



IHIE | INSTITUTE OF HIGHWAY
INCORPORATED ENGINEERS



THE INSTITUTION
OF HIGHWAYS &
TRANSPORTATION



Institution of Civil Engineers

JOINT BOARD OF MODERATORS

SELF-MANAGED WORK-BASED FURTHER LEARNING ROUTE FOR COMPLETION OF THE EDUCATIONAL BASE FOR AN INCORPORATED ENGINEER

1. Introduction

- 1.1 These Guidelines set out the Joint Board of Moderators (JBM) guidelines for approved Self-Managed Work-Based Further Learning Programmes (FLPs) intended to complete the educational base for an Incorporated Engineer for holders of JBM-approved HNC/Ds, Foundation Degrees or equivalent. The Guidelines comply with UK-SPEC and its supporting documents.
- 1.2 The guidelines are published by the JBM and have been approved by the Institution of Civil Engineers (ICE), the Institution of Structural Engineers (IStructE), the Institution of Highways & Transportation (IHT) and the Institute of Highway Incorporated Engineers (IHIE).
- 1.3 The formation of professional engineers in the UK has three stages:
 - Attainment of an appropriate educational base, followed by
 - A period of postgraduate industrial development known as Initial Professional Development (IPD), culminating in a
 - Professional Review to assess and confirm that the required standards have been met.
- 1.4 Under the UK Standard for Professional Competence (UK-SPEC) (2004), published by the Engineering Council UK (EC^{UK}), one way for a candidate that holds approved qualifications but not at the appropriate level to satisfy the educational base for registration as an Incorporated Engineer (IEng) is to complete a period of Further Learning.
- 1.5 Further Learning comprises the additional educational achievement necessary to bridge the gap between an approved HNC/D/Foundation Degree or equivalent and an accredited BSc degree for an Incorporated Engineer. Where appropriate, elements of Further Learning can be integrated with IPD but must be recorded and assessed separately.
- 1.6 Many newly graduated engineers will find themselves working for Small and Medium Sized Enterprises (SMEs) or other organisations where support systems for professional development are not-easily accessible. Also, individuals may well move between employers throughout their career. For these reasons, it is expected that many Learning Plans will be self-managed and developed by individuals, perhaps with support from their line managers and/or institution advisors, Mentors and Supervising Engineers.

- 1.7 These guidelines set out a procedure for those candidates that have chosen to follow a Self-Managed route for Further Learning to follow. They are based upon the UK-SPEC document “The Accreditation of Higher Education Programmes” (AHEP).
- 1.8 These Guidelines refer only to Further Learning to Bachelor level and assume that all candidates have achieved a JBM-accredited HNC/D/Foundation Degree or equivalent (contact the relevant Institution for further information on the equivalence of qualifications). For confirmation that a candidate needs to complete Further Learning in order to complete the educational base for an Incorporated Engineer, please contact the relevant Institution (ICE, IStructE, IHIE or IHT).
- 1.9 Many of the processes and principles that are to be followed by candidates taking this route are the same as for candidates following an Employer-Managed Work-Based Further Learning Programme.
- 1.10 The guidelines cover:
- Educational and regulatory context for Further Learning.
 - Roles and responsibilities.
 - Learning outcomes.
 - Learning time.
 - Learning opportunities.
 - Prior Learning
 - Learning plan.
 - Candidate evidence.
 - Assessment.
 - Verification.
 - Application process.
 - Supporting reading material

2. Educational and Regulatory Context for Further Learning

- 2.1 UK-SPEC defines general and specific learning outcomes for Bachelor degree programmes. Further Learning is required where a candidate has already achieved and demonstrated HNC/D/Foundation Degree (or equivalent) level learning, but has not achieved and demonstrated the learning to Bachelors level for an Incorporated Engineer.
- 2.2 Degree accreditation is undertaken by the JBM which is appointed by the member institutions of ICE, IStructE, IHT and IHIE. ICE, IStructE, IHIE and IHT are licensed by EC^{UK} to accredit degree programmes. To ensure that the same rigour and standards apply across all the Further Learning routes, responsibility for approving Self -Managed Work-Based programmes rests with the member institutions that form the JBM.
- 2.3 Candidates who successfully complete a Further Learning Programme, which has been approved by the appropriate JBM institution according to these guidelines, will be deemed to have completed the educational base for registration as an Incorporated Engineer.
- 2.4 These guidelines will be reviewed periodically in the light of feedback. The JBM Secretariat welcomes comments. Please contact them by email at jbm@ice.org.uk

3. Roles and Responsibilities

3.1 Details of the Further Learning verification process are given later. The following diagram sets out the framework for Further Learning achievement.

Role	Employer-Managed Further Learning Programme	Self-Managed Further Learning Route
Manages the FLP	SE	Candidate
Gives guidance and support to the candidate	SE	Mentor
Provides assessment and makes judgements on the candidate's evidence. The Assessor (ICC) will be a member of the Individual Case Panel of one of the JBM member institutions.	Assessor	Assessor (ICC)
Provides internal audit on behalf of the employer	Internal Verifier	NOT APPLICABLE
Provides external audit on behalf of the JBM and makes recommendations to the JBM about approval of the scheme	External Verifier	NOT APPLICABLE

3.2 Candidate

- (a) Once the Learning Plan has been agreed by the SE/Mentor, it is the candidate who bears the primarily responsibility to identify and record the Further Learning that has been achieved against the agreed objectives.
- (b) It is the role of the candidate to provide the /Mentor/Assessors with the appropriate documentation and to ensure that they update their Learning Plan on a regular basis and maintain their portfolio of evidence.

3.3 Supervising Engineer or Mentor

- (a) A number of companies may have registered Supervising Engineers (SE) but may not have submitted a formal Employer-Managed programme for approval. If the candidate is working for an employer that has an approved SE, this person will be the principal point of contact for the candidate. Where the employer has several offices, there may be more than one SE. For more information regarding SE's please contact one of the JBM member institutions.
- (b) The Mentor will normally be a Chartered or Incorporated Engineer and will have undergone an induction to the Further Learning process, which will be offered by the JBM or one of its member institutions.

- (c) Where a candidate works for a company where there is no registered SE they should seek support and guidance from an appropriately qualified Chartered or Incorporated Engineer, for example if they are registered on a Company Training Scheme, this could be their Mentor or for an ICE Company Approved Training Scheme, their Supervising Civil Engineer (SCE). This individual will act as the candidate's mentor.
- (d) The Mentor will sign-off learning outcomes as they are achieved and will also give advice on adapting a candidate's Learning Plan to changing circumstances.

3.4 Assessor (ICC)

- (a) For a candidate working on a self-managed programme, the assessment will be undertaken by one of the JBM member institutions. The Assessor (ICC) will make judgements on the evidence provided by the candidate, to assess whether standards have been met.
- (b) Assessors (ICC) will be Chartered or Incorporated Engineers. Essentially, however, they must be competent in the field they are assessing and competent to assess. The Assessor (ICC) will make judgements on candidates' evidence to determine if the standards have been met. (There may be more than one Assessor to cover different areas of learning)
- (c) All Assessors (ICC) will be trained according to these revised guidelines. In some cases an Assessor (ICC) will also be a Supervising Engineer.
- (d) The JBM member institutions' Individual Case Committee (ICC) will nominate one or more Assessors (ICC) for candidates following the Self-Managed Route. Normally these Assessors will be drawn from the membership of the Committee.

4. Designing a Programme

- 4.1 Candidates and their employers will need to be clear about the key criteria for these programmes described overleaf.
- 4.2 When designing FLPs, candidates should seek to ensure that there is a balance between the following requirements:
- Recognition of their first qualification achievement, i.e. an approved HNC/HND or Foundation Degree (or equivalent).
 - Candidates' individual career aspirations.
 - The business requirements of the employer.
 - The input, process, learning outcome and assessment requirements of the FLPs.

5. Learning Outcomes not Inputs

- 5.1 With the publication of UK-SPEC came the shift in emphasis for the professional bodies' accreditation process from specifying inputs (such as A-level points or numbers of hours) to learning outcomes.
- 5.2 It will be essential to ensure that the level of learning is to Intermediate (Bachelors) level. Learning that is 'additional' but not to I- level, or that is more of the same, or a duplication of learning already undertaken at the Certificate or Diploma level, is not Further Learning.

- 5.3 AHEP sets out the learning outcomes for IEng degree programmes. The learning outcomes for IEng, beyond those for Higher Certificate, Higher Diploma, Foundation Degree or NVQ, are summarised in **Appendix 1**.
- 5.4 **Appendix 1** indicates that this level is more advanced than *knowledge and understanding*; in many instances it requires *ability* and *application*, and points towards *competence*. Bachelors level learning is also about support know-how when applying technology to future engineering problems and processes. The workplace provides many opportunities for all these types of learning to take place.
- 5.5 The descriptors for Intermediate (I) level published by the Qualifications Assurance Agency (QAA) are summarised below and are included here as further assistance to employers in understanding the requirement for Further Learning to be at I-level:

Holders of qualifications at this level will have developed a sound understanding of the principles in their field of study and will have learned to apply these principles more widely. Through this, they will have learned to evaluate the appropriateness of different approaches to solving problems. Their studies may well have had a vocational orientation, enabling them to perform effectively in their chosen field. They will have the qualities necessary for employment in situations requiring the exercise of personal responsibility and decision-making.

Understanding Qualifications: The Framework for
Higher Education Qualifications, QAA

6. Learning Time

- 6.1 There is no prescriptive requirement for programme length, or minimum quantum of learning time. However, the quantum of FLPs will need to be broadly equivalent to the last year of an IEng accredited degree course.
- 6.2 Learning time will comprise both contact time (ie. learning in a structured environment) as well as other learning. Based on JBM research, it is expected that some 300-400 hours of a Candidate's total learning will be contact time, ie. formal learning in a structured environment. This might equate, say over a three to four year structured training programme, to some 10 days education/training per year. It is therefore unlikely that a Work-Based FLP will be completed in less than three years. This is consistent with, and will complement, graduate employer training schemes approved by professional bodies. This contact time will vary depending on the base academic qualification held by the Candidate. For guidance on contact time refer to the leaflet "Further Learning: Completing the Educational Base" available on the JBM website. www.jbm.org.uk.
- 6.3 A greater proportion of the total work-based Further Learning will be derived from other learning, including evidence from the workplace to show that a candidate has reflected on structured learning and put this into practice.
- 6.4 The figures shown in **Appendix 3** are approximate and are included to assist candidates when planning their FLPs. The key principle is that learning programmes are being judged on outcomes, not inputs.

- 6.5 A candidate's work-based FLP may be integrated with a company approved training scheme. It must, however, be distinguished in content from a training scheme, and where an activity is undertaken that meets requirements for both, it must be recorded **separately and specifically** for the FLP demonstrating how the appropriate learning outcomes have been achieved in order to satisfy audit requirements.

7. Learning Opportunities

- 7.1 There will be many opportunities in the workplace for candidates to achieve the required learning outcomes, by a mix of contact time and other learning including private study. Contact time may include short courses, modules offered by a university department or attending presentations on new techniques. Site visits may be included, but only where they clearly identify and relate to learning outcomes; logging hours of attendance with no explanation of the learning and learning outcomes will not be accepted.
- 7.2 Other sorts of activities which might result in Further Learning include data collection/analysis/evaluation that ultimately lead to making recommendations, research for a report or for a presentation on a new area of knowledge, project work, team working and interviewing. Some examples related to IEng Bachelor degree learning outcomes are shown in **Appendix 2**.

8. Prior Learning

- 8.1 Some candidates may have spent some time working in the civil engineering industry before they decide to prepare their Learning Plan. During this time they may have attended a number of short courses or developed their work-based Further Learning by the achievement of appropriate knowledge and skills. This time is referred to as prior learning i.e. learning gained prior to the development of the Learning Plan.
- 8.2 Please note that prior learning can only be taken into account if it can be confirmed to be to IEng Bachelor degree level. Such Assessed Prior Learning (APL) must be suitably recorded and should stand up to external verification by the Individual Case Committee.
- 8.3 If candidates submit evidence of prior learning as contributing to their Further Learning, this will be assessed by the FL Assessor (from the Individual Case Committee). In order for this to contribute, it should be learning that is clearly to IEng Bachelor degree level.
- 8.4 Candidates seeking the assessment of Prior Learning must map their evidence against the appropriate Learning Outcomes.

9. Self-Managed Further Learning Plan

- 9.1 Each candidate shall, with the help of their SE/Mentor, produce a Learning Plan. This plan will set out the means through which the learning outcomes are to be achieved (courses, projects, etc.); the timescale for their achievement; and the proposed evidence and arrangements for assessment. A suggested format for a Self-Managed Work-Based Further Learning Plan is shown in **Appendix 3** of this document.
- 9.2 Candidates will need to seek approval of their Plan which shall be assessed by the appropriate committee. An individual's Plan, which may contain an approved component provided by a Further or Higher Educational establishment, should be approved by the ICC

before commencement. A request for the retrospective assessment of the Learning Plan can be permitted but prior approval is strongly recommended.

9.3 The Learning Plan may change and develop along the way. Depending on experiences, the plan may be developed in stages or phases perhaps of 6 or 12 month duration, and should be re-assessed periodically by the candidate to identify any gaps and agree future learning priorities. The Institutions will provide an Assessor to review the candidates initial Learning Plan, and a progress report to be submitted after twelve months, they will not review any further annual changes to the candidates learning plan but will undertake the final review of the candidate's portfolio

9.4 **Appendices 3 and 4** are suggested formats for a learning plan summary and for a portfolio summary sheet.

10. Candidate Evidence

10.1 Before embarking on an FLP, the candidate must provide documentary evidence to the relevant professional body to confirm their HNC/D/Foundation Degree award or equivalent is acceptable. This will normally be a certificate and a copy should be included in the portfolio. If the academic programme of study is not accredited/approved by JBM, or not listed on the EC^{UK} database, the candidate will need to apply for an assessment of their qualifications by the Individual Case Committee of the relevant JBM member professional body.

10.2 In order to ensure that an FLP is broadly equivalent to the final year of an IEng Bachelor degree programme, comparable evidence will be desirable. This evidence has to demonstrate that the appropriate learning outcomes have been achieved. These might include:

- Preparation and presentation of reports on work-based projects and assignments.
- Achievement gained on in-house and external courses.
- Appropriate tests (e.g. a relevant Health & Safety test).
- Documents produced by the candidate (e.g. diaries, logs, correspondence, minutes of meetings, etc.).
- Testimony from senior colleagues in the workplace.

10.3 A template for a learning plan summary is available on the JBM website. A suggested framework for an individual candidate's learning plan summary is shown in **Appendix 3**, and an individual portfolio summary in **Appendix 4** of this booklet.

11. Assessment

11.1 Assessment of the candidate's Further Learning will be according to the Assessor guidelines set out in **Appendix 5** of this booklet. Assessors must be trained in the assessment process, and this will be offered by the JBM. Verification of Assessor training will be a part of the external verification process. It is recommended that assessors be qualified to the National Standard Unit A1 "Assess candidates using a range of methods".

11.2 A template for recording the assessment is available from the Institutions.

- 11.3 As previously noted, assessment will be undertaken by Assessors nominated by the appropriate committee of the JBM member institutions, normally the Individual Case Committee or its equivalent.

12. Verification

- 12.1 Verified successful completion of the entire programme for candidates undertaking a Self-Managed scheme will be necessary before they can take the Professional Review. Candidates will need to submit their complete portfolio for assessment in order that the Institutions can confirm that the educational base requirements have been satisfied.

13. Application for Assessment of a Self-Managed Further Learning Programme

- 13.1 For a Self-Managed scheme, a completed portfolio of evidence is to be submitted formally to the Institution, at least three months before an application for the Professional Review. The portfolio must contain documentary evidence that demonstrates that the required Learning Outcomes have been achieved.
- 13.2 Candidates will need to check with their chosen professional body as to whether there is a schedule of submission dates for the approval of a Self-Managed scheme.
- 13.3 As soon as the candidate believes that all the criteria outlined in the Learning Plan have been met, this plan and the supporting portfolio of evidence should be submitted to the appropriate Institution.
- 13.4 In the event that the assessment shows that the Learning Plan is incomplete, guidance will be given by the Institution as to how the shortfall may be made good by further experience and/or learning and the submission of additional evidence of satisfactory achievement in those areas.

14. Supporting Reading Material

- 14.1 These Guidelines should be read in conjunction with the following publications as appropriate:-
- JBM Guidelines for IEng degree programmes
 - Employer-Managed Work-Based Further Learning Programmes for Completion of the Education Base for an Incorporated Engineer www.jbm.org.uk.
 - UK-SPEC – The Accreditation of Higher Education Programmes – <http://www.engc.org.uk/UKSPEC>.

APPENDIX 1 – SUMMARY OF ENHANCED LEARNING OUTCOMES EXPECTED OF IENG GRADUATES

The following enhanced learning outcomes expected of IEng graduates, beyond those of HNC/D/Foundation Degree/NVQ graduates, have been derived from the UK-SPEC document “The Accreditation of Higher Education Programmes” (AHEP), published by EC^{UK} in 2004:

- The ability to monitor, interpret and apply the results of analysis and modelling in order to bring about continuous improvement;
- The ability to apply quantitative methods and computer software relevant to civil, structural and highway engineering, frequently within a multi-disciplinary context;
- The ability to use the results of analysis to solve engineering problems, apply technology and implement engineering processes;
- The ability to apply a systems approach to engineering problems through know-how of the application of the relevant technologies;
- The knowledge, understanding and skills to define a problem, identify constraints and design a solution according to customer and user needs;
- The knowledge, understanding and skills to use creativity and innovation in a practical context, ensure fitness for purpose (including operation, maintenance, reliability, etc) and adapt designs to meet their new purposes or applications;
- Knowledge and understanding of commercial and economic context of engineering processes;
- Knowledge of management techniques which may be used to achieve engineering objectives within the commercial and economic context of the engineering process;
- Understanding of the requirements for engineering activities to promote sustainable development;
- Awareness of the framework of relevant legal requirements governing engineering activities, including personnel, health, safety and risk (including environmental risk) issues;
- Understanding of the need for a high level of professional and ethical conduct in engineering;
- Understanding of and ability to use relevant materials, equipment, tools, processes, or products;
- Knowledge of context in which engineering knowledge can be applied, for example, operations and management, application and development of technology, etc;
- Ability to use and apply information from technical literature;
- Ability to use appropriate codes of practice and industry standards;
- Understanding of the principles of managing engineering processes
- Awareness of quality issues and their application to continuous improvement.

APPENDIX 2 – SCHEDULE OF IENG FLP LEARNING OUTCOMES AND EXAMPLES OF LEARNING OPPORTUNITIES

	IEng FLP Learning Outcomes	Indicative Learning Opportunities & Comments
1	The ability to monitor, interpret and apply the results of analysis and modelling in order to bring about continuous improvement.	Assessment and interpretation of data collected throughout the lifespan of a project to revise and update project review procedures.
2	The ability to apply quantitative methods and computer software relevant to civil engineering, frequently within a multidisciplinary context.	Use and application of standard packages for the production of a building services maintenance manual in conjunction with other architectural, engineering and construction professionals.
3	The ability to use the results of analysis to solve engineering problems, apply technology and implement engineering processes.	Application of site investigation and soil analysis data to temporary works design.
4	The ability to apply a systems approach to engineering problems through know-how of the application of the relevant technologies.	Use and application of a design manual.
5	The knowledge, understanding and skills to define a problem, identify constraints and design a solution according to customer and user needs.	Use and application of best practice in the production of healthy buildings.
6	The ability to use creativity and innovation in a practical context, ensure fitness for purpose (including operation, maintenance, reliability etc) and adapt designs to meet their new purposes or applications	Application of resource efficient products, services and solutions particularly with respect to water, energy and waste.
7	Knowledge and understanding of commercial and economic context of engineering processes;	Awareness and application of whole life cycle costing to the design, construction and use of infrastructure.
8	Knowledge of management techniques which may be used to achieve engineering objectives within the economic and commercial context of engineering processes;	Application and use of environmental management systems.
9	Understanding of the requirements for engineering activities to promote sustainable development;	Appraising the social, economic and environmental impacts of projects' in local, regional and global contexts.
10	Awareness of the framework of relevant legal requirements governing engineering activities, including personnel, health, safety, and risk (including environmental risk) issues;	Study of SHE legislation and its impact in the workplace.
11	Understanding of the need for a high level of professional and ethical conduct in engineering	Awareness of human capital and its role in the creation of wealth and the maintenance of infrastructure.

12	Understanding of and ability to use relevant materials, equipment, tools, processes, or products;	Study of concrete site practice.
13	Knowledge of context in which engineering knowledge can be applied (eg operations and management, application and development of technology etc);	Appraisal and selection of appropriate technologies and methodologies.
14	Ability to use and apply information from technical literature;	Ongoing application of appropriate technologies.
15	Ability to use appropriate codes of practice and industry standards;	Application of appropriate best practice.
16	Understanding of the principles of managing engineering processes	Awareness of the integration of design, construction and operational activities.
17	Awareness of quality issues and their application to continuous improvement.	This can link to 1 above.

APPENDIX 3 – EXAMPLE OF A SELF-MANAGED CANDIDATE’S FURTHER LEARNING PLAN SUMMARY

Employer: **Candidate:** **Supervising Engineer/Mentor:**

Plan Overview

The JBM learning outcomes form the framework for this FLP. My role for the next three years will be site based, and therefore my learning activities are likely to include (but not be limited to) setting out, temporary works design, site programming, site supervision, measurement for record/payment purposes and materials reconciliation. This work-based learning will be supplemented by in-house and external courses. I will retain evidence of all this learning in a portfolio. The learning will be regularly assessed, and records of this assessment will also go into the portfolio.

The details of the FLP may be revised at any time to take account of the changing needs of the business.

Plan summary

No.	JBM Further Learning outcome	Learning Activity and Evidence Plan	Assessment methods/other comments	Estimated overall learning period (months)	Indicative Learning Time (Hours)
1	The ability to monitor, interpret and apply the results of analysis and modelling in order to bring about continuous improvement.	Assessment and interpretation of project data. Preparation of report on findings and recommendations	Interview by line manager based on report.	Sep 2006 – Sep 2007	120
2	The ability to apply quantitative methods and computer software relevant to civil engineering, frequently within a multidisciplinary context.	Use and output from standard packages.	Approval of output by line manager.	Sep 2006 – Sep 2007	200
3	The ability to use the results of analysis to solve engineering problems, apply technology and implement engineering processes.	Interpretation of soil data and design of temporary works.	Approval of design by line manager.	Sep 2007 – March 2008	120

No.	JBM Further Learning outcome	Learning Activity and Evidence Plan	Assessment methods/other comments	Estimated overall learning period (months)	Indicative Learning Time (Hours)
4	The knowledge, understanding and skills to define a problem, identify constraints and design a solution according to customer and user needs.	Use of design manual.	Approval of wide range of design by line manager.	etc	etc
5	The ability to use creativity and innovation in a practical context, ensure fitness for purpose (including operation, maintenance, reliability etc) and adapt designs to meet their new purposes or applications	Study of best practice.	Peer assessment on in-house presentation.	etc	etc
6	The ability to use creativity and innovation in a practical context, ensure fitness for purpose (including operation, maintenance, reliability etc) and adapt designs to meet their new purposes or applications	Application of resource efficient products, services and solution to infrastructure projects.	Assessment of designs in accordance with BREEAM by line manager.		
7	Knowledge and understanding of commercial and economic context of engineering processes;	Whole life cycle costing applied to various projects. Project evaluated.	Assessment by line manager.		
9	Understanding of the requirements for engineering activities to promote sustainable development;	Attendance at 2 day expert course on Environmental Impact Assessment.	End of course exercise.		

No.	JBM Further Learning outcome	Learning Activity and Evidence Plan	Assessment methods/other comments	Estimated overall learning period (months)	Indicative Learning Time (Hours)
10	Awareness of the framework of relevant legal requirements governing engineering activities, including personnel, health, safety, and risk (including environmental risk) issues;	Study of SHE legislation by enrolling on University module.	Examination.		
11	Understanding of the need for a high level of professional and ethical conduct in engineering	Investigation into and formal presentation relating to human capital at ICE Branch evening meeting.	Peer assessment at Branch meeting.		
12	Understanding of and ability to use relevant materials, equipment, tools, processes, or products;	Attendance at in-house company presentations into concrete site practice.	Use in design and construction practice formally assessed by line manager.		
13	Ability to use and apply information from technical literature;	Study into appropriate technologies.	Inclusion of appropriate technologies into current project design formally assessed by line manager.		
14	Ability to use appropriate codes of practice and industry standards;	Application of appropriate technologies.	Inclusion of appropriate technologies into current project design formally assessed by line manager.		
15	Understanding of the principles of managing engineering processes	Study into best practice through the section.	Interview by Supervising Engineer.		
16	Awareness of quality issues and their application to continuous improvement.	Study into integration of design construction and operational activities.	Interview by human resources manager.		
17	Understanding of the need for a high level of professional and ethical conduct in engineering	See 1 above.	Annual staff appraisal.		
				TOTAL HOURS =	

No.	JBM Further Learning outcome	Learning Activity and Evidence Plan	Assessment methods/other comments	Estimated overall learning period (months)	Indicative Learning Time (Hours)

APPENDIX 4 – SUGGESTED FORMAT FOR A SELF-MANAGED CANDIDATE’S FLP PORTFOLIO SUMMARY SHEET

Employer: **Candidate:** **Supervising Engineer/Mentor:** **Assessors (from ICC):**

Evidence Overview by Supervising Engineer/Mentor

All the learning outcomes have been achieved within the planned timeframe. The Further Learning Plan worked well, despite having undergone a major revision when the candidate was promoted to new duties in 2008. In fact this helped to enrich the range of learning opportunities, and the Assessors are pleased to report that this enhanced the quality of the outcomes. It is the Employer’s view that this route to IEng for our candidates is as least as effective as the BSc route. The full comments from the assessor and the internal verifier are recorded in the evidence portfolio.

Portfolio summary

No.	Further Learning outcome	Learning undertaken	Portfolio details	Name of SE/Mentor	SE/Mentor’s comments	ICC Assessor’s comments
1	The ability to monitor, interpret and apply the results of analysis and modelling in order to bring about continuous improvement.	Assessment and interpretation of project data for the Preparation of report on findings and recommendations	See section xxx pages x-x	xxx	Xxx report was of an acceptable standard.	
2	The ability to apply quantitative methods and computer software relevant to civil engineering, frequently within a multidisciplinary context.					
3	The ability to use the results of analysis to solve engineering problems, apply technology and implement engineering processes.					
4	The knowledge, understanding and skills to define a problem, identify constraints and design a solution according to customer and user needs.					

No.	Further Learning outcome	Learning undertaken	Portfolio details	Name of SE/Mentor	SE/Mentor's comments	ICC Assessor's comments
5	The ability to use creativity and innovation in a practical context, ensure fitness for purpose (including operation, maintenance, reliability etc) and adapt designs to meet their new purposes or applications					
Etc.						

APPENDIX 5 – GUIDELINES FOR THE ASSESSMENT OF FURTHER LEARNING PROGRAMMES

1. Introduction

The ICC Assessor must confirm that the educational base to certificate or diploma level has been achieved before approving a candidate's Self-Managed Further Learning Programme Plan. The ICC Assessor will subsequently assess the completed programme with responsibilities as indicated below.

2. Approve Plans for Assessing Candidates

The ICC Assessor will:

- Approve a candidate's Learning Plan.
- Check the support available to them.
- Approve fair, safe, valid and reliable assessment methods.
- Approve the use of different types of evidence.
- Approve the contribution that a candidates' past achievements can make to the FLP.
- Review and provide feedback on progress 12 months after commencement of the programme subject to the candidate submitting evidence of attainment to that date.

3. Judge Evidence Against Criteria to Make Assessment Decisions

Assessors must be able to:

- Use agreed assessment methods (see third bullet point above) to assess candidates' evidence.
- Ensure that the evidence comes from candidates' own work.
- Make safe, fair, valid and reliable decisions about candidates' achievements against the requirements of the FLPs.
- Explain and resolve any inconsistencies in the candidates' evidence.
- Record the outcomes of the assessment so that they can be verified.
- Seek advice if there are any disagreements about the assessment.

4. Provide Feedback and Support to Candidates on Assessment Decisions

Assessors must be able to:

- Give candidates feedback at an appropriate time and place.
- Give candidates feedback in a constructive and encouraging way, which meets their needs and is appropriate to their level of confidence.
- Clearly explain their assessment decision on whether candidates' evidence of achievement is good enough.
- Give candidates advice, when they cannot prove their achievement, on how they can develop the necessary skills or provide more evidence.
- Encourage candidates to get advice following assessment decisions.
- Identify and agree the next steps in the assessment process, and how candidates will achieve these.

5. Contribute to the Verification Process

Assessors must be able to:

- Ensure that assessment records are accurate and up to date, and provide an audit trail of evidence.
- Contribute to standardisation arrangements (internal verification) agreed with the JBM approving body so that their assessment decisions are in line with others.
- Contribute to agreed quality assurance processes.

6. Knowledge Requirements

Assessors need to know:

- How to identify and use different types of evidence when carrying out assessments.
- How to use evidence from candidates' prior achievements.
- How to develop and agree learning and assessment plans.
- How to involve the candidates in the planning and assessment processes.
- How to give candidates constructive feedback and help them develop their knowledge and ability.
- How to follow quality assurance procedures.
- How to ensure that the evidence is the candidates' own work.
- How to make valid and reliable assessments of candidates' achievements, based on their evidence.
- How to encourage candidates to ask questions and get advice.
- How to record, store and pass on assessment decisions within an agreed system.

Note: These Assessor guidelines are based upon the National Standard Unit A1 "Assess candidates using a range of methods".