to enter text. Box will expand as you type.](#)



**Attribute F****F. Commercial Ability**

**Incorporated Engineer shall demonstrate sound knowledge of statutory and commercial frameworks within their own area of responsibility**

F1	Manage, prepare and control costs/budgets of engineering tasks or projects
F2	Use sound knowledge of statutory and commercial frameworks within their own area of responsibility and have an appreciation of other commercial arrangements

**Some examples that demonstrate this Attribute.**

- Identifying factors affecting the project implementation
- Carrying out holistic and systematic risk identification, assessment and management
- Preparing and agreeing implementation plans and method statements
- Securing the necessary resources and confirming roles in a project team
- Applying the necessary contractual arrangements with other stakeholders (clients, subcontractors, suppliers, etc)
- Operating appropriate management systems
- Working to the agreed quality standards, programme and budget, within legal and statutory requirements
- Managing work within all relevant legislative and regulatory frameworks, including social and employment legislation.
- Presentation or report demonstrating the analysis of costs for a project and proposing cost-saving measures
- Management of a project budget, including tracking expenses and providing regular financial reports

**Trainee's Record of Achievement**

[Click here to enter text.](#) Box will expand as you type.

**Attribute G****G. Health, Safety and Welfare**

**The Incorporated Engineer shall demonstrate knowledge of health and safety regulations and apply them in their area of responsibility**

G1	Demonstrate a sound knowledge of legislation, hazards and safe systems of work
G2	Manage risks
G3	Manage health, safety and welfare within their own area of responsibility; Contribute to improvements in health, safety and welfare

**Some examples that demonstrate this Attribute.**

- Identifying and taking responsibility for your own obligations for health, safety and welfare issues
  - Managing systems that satisfy health, safety and welfare requirements
  - Applying a sound knowledge of health and safety legislation, for example: SL HASAW Legislation, ISO 45001 and company safety policies.
  - Developing and implementing appropriate hazard identification and risk management systems and culture
  - Documentation of risk assessments conducted for engineering projects, along with proposed mitigation measures
  - Managing, evaluating and improving these systems
  - Implementation of health and safety protocols that resulted in improved safety records and reduced incidents.
  - Membership or participation in professional organizations related to health and safety
- Identifying and taking responsibility for your own obligations for health, safety and welfare issues

**Trainee's Record of Achievement**

[Click here to enter text.](#) Box will expand as you type.

**Attribute H****H. Independent Judgement and Responsibility**

**Incorporated Engineers shall demonstrate sound, evidence-based judgements and take personal responsibility for their actions.**

H1 Identify the limits of personal knowledge and skills

H2 Exercise sound independent engineering judgement and take responsibility

**Some examples that demonstrate this Attribute.**

- Identifying the limits of your knowledge and skills
- Taking steps to develop and extend personal knowledge of appropriate technology, both current and emerging
- Identifying variations from quality standards, programme and budgets, and taking corrective action
- Evaluating performance and recommending improvements
- Applying knowledge and experience to investigate and solve problems arising during engineering tasks and implementing corrective action.

**Trainee's Record of Achievement**

[Click here to enter text.](#) Box will expand as you type.

**Attribute I****I. Innovation and Sustainable Development**

**Incorporated Engineer shall demonstrate an understanding of the principles of sustainable development and apply them in work.**

I1	Understand the principles of sustainable development and apply them in work
I2	Manage engineering activities that contribute to sustainable development and the United Nations' Sustainable Development Goals (UNSDGs)

**Some examples that demonstrate this Attribute.**

- Operating and acting responsibly, taking account of the need to progress environmental, social and economic outcomes simultaneously
- Documenting successful implementation of an innovative engineering solution with sustainable outcomes
- Taking action to minimise environmental impact in your area of responsibility
- Recognising how sustainability principles, as described in the UN Guidance on Sustainability can be applied in your day-to-day work
- Providing products and services which maintain and enhance the quality of the environment and community, and meet financial objectives
- Understanding and encouraging stakeholder involvement in sustainable development
- Using resources efficiently and effectively
- Contribution to the development of sustainable design guidelines or strategies for an organization

**Trainee's Record of Achievement**

[Click here to enter text.](#) Box will expand as you type.

## APPENDIX – SCORING GUIDANCE

Note: As a guide to the standards required, an indicative marking matrix is included and the requirement is to achieve more than 50% of the attributes with a score of 3 or 4 with the remainder no lower than a score of 2.

### INCORPORATED ENGINEER

Attribute	Score			
	1	2	3	4
A	Little or no evidence of broadening or deepening beyond initial academic knowledge and skills. Does not use or implement new technology. May have moved into a non-engineering role	Some evidence of broadening and deepening post academic qualification. Able to demonstrate practical application of engineering principles as a member of a team or as an individual. May only be on the periphery of decisions to implement new technology. Some evidence of identifying opportunities for improvement and how these have been implemented.	Uses a combination of general and specialist engineering knowledge and understanding to apply existing and emerging technology. Has maintained an extended a sound theoretical approach to the application of technology in engineering practice. Uses a sound evidence-based approach to problem-solving and contribute to continuous improvement.	Strong evidence of continued broadening and deepening of knowledge, skills and understanding of engineering techniques, analysis, standards and risks. Researches and uses new and emerging technologies and best practices in their area of control to provide solutions to technical issues. Strong evidence of identifying opportunities for improvements and methods of implementation. Possibly seen as a subject matter expert in their field.
B	Little evidence of identification and selection of technologies and processes to be used. Works under close supervision or instruction. Little evidence	Some evidence of taking responsibility for identification of technical improvements, problems or opportunities. Some evidence of contributing to the identification and specification	Applies appropriate theoretical and practical methods to design, develop, manufacture, construct, commission, operate, maintain, decommission and recycle engineering processes, systems, services and products.	Strong evidence of leadership for identifying technical improvements, solutions and opportunities. May have close client contact on technical matters. Is recognised as a technical resource capable of working without

	of identifying problems and solving them. No engineering autonomy.	of design and development requirements, but unlikely to be the decision maker for either project activities or designs. Contributes to the evaluation of outcomes of design or process changes, but works under some supervision.	Identifies, reviews and selects techniques, procedures and methods to undertake engineering tasks. Contributes to the design and development of engineering solutions. Implements design solutions for equipment or processes and contributes to their evaluation.	supervision. Shows consideration for safe systems of work, sustainability and the environment. May oversee or approve the work of others.
C	Little or no evidence of either management or leadership either directly or through a specialist skill.	Plans and leads small projects or tasks or part of a much bigger project. Contributes to team improvement and continuous learning. Works to ensure standards of quality are maintained, conformed to and improved.	Plans the work and resources needed to enable effective implementation of engineering tasks and projects. Manages (organises, directs and controls), programme or schedule, budget and resource elements of engineering tasks or projects. Manages teams, or the input of others, into own work and assist others to meet changing technical and management needs. Takes an active role in continuous quality improvement.	Leads by being either a line manager or task manager. Providing specialist knowledge, guidance and input to engineers, teams, corporations and stakeholders. Promotes continuous quality improvement including sharing lessons learnt and post project review. Good commercial awareness and strong budgetary control skills
D	Little or no evidence of effective communication in English e.g., in meetings or discussions. Poor performance at PRI, and/or application poorly prepared. No evidence of	Some evidence of effective communication in English, e.g., in the preparation of technical documents or reports or in the sharing of technical information with colleagues or clients. May prepare and	Communicates effectively with others, at all levels, in English. Clearly present and discuss proposals, justifications and conclusions. Demonstrates personal and social skills and awareness of diversity and inclusion issues.	Excellent communicator with clear, concise and precise responses to questions. Good, well-written report showing logicity, presentational skills and social awareness of likely audience. Resolves conflicts. Well aware of the issues of diversity and inclusivity. Creates

	awareness of diversity and inclusion issues.	deliver presentations or proposals to technical or non-technical audiences. Has some awareness of diversity and inclusion issues		supportive and enhancing work environments.
E	Not aware of and has not read any Code of Conduct (CoC). Little or no evidence of commitment to the SLIE, the profession or society. Little evidence of knowing about ethics, sustainability or their own development.	Has limited understanding of the SLIE CoC but is aware of the legal and regulatory issues surrounding safe systems of working. Some awareness of how their role can impact this and what must be undertaken to reduce hazards and risks. Limited CPD activity and/or career planning. May understand the ethical issues surrounding their role but is not aware of their detailed responsibilities. No IMechE involvement or professional promotion, e.g., STEM. <b>Maximum score for Attribute 9 if the SLIE CoC has not been read.</b>	Understands and complies with the SLIE's code of conduct (CoC). Understands the safety implications of their role and manage, apply and improve safe systems of work. Understands the principles of sustainable development and applies them in their work. Carries out and records the Continuing Professional Development (CPD) necessary to maintain and enhance competence in their own area of practice. Understands the ethical issues that may arise in their role and carries out their responsibilities in an ethical manner	Has a good understanding of the SLIE CoC and of the legal and regulatory issues and responsibilities surrounding safe systems of work for themselves and others. Strong awareness of how their role can impact this and what must be undertaken to reduce hazards and risks. Strong evidence of their commitment to sustainable development. Strong evidence of their commitment to CPD and career planning. Strong evidence of SLIE involvement or professional promotion, e.g., STEM Strong evidence of upholding good ethical behaviour when an ethical dilemma has been encountered.
F	Little commercial knowledge or experience in the field.	Has undertaken some commercial work as a junior team member. Understands the basic forms of contact.	Manages contracts and budgets. Has significant experience in managing sub-contractor and client relationships.	Has a sophisticated view of how contractual arrangements influence behaviour. Bid/Business leader with broad negotiating expertise.

G	Little or no evidence of Health, Safety or welfare obligations to the workforce or society.	Is aware of the legal and regulatory issues surrounding safe systems of working. Some awareness of how their role can impact this and what must be undertaken to reduce hazards and risks.	Understands the safety implications of their role and manages, applies and improves safe systems of work. Understands the wider ethical, legal and regulatory obligations of a Professional Engineer and works to promote H, S and W to the wider public.	Has a thorough understanding of the SLIE CoC and of the legal and regulatory issues and responsibilities surrounding safe systems of work for themselves and others. Strong awareness of how their role can impact this and what must be undertaken to reduce hazards and risks.
H	Little or no evidence of Independent Judgement or Responsibility beyond initial academic knowledge and skills. Does not use or implement new technology. May have moved into a non-engineering role	Able to demonstrate practical application of engineering principles as a member of a team or as an individual. May only be on the periphery of decisions. Some evidence of identifying opportunities for improvement and responsibility of how these have been implemented.	Confidently exercises a combination of general and specialist engineering knowledge and understanding to apply existing and emerging technology. Has maintained an extended a sound theoretical approach to the application of technology in engineering practice. Uses a sound evidence-based approach to problem-solving and contributes to continuous improvement.	Strong evidence of leadership, broadening and deepening of knowledge, skills and understanding of engineering techniques, analysis, standards and risks. Make decisions regarding new and emerging technologies and best practices in their area of control to provide solutions to technical issues. Strong evidence of identifying opportunities for improvements and methods of implementation. Possibly seen as a subject matter expert in their field.
I	Little evidence of knowing about sustainability and their responsibilities.	Recognises the ethical issues surrounding their role but has a limited understanding of their responsibilities or how to influence.	Understands the principles of sustainable development and applies them in their work.	Strong awareness of how their role can impact this and what must be undertaken to reduce the impact of their work. Strong evidence of their commitment to sustainable development.



