



JOINT BOARD OF MODERATORS

2007 ANNUAL REPORT

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1. Chairman's Introduction

I am very pleased to present my third Annual Report to you as Chairman of the Joint Board of Moderators (JBM) outlining the activities that the JBM has been involved with during 2007. It was again a busy year for visits within the UK.

Several revised guidelines for degree programmes have been published on the JBM website which is now the JBM preferred means of communication. Guidelines posted during 2007 contain the results of experience relating to the benefits of good interaction between industry and universities, and between universities and the profession through links with the JBM member Institutions.

The development of schemes by the Board for employer-managed work-based further learning to both CEng and IEng has led to a revision of the Employer managed scheme to CEng and a new scheme leading to IEng. These are commended to employers. There is already renewed interest from within the UK and also from some internationally based organisations. Full documentation for both employers and candidates was made available during the year.

The Board has been impressed by the good practice it has seen in many of the departments visited. It views it as important that it should facilitate the sharing of good practice through this Annual Report and by specific examples provided on the JBM website. Excellent links with industry and the institutions are seen in some but not all departments. The Board considers industrial advisory committees or similar to be important contributors to departments from the profession and a resource which is often underestimated and rarely quantified. The Board has considered suggestions for further components to degree courses but recognises the need not to diminish or detract from core course content. As examples, it would wish to see integrated methods of exposing young engineers to historical precedent and a more obvious culture of health and safety awareness and risk management.

I would like to thank the JBM secretariat for their support over the past year and also the secretariat staff from the member institutions who had supported the accreditation process in their role as visit secretaries.

At the meeting of the JBM Chairman and the Presidents of the associated Institutions it was agreed that the Institutions are indebted to those members from academia and industry who contribute to the work of the JBM and its associated Sub-Committees.

I hope you will continue to give the same level of support to my successor as Chairman of the JBM, Professor Gerry Parke from the University of Surrey that you have given to me during my tenure.

Dr John A Hill FREng

2. **Executive Summary**

The Board and its Working Groups and Sub-Committees discussed a number of major policy issues during 2007.

The Board confirmed that it is important that within a department the programme leader develops a portfolio of student evidence to support the output standard requirements for each of the programmes at their exit level. A Department should seek to map its learning outcomes for course modules against the requirements set out in UK-SPEC.

Before any accreditation visit universities must review the content of all programmes to ensure that 'design', 'health, safety and risk management' and 'environment and sustainability' issues are covered satisfactorily and in compliance with revised the JBM guidelines.

The JBM member Institutions have agreed that an Accreditation Certificate should be produced and sent to all Universities visited by the Team during the academic year 2006/7 onwards and this will be sent to Universities in April 2008.

Two briefing sessions were held for employers regarding Employer Managed Further Learning Schemes; some 46 delegates attended the sessions.

Additional guidance material to support the Further Learning process was developed in 2007 and this is available on the JBM website. www.jbm.org.uk

The Board has produced a guidance note on the benefits to a University of good effective contact with the local civil engineering industry. This is available to download from the JBM website.

An updated version of the JBM's guidance document on achievement levels for entry onto accredited degree programmes is available to download from the JBM website.

Mr Sleigh a member of the accreditation committee of the Institution of Chemical Engineers attended the June Board meeting to discuss best practice regarding Health, Safety and Environmental teaching in accredited degree programmes. It was agreed that both the IChemE and the JBM recognised the need for a culture of Health and Safety within departments where they accredit representing good practice within their respective industries and not just an awareness of the regulations.

3. Role of the Joint Board of Moderators

The Institution of Civil Engineers (ICE), the Institution of Structural Engineers (IStructE), the Institute of Highway Incorporated Engineers (IHIE), and the Institution of Highways & Transportation (IHT), establish the Joint Board of Moderators to coordinate accreditation activities for educational programmes in the civil, structural, transportation and associated engineering disciplines within the built environment sector.

The JBM debates and make recommendations on accreditation, approval and non-accreditation of educational programmes for decision by the JBM member institutions. The JBM will maintain and strengthen links with universities and colleges on all matters concerned with these programmes.

The JBM ensures that the standards of programmes in Civil, Structural and associated engineering disciplines it accredits within the built environment sector meet the academic requirements for Chartered, Incorporated or Technician Membership of these Institutions. It is required, in concert with the educational establishments, to develop a system for accrediting/approving programmes of study to enable it to publish and keep up-to-date a list of qualifications which can meet or contribute towards the academic base requirements for Membership and Chartered Engineer (CEng), Incorporated Engineer (IEng) and Engineering Technician (Eng Tech) qualifications. Applications for accreditation made through individual Institutions are referred to the Board.

If requested the JBM will also consider accreditation of programmes overseas provided that the sponsoring Institutions of the JBM incur no costs and the area of activity falls within their business objectives.

The membership of the Board is drawn from the academic, public and private sectors, representing a wide spectrum of engineering associated with the built environment. All members involved in the accreditation activities of the Board are experienced engineers who bring to the moderation exercise an ability to make balanced judgements on the ability of a department to create a high standard of graduate output. As well as assessing the quality of the facilities, the content of the syllabus, the teaching and research base, and the rigour of the examinations, moderators assess how the department aims to stimulate creativity through the application of engineering principles. During the visit the representatives of the JBM will meet students, recent graduates from the programmes to be reviewed and representatives from local industry to ensure that the students experience is a positive one.

The Board has formulated Guidelines, which define in general terms the curriculum, learning outcomes, standards and other requirements against which all accreditation decisions are made. The Board aims not to be over-prescriptive in its requirements since it wishes to encourage diversity in education provision.

All accreditation visits are preceded by the submission of a standard report by the Department. The structure of each visit also follows a standard format. It involves a tour of laboratories and facilities, scrutiny of the quality of students' examination and coursework, and the assessment system. Discussions are held with academic staff, support staff, students and the Vice Chancellor, or Chief Executive, on all matters affecting the content,

standard of teaching and learning, departmental facilities and funding issues relating to the programmes being accredited. For its visit to a Department, the visiting team generally consists of two academics, two practising engineers and a secretary.

Each team's Visit Report and recommendations are considered by the full Board of the JBM, which decides whether to make recommendations to the participating Institutions that they should grant or renew accreditation for a period of up to five years. If the report is deemed sufficiently unsatisfactory the Board may refuse or terminate accreditation, but existing students on accredited degree programmes are always protected from any changes in accreditation decisions.

To reflect the range of the Board activities several specialist Sub-Committees have been established as follows: -

The International Sub-Committee of the JBM was established to assist the Board in its international activities and continues to develop international agreements with similar accreditation bodies operating in the built environment where the degree programmes would meet the educational benchmark requirements for membership.

The remit of the Further Learning Sub-Committee is to produce a series of documents defining further learning and provide supporting information and guidance, clearly setting out procedural and explanatory notes. The Sub-Committee also considers applications from Universities and Organisations for the approval of Masters degrees and Employer Managed schemes as meeting the Further Learning requirements for Chartered and Incorporated Engineers as appropriate.

The Higher Level and Technicians Sub-Committee is responsible to the Board for any activities that relate to the assessment of HNC/HND/NC/ND or equivalent programmes of study.

The Panel of Moderators has been established to assist the Board in its accreditation activities. This Panel consists of those members who can be called upon to form part of the accreditation visit teams. Members will be selected on the basis of their background and experience relevant to the programmes to be accredited. They will normally have been actively involved in accreditation activities through JBM within the previous 5 years. Normally, all visit team leaders, and one other member will be drawn from the Board and the remainder may be drawn from this Moderators' Panel.

The Board publishes a list of all accredited programmes on a regular basis; please refer to the JBM Website for more information on www.jbm.org.uk.

4. JBM Activity In 2007

4.1 Visits undertaken

Quinquennial Visits	(Dates)	Review Visits	(Dates)	EAB Visits
Swansea	25 /26 January	Liverpool	1 February	University of Oxford 20/21 February
Plymouth	8/9 February	Dundee	22 March	
Newcastle	15/16 February	Brunel	19 June	University of Cambridge 6/7 March
Bolton*	22/23 February	Robert Gordon *	17 March	
Anglia Ruskin*	8/9 March			
Salford	15/16 March			
Glasgow Caledonian *	17/18 May			
Abertay*	25/26 October			
Newport*	1 /2 November			
Birmingham	1 / 2 November			

* Visit covered IEng programmes only

4.2 Summary of course accreditations

Date of JBM Board Meeting in 2007	No of UK Visit Reports considered CEng	No of Visit Reports Considered (O.seas) CEng	No of Paper Submissions for new programmes	CEng Approved	CEng Rejected	No of UK Visit Reports considered IEng	IEng Approved	IEng Rejected
19.01*	4	-	-	11	-	3	4	1
20.04	6	-	-	16	-	5	10	1
30.06	4	-	-	11	-	-	2	1
11.10	1	-	-	2	-	-	-	-
Total	15	-	-	40	-	8	16	3

*This JBM meeting considered a number of visit reports for visits undertaken in October/November 2006

4.3 Summary of programmes Accredited as meeting Further Learning requirements

Date of JBM Board Meeting in 2007	Further Learning for CEng	Further Learning for CEng Rejected	Further Learning for IEng
19.01	12	-	-
20.04	62	1	-
29.06	22	-	-
11.10	3	-	-
Total	99	1	-

5. Summary of Policy Decisions and Main Discussion by Board

A number of major policy issues were discussed by the Board and by Sub-Committees on behalf of the Board during 2007.

- *Guidance on Industrial Liaison*
The Board has produced a guidance note on the benefits to a University of good effective contact with the local civil engineering industry. This is available to download from the JBM website.
- *Guidance on Entry Standards*
It was agreed that entry standards should not be a major issue for visiting teams. However, it was agreed to review the existing JBM guidelines for clarity. An updated version of the JBM's guidance document on achievement levels for entry onto accredited degree programmes is available to download from the JBM website.
- *Post-Graduate Diplomas*
The RSC of EC^{UK} has now issued guidance that states that a Post Graduate Diploma (PgDip) should no longer be considered for accreditation as meeting the Further Learning requirements for a Chartered Engineer and should only be considered via the Individual Case Procedure operated by the various professional bodies. This change of policy was implemented for visits undertaken in autumn 2007 onwards.
- *List of Accredited courses*
The JBM booklet has been updated to confirm that MSc courses accredited as providing the Further Learning to CEng are for holders of a CEng accredited first degree. Graduates that hold non-accredited bachelor degrees must be assessed via the individual case route operated by the JBM member institutions.
- *Number of recommendations made following a JBM visit*
The Board agreed that there should be no limit on the number of recommendations but that visit teams could look at grouping their recommendations into relevant sections.
- *Representation of Chartered Engineers in Civil Engineering Departments*
The Board considered the policy issue about the number of Chartered Engineers in Civil Engineering departments and a range of views was expressed. The Board agreed that while having professional qualification of staff was important, particularly in relation to the student experience, they would not wish to state a minimum number. The Board agreed that a Professionalism thread in University programmes could be investigated and a brief set of guidelines drawn up in relation to the appointment of professionally qualified staff in departments. This area will be explored further in 2008.

Details of the main activities of the associated Sub-Committees are reported in the following sections.

5.1 International Sub-Committee

One meeting of the International Sub-Committee was held in 2007.

- The International Sub-Committee continues to work with their colleagues on the Russian International Accreditation Board (RIAB) and they were pleased to receive reports on the RIAB recent accreditation visits to Moscow State University of Civil Engineering.

5.2 Higher Level and Technician Qualifications Sub-Committee

- The JBM agreed to continue to develop and maintain a list of approved programmes for EngTech registration. The updated list is available on the JBM website.
- One area that the Sub-Committee will be reviewing in 2008 is the growth of Foundation Degrees and they will consider if separate guidance is required.

5.3 Further Learning Sub-Committee

- During the past twelve months the Sub-Committee has continued to approve company and university proposals for schemes of further learning.
- It was agreed that the JBM member institutions should promote the uptake of Employer-Managed Work-Based Further Learning Programmes to increase accessibility beyond the large employers. Two briefing seminars were held in London and Manchester for employers to outline the essential characteristics of an Employer-Managed Work-Based Further Learning Programme. The Sub-Committee is to consider providing some follow-up sessions for companies and proposed Supervising Engineers in 2008.

The current list of approved Employer-Managed schemes is as follows: -

- Carillion plc
 - Dawnus Construction Ltd
 - Edmund Nuttall
 - Jacobs
 - Kier Construction
- Professor Barry Clarke has held meetings with a number of companies to discuss the requirements of an Employer-Managed scheme.
 - Following visits or reviews of paper submissions some 99 MSc programmes were approved during 2007 as meeting the Further Learning requirements for a Chartered

Engineer under the provisions of UK-SPEC for holders of a CEng accredited BEng (Hons) undergraduate first degree from the following universities. For a full list of accredited programmes please see the list on the JBM website: -

- Heriot-Watt University
 - Hong Kong University of Science and Technology
 - Newcastle University
 - University of Dundee
 - University of Hong Kong
 - University of Liverpool
 - University of Plymouth
 - University of Salford
 - University of Wales, Swansea
-
- The Board and its member Institutions have approved a paper developed by the Sub-Committee that identifies the Further learning requirements for an accredited CEng level graduate compared to those of an honours graduate from an IEng accredited degree. This guidance document that identifies the differences between Technical and Non-Technical MSc programmes for the different types of graduates. This document is available on the JBM website www.jbm.org.uk. To support this work, the Sub-Committee is also developing a guidance document for the use of Visiting Teams.

 - The Sub-Committee has also developed guidelines for an MSc with a pre-qualifying year to allow candidates with cognate degrees to complete the educational base for a Chartered Engineer. This draft is currently with the JBM member bodies for their consideration.

5.4 Other Issues considered by the Board in 2007

- *Pressure to have research active staff*
The Board noted that as a consequence of a reduction in teaching income there continues to be pressure on Departments to recruit new staff with a proven research record as income generators. The Board recognised that most extra income now comes through research work and Departments at Universities without strong research activities will be forced to increase the student to staff ratios in order to remain viable. In the light of these pressures exhortations for the recruitment process to put greater weight on new staff with appropriate professional and practical experience are too often falling on deaf ears.

- *Bologna Declaration*
The Board has been concerned with lack of progress on addressing the problems arising from UK participation in the Bologna Agreement. The Board has been aware that some departments are seeking to improve compatibility but there remains uncertainty as to what changes will prove necessary, or feasible in the present funding climate and available resources within an academic year. The JBM would not wish to see the degrees it accredits being measured unfavourably against European and other standards and will continue to press for a timely resolution of the

uncertainties.

During 2007 the Board spent a considerable time considering the implication of the Bologna declaration; Professor Parke and others attended the meeting held on 5 October 2007: "Engineering Higher Education and the Bologna Process: Implications of the Latest Position" organised by ECUK and others. The overall conclusion is that the JBM member institutions do not wish the JBM to accredit degrees to ensure that they are Bologna compatible.

- *Diploma Supplement*
This document aims to describe the qualification that a graduate has received in a standard format that is easy to understand and easy to compare, and it is has been widely implemented in other Bologna signatory countries. The Board agreed that it would ask its visiting teams to check if the University being visited can made these documents available to its graduates if required.
- *JBM Website*
The Board agreed to a proposal to revamp and develop the JBM website which would be confined to essential restructuring of the existing information rather than whole-scale website re-design. Greater use is being made of the JBM website to promote issues to universities.
- *Engineering Accreditation Board*
The current JBM policy is that it will only take part in those visits organised under the auspices of EAB where an educational establishment has generic, integrated engineering degree programmes rather than specific civil engineering programmes. In this regard the JBM took part in two EAB visits to the Universities of Oxford and Cambridge in 2007.
- *New Board Membership*
In 2007 to assist the operation of the JBM the member Institutions reviewed their nominees to the Board and the associated Panel of Moderators and two new Member joined the Board in 2007, Mr Michael Dickson (Buro Happold) and Mrs T Frost (Cornwall County Council).
- *Move to Panel of Moderators*
Professor Powrie, Professor Barr and Dr Williams completed their service on the main JBM Board at the end of 2007 and they have kindly agreed to remain as members of the Panel of Moderators for a further three years.
- *Royal Academy of Engineering*
The Board discussed the implications for accreditation activities in light of the recommendations in two of the Royal Academy's publications – "Educating Engineers for the 21st Century" and "Creating Systems that Work". A representative of the RAEng will attend the JBM meeting in January 2008 to discuss these further.
- *Eurocodes*
The Board discussed the issue of Eurocodes. It was noted that Universities were

starting to cover the principles of Eurocodes and it was agreed it is now timely that JBM teams should pick up on examples of best practice in the upcoming accreditation visits.

- *Training for Moderators*
A Training Session for Moderators was held on the 26th January 2007 when training in Health & Safety Risk Management issues was given prominence. Training of new Board members continues to be through on-the-job training during visits.
- *UK-SPEC*
 - All visits now comply with UK-SPEC and teams check that the appropriate learning outcomes have been achieved. It is important though that accreditation visits do not become a tick-box exercise. One of the roles of the accrediting teams is to promote excellence and not simply to ensure that a series of hurdles are cleared.
 - In line with UK-SPEC, all MSc programmes are now listed as accredited rather than approved.
- *HNC/HND Programmes*
Where a University offers HND awards as well as degree programmes, details of such programmes must also be included in the submission. This has two benefits: firstly to enable the JBM to monitor the provision of such programmes and, secondly, to enable the Team to obtain a clearer picture of the full range of programmes on offer at the University and how transfer arrangements between the two programmes have become more transparent.
- *Panel for Historical Engineering Works*
The Board noted a paper for the ICE Panel for Historical Works (PHEW) seeking further support to ensure that the aim of increasing students' understanding of historical, current and further developments and technologies is achieved. It was agreed that it was important to learn from past events and identify areas of human weakness so that mistakes would not be repeated. The Board agreed that the view of PHEW should be endorsed and some examples from Universities should be collected and identified as areas of good practice.

5.7 Issues to be considered by the Board in 2008

In 2008, the following areas are to be considered by the JBM: -

- Need for further guidance to departments as visiting teams gain more experience of assessing, undergraduate and masters programmes using the new Output Standards documentation
- Development of supporting guidance material on Further Learning for potential candidates that have not been able to follow an Employer-Managed Work-Based Further Learning programme or an accredited MSc degree.
- The issue of MEng as a fast-track route to CEng registration will be given further consideration
- The Board is intending to develop a Business Plan and to set objectives for 2008.
- A number of universities reported that they were considering plans to offer a Foundation Degree in civil engineering and the growth of such programmes will be monitored by the Higher Level and Technician Qualifications Sub-Committee during 2008.

- To meet with HERG to discuss opportunities for closer collaboration in accreditation activities.
- To meet with the RAEng to discuss the implications of the two publications “Educating Engineers for the 21st Century” and “Creating Systems that work”.
- A Working Group has been established to review the current JBM submission documentation.
- A JBM Sub-Committee will now review all the JBM visit reports prior to the Board meeting to ensure consistency of approach and to highlight any key policy issues for the Board to debate in more detail.
- The 14-19 Diplomas in Engineering and the Construction and the Built Environment to consider the impact on entry standards and routes to professional membership.
- To review the role of Industrial Advisory Board’s or their equivalent.

6. Good Practice

Visit Reports are now prepared with points of good practice being highlighted for the information of Board Members and Universities. This aspect of reporting was introduced to improve the level of dissemination of good practice observed during JBM Visits.

- *Student Poster Work*
Whilst Visiting Teams were happy with the quality of the students presentations both posters and other work viewed by Teams were generally of a high standard, they were generally disappointed that the Department was not using some of this excellent work on display boards in the Department or in its laboratories to highlight aspects of civil engineering to other students in the University and to external visitors. Displaying student work in communal areas could act as an inspiration to other students.
- *Participation in the Constructionarium.*
Those Departments that are able to take part in the Constructionarium continue to find great benefit.
- *Support from Students*
A recurring theme in most Visit Reports is that the visiting team was impressed by the articulate and enthusiastic students who were very supportive of the staff. Similarly, many Visit Reports refer to a strong team spirit between the staff and the students and that a good atmosphere is apparent during the visit, often as a result of the "open door" policy of the staff in the Department.
- *Links with Industry*
The links between Departments and Industry continue to be somewhat more variable. However, in those Departments with an effective Industrial Liaison Committee or where there is a high level of regular contact between the Department and Industry, there was clear evidence of the benefits to be gained by all parties including students. In particular, excellent links between Universities and Industry have been established in those Departments offering sandwich or vacation placements. Evidence was also provided in many cases of good use being made of Visiting Professors, some of whom were based in Industry.
- *Research work*
A good number of Visit Reports indicated that the research work of staff was being

fed back to the students in project work and occasionally in final year modules.

- *Intranet systems*
Good use is also being made of university intranet systems to enable students to access lecture notes, worked examples and previous examination papers.

Some more detailed examples of good practice are listed in Annex 1 and a contact name is provided if more information is required. JBM is keen to facilitate the spread of best practice and comments are invited.

7. Current Concerns

Undergraduate programmes

- *Aims and Objectives*
The aims and objectives of various degree schemes at a number of Universities were considered to be disappointing with many not differentiating significantly between IEng and CEng degree schemes or even between the different modes of study. The broadening aspects of the MEng degree were often overlooked in the aims and objectives. Also, many Departments continue to fail to refer to the uniqueness of the course or the Department's particular strengths in the published documentation. This is an area in which the Industrial Advisory Board or its equivalent can help to ensure that the course structure meets the aims and objectives as specified by the Department.
- *Need to maintain documentary evidence for visiting teams*
That Universities are failing to recognise that with a move to the accreditation of degree programmes against defined output standards that they must maintain a body of evidence to enable visiting Teams to assess and confirm that the appropriate output standards are being achieved.
- *Lack of evidence of a design thread*
The Board continues to be concerned about the number of Visit Reports stating that the visiting team had experienced difficulty in identifying a design thread throughout the course. The Board will keep this area under review since the difficulty is unlikely to ease with the pressure coming from the administration arm of the Universities to appoint "research active staff". The design thread could be strengthened if the Department also considered the early part of the design process when developing project scenarios to cover such areas as problem definition, contextualisation and schematic design
- *Links with JBM member bodies*
The benefits of membership of the Institutions should be stressed to members of the academic staff. It is important that students come into contact with lecturers who are professionally qualified. Departments must encourage academic staff to pursue professional membership and Chartered status where appropriate.

Some Department's send a group email to the civil engineering students to remind them when an evening meeting from one of the JBM associated professional bodies is to take place on the campus or nearby.

Departments are encouraged to contact the local Institutions liaison representatives to undertake a presentation to students.

Students must be encouraged to become members of ICE, IStructE, IHT or HIIE and to participate in the activities of these institutions.

- *Course Completion rates*

A small number of Departments are being encouraged to develop and implement initiatives to improve the course completion rate.

- *Health and Safety Risk Management*

This continues to be an issue and health and safety should become more imbedded, especially in terms of its practical application. One way of achieving this in part would be to have the students complete their own risk assessments when doing lab work. A number of Teams have commented that there was little evidence of health and safety notices in the laboratories and recommended that the Department address this issue.

In most cases the use of engineering disasters could be improved to better illustrate concepts to the students.

Departments should ensure that the study of case precedents is undertaken to allow students to learn from others' past mistakes and to see how the lessons learnt can be applied in current construction projects and in their design work

- *Sustainability*

The teaching of sustainable development should be widened to include economic and social considerations, not just environmental. It is suggested that Departments should require students to consider sustainability issues in all projects.

- *Integrated Project work – assessing individual students performance*

Where Departments are operating an Integrated Design Project, they should record all stages of the project process. This will include monitoring the student's log books and keeping records of the interim reports.

Departments are being asked to review how the contribution from an individual student is assessed in group-based projects with particular reference to the quality as well as the quantity of the work. Teams feel that peer assessment within the group projects should be increased and the procedures for individual marking made more robust to better reflect the contributions made by the members of the group. Thought should be given to the best way to ensure that good critical assessment is part of the projects.

- *Industrial Liaison*

There is a need for Departments to ensure that they fully utilise the support available through their industrial liaison panel or its equivalent. Some industrial panel members are more than willing to become involved in the assessment of Final Year projects, design tutoring, to give the occasional one-off guest lecture, industrial placements (or vacation experience) and suggest opportunities for site visits. In some cases visiting teams have suggested that the membership of this industrial panel should be expanded to better reflect the broad nature of the civil engineering profession. Panels can also assist with student work placements and they can also promote the value of relevant vacation work and possibly encourage some of their

colleagues to undertake some kind of mentoring at least for the full time students. It may also be possible for Part-Time students to act as 'buddies' to full-time students where feasible taking them to their office/sites.

It is important that the IAP should continue to be active **after** the JBM visit.

Other specific issues of concern arising from the 2007 Visit Reports include:

- The Moderating Team believe that it would be highly desirable to use a new design brief each year for the live projects especially in the final year
- Staffing continues to be an issue in some Departments and a number have been asked to keep the JBM advised about changes in staff
- Departments should ensure that the End of Module Tests are subjected to the same quality assurance procedures as examinations, including validation by an external examiner.
- In some cases it has been suggested that the number of electives should be increased to improve choice for the students and improve the breadth of the course.
- Level of training of post graduate assistants
- Students would welcome more examples in the mathematics modules that demonstrate the civil engineering application of mathematical theory.
- For an IEng accredited degree the final year individual projects should include more practical/analytical elements.
- Timetables should allow students to take part in site visits.
- Ensure that assessments are aligned to the stated learning outcomes.
- The need to monitor progression rates so that at the time of an accreditation visit, data can be provided that demonstrates how the cohort extremes have been supported.
- Regulations for referral and compensation should be transparent and easy to understand by visiting teams.
- Departments should continue with the modernisation of facilities, particularly the laboratory space.
- Departments are encouraged to monitor graduate progression into the construction industry and elsewhere.
- Departments need to ensure that there is less of a bias towards literature/desk study in individual projects, as opposed to laboratory/experimental work, option appraisal and opinion forming.

7.2 Post-Graduate Programmes

The Board is still gaining experience in the accreditation of MSc programmes and a number of comments from Teams refer specifically to issues arising from the request for the accreditation of these programmes of study. In particular: -

- To make the examination papers for the MSc programmes more open ended and challenging.
- The lack of evidence of sufficient technical depth and specialist engineering theory and application to Masters level in some of the potential routes within the MSc programme when students have the choice to follow a number of pathways.
- All assessments on MSc programmes must be at M level.

As a consequence of the experiences of JBM visiting teams, the Further Learning Sub-Committee has been asked to develop and promulgate clear guidance and criteria against

which MSc programmes can be judged as meeting the requirements and standards of Further Learning which will ensure that a graduate undertaking such learning will have met the educational base requirements of a Chartered Engineer.

Annex No. 1**More detailed examples of good practice****University of Abertay**

Dr Roger J Preston BTech (Hons) PG Cert HE MSc PhD CEng MICE CEnv FHEA. School of Contemporary Science, University of Abertay Dundee, Bell Street, Dundee DD1 1HG. Tel: (+44) (0) 1382 308111, Email: r.preston@abertay.ac.uk.

- **The series of 5 one day courses at the CITB in Glasgow**

During the first semester of stage 2, students are required to attend a series of 5 one day courses at the CITB in Glasgow. These courses are aimed at introducing students to a hands-on exercise in managing a construction process, with additional outcomes involving setting-out, steel-fixing, formwork, false work, access scaffolding, concreting and health and safety issues.

Anglia Ruskin University

Mr Phil Mellow, Department of the Built Environment, Anglia Ruskin University, Bishop Hall Lane, Chelmsford, CM1 1SQ. Tel No: (+44) (0) 845 196 3287, Fax No: 01245 683044, Email: p.mellow@anglia.ac.uk.

- **The Mentoring Scheme**

Mentoring of Students by Practitioners

The University is committed to an Employer Mentoring Scheme particularly focusing on second year full-time students. Graduates or professionals from local businesses support the students on a one-to-one basis, for a six-month period. Each student works with a carefully paired mentor to identify individual needs that may need development and together they undertake a personal programme designed to meet those needs. Mentoring enables students to evaluate and enhance their business awareness, assisted by an experienced employer. It has also led to part-time and/or vacation employment.

University of Birmingham

Mr Kamel IM Hawwash, BSc, MSc, MAPM, ILTM, Acting Head of Civil Engineering Department of Civil Engineering, The University of Birmingham, Edgbaston, Birmingham, B15 2TT. Tel: (+44) (0)121 414 5068, Email: k.i.m.hawwash@bham.ac.uk

- The Mathematics Drop-in Centre.
- The needs based teaching for mathematics and the option that allows students to take advanced optional modules in mathematics (Engineering Mathematics A – Numerical Analysis and Engineering Mathematics B Vector Calculus.
- The supervision by third year MEng students of the first year field courses, and the use of this as an element in the third years' MEng group project. .

The Mathematics Drop-in Centre.

To support Mathematics teaching a Maths drop-in centre has been opened. The centre is staffed by MEng and PG students during specific hours each week and they are supported by a few academics. In discussion with staff the remit of this centre may be extended to cover additional support for the teaching of structures.

The needs based teaching for mathematics and the option that allows students to take advanced optional modules in mathematic

The Team was impressed with the approach taken to the teaching of mathematics by the Department as this is embedded within modules and it is introduced on a need to know basis. Mathematical

concepts are introduced when they are necessary to underpin the technical content of the module. Students can also take advanced optional modules in mathematics (Engineering Mathematics A – Numerical Analysis and Engineering Mathematics B - Vector Calculus), if additional study in mathematics is desired to support their choice of module options.

The supervision by third year MEng students of the first year field course

Surveying is taught as an element in the first year module entitled Construction Design and Professional Skills B. A one-week field course also takes place at West Hills. This field course also forms an element in the MEng group project where the MEng students are asked to manage the work of the first year students. The MEng students are responsible for a substantial budget, covering the costs of the Design-and-Build Exercise, a construction site visit, the Conceptual Design exercise, the Surveying Field Course and associated social events.

University of Dundee

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- **MEng Multidisciplinary Project at Level 5**
- **Health and Safety and Environmental Management core module for all MSc students**
- **The Summer Project for the MEng students**

MEng Multidisciplinary Project

One additional feature of the MEng Multidisciplinary Projects at Dundee University is that at Level 5 civil engineering students are paired with 'design' buddies from Level 5 of the MArch course in the School of Architecture.

Core Module for MSc Students

Completion of the core module Health and Safety and Environmental Management by all MSc students, many from outside the UK, enables them to cover the core areas of sustainability and health and safety risk management.

The Summer Project for the MEng students

Following Level 3 examinations, MEng students carry out a Summer Project intended to introduce the students to the civil engineering industry. The project lasts approximately six to eight weeks in the summer and students complete a report on their placement.

Glasgow Caledonian University

Mr Martin Cullen BSc, MBA, CEng, MICE, FInstCES, School of the Built and Natural Environment, Glasgow Caledonian University, Cowcaddens Road, GLASGOW, G4 OBA. Tel (direct) (+44) (0) 141 331 3544, Fax 0141 331 3696, Email m.n.cullen@gcal.ac.uk

- **Excellent learning resource for students in the Saltire Centre**

The recently built Saltire Centre is located between two of the main buildings on campus and was made available to students at the beginning of semester B in 2006. The ground floor service mall is designed to allow Student Services to provide an integrated one-stop shop. The Saltire Centre offers the students private study areas, IT, areas of differing noise and privacy according to their study requirements, be it individual or group study.

University of Plymouth

Professor R Sutton, Head of School of Engineering, University of Plymouth, Drake Circus, Plymouth PL4 8AA. Tel: +44 (0)1752 232573 Email: R.Sutton@plymouth.ac.uk

- **Women in Technology Network (WITNET)**
- **Links with local schools**
- **Local graduates supporting design work**
- **Centre for Sustainable Futures (CSF)**

Women in Technology Network (WITNET).

This scheme is designed to support all female students in technology programmes and comprises induction events, peer mentoring, regular meetings/social events, workshops for personal and professional development, careers talks from women in industry and academia and opportunities to help widen access to technology for schoolgirls.

Links to local Schools

The School's close links with local schools. Students actively participate in the Science and Technology Opportunities Programme (STOP) and regular events are organised by staff and practising engineers to raise the awareness of engineering within schools.

Graduate trainees supporting design project work

Local graduates supporting design project work. Graduates from local firms of consulting engineers and other organisations contribute to the teaching of design in the final years of the undergraduate courses. In many cases, the graduates assisting with the teaching do so with the encouragement of members of the Industrial Advisory Committee.

Centre for Sustainable Futures

The link between the Centre for Sustainable Futures (CSF) and Teaching. The CSF has had a very clear positive impact on the sustainability thread in all the undergraduate programmes.

University of Salford

Professor Clive Melbourne BEng(Hons), PhD, CEng, FICE, FStructE, School of Computing, Science and Engineering, Newton Building, University of Salford, Salford, Gtr. Manchester, M5 4WT. Tel:0161 295 5921, Email: c.melbourne@salford.ac.uk.

- **Programme of Visiting Lectures**

A list of visiting lecturers and their topics was included within the submission documents. This is a weekly occurrence with attendance voluntary from the students. Certificates are issued to students to develop a culture of CPD.

Annex No. 2**Details of Membership - 2007****Joint Board of Moderators**

Chairman	Dr J Hill
Members	Professor C Bailey Mr P W Bedford Professor B G Clarke Mr M Dickson Mr T Edmunds Mr S Evans Ms T Frost Professor D Lloyd-Smith Mr H MacIntyre Mr F Montgomery Mr C Nason Professor G Parke Professor R Plank Professor W Powrie Dr D B Reid Mr A Silver Professor T Ibell Mr S Spender Dr D R Twigg Ms F Wainwright Dr C Williams
EC ^{UK} Liaison Officer	Mr M Robbins
International Sub-Committee Chair	Professor B Barr
HLTQSC Chair	Mr E Hewitt
Further Learning Sub-Comm. Chair	Professor B G Clarke
Secretariat (ICE)	Mr D Mitchell/Ms C Dooley Ms E Ryan Ms D Seddon
Secretariat (IHIE)	Ms M DaCosta Ms J Walker
Secretariat (IHT)	Ms R Sprunt Ms S Stevens
Secretariat (IStructE)	Mr A Brereton Mr D Byrne Ms M Dignan Ms L Pollard

Higher Level and Technician Qualifications Sub-Committee

Chairman	Mr E Hewitt
	Mr D Hoskins
	Mrs J Knight
	Mr B Pyper
	Mr C Bedford
	Mr P Dipper
	Secretariat
	M DaCosta
	D Byrne
	D Mitchell
E Ryan	

International Sub-Committee

Chairman	Professor B Barr
	Mr C Carter
	Professor D Cleland
	Mr R Eastwood
	Mr E Hewitt
	Mr J C Joel
	Professor B Lee
	Mr R McKittrick
	Professor C Melbourne
	Professor D Nethercot
Secretariat	
Professor N Smith	
M Dignan/D Byrne	
D Mitchell	
E Ryan	
D Seddon	

Further Learning Sub-Committee

Chairman	Professor Clarke
	Mr K Howatt
	Dr R Lark
	Mr E Hewitt
	Mr J Ingle
	Mr L Parker
	Mr McKittrick
	Secretariat
	M Dignan/D Byrne
	D Mitchell
M DaCosta	
E Ryan	
D Seddon	
S Stevens	

Annex 3 Student Intake Numbers 2007	MEng			BEng (Hons) CEng			MSc			PGDip			IEng Degree			HNC/FD	HND	NC	ND	Total Students
	Home	OS	Total	Home	OS	Total	Home	OS	Total	Home	OS	Total	Home	OS	Total	Total	Total	Total	Total	
Aberdeen	56	1	57	96	9	105			0			0			0					162
Abertay Dundee			0			0			0			0	69	3	72					72
Anglia Ruskin University			0			0			0			0	76		76		58			134
Bath	174	26	200	49	23	72	12	37	49			0			0					321
Belfast Queens University	248	14	262	142	84	226	20	3	23			0			0					511
Belfast Metropolitan College			0			0			0			0			0	28	24	27		79
Birmingham	76	35	111	132	52	184	72	33	105	2	6	8			0					408
University of Bolton			0			0			0			0	136	14	150	109				259
Bradford	26	3	29	180	53	233			0			0	9	5	14					276
Bridgend College			0			0			0			0			0					0
Brighton	17	2	19	105	10	115	8	7	15			0			0					149
Bristol	228	22	250	20	12	32			0			0			0					282
Burton College			0			0			0			0			0					0
Cambridge	846	237	1083			0	21	10	31			0			0					1114
Cardiff	278	19	297	149	55	204	10	28	38			0			0					539
City	33	7	40	159	38	197	24	10	34	3		3			0					274
Coventry	16		16	157	29	186	29	2	31	4		4	73	13	86	65	23			411
Derby																55				
Dundee College			0			0			0			0			0	43	35	13		91

Dundee University	59	1	60	148	2	150	15	24	39			0			0					249	
Students 2007	MEng			BEng (Hons) CEng			MSc			PGDip			IEng Degree			HNC	HND	NC	ND	Total Students	
	Home	OS	Total	Home	OS	Total	Home	OS	Total	Home	OS	Total	Home	OS	Total	Total	Total	Total	Total		
Durham	71		71	10		10			0			0			0						81
East London			0	128	100	228	30	41	71			0			0	17					316
Edinburgh	251	5	256	81	10	91	3	8	11			0			0						358
Exeter College			0			0			0			0			0	28		19			47
Exeter University (entry to all engineering)	75	1	76	102	11	113	3	3	6			0			0						195
Forth Valley College			0			0			0			0			0						0
Glamorgan			0	13		13	6	7	13			0	92	14	106	47	28				207
Glasgow University			0			0			0			0			0						0
Glasgow Caledonian University			0			0			0			0	121	8	129						129
Greenwich			0	58	39	97	1	6	7			0	21	13	34	25	11				174
Heriot-Watt	152		152	139	1	140	58	15	73	8	2	10			0						375
Kingston			0	181	15	196	51	21	72			0	66	9	75						343
Leeds	123	7	130	271	56	327	28	49	77	2		2			0						536
Leeds Metropolitan University			0			0			0			0	87	6	93		188				281
Lincoln College			0			0			0			0			0						0
Liverpool	102	18	120	101	46	147	2		2			0			0						269
Liverpool John Moores			0	129	7	136	25	2	27			0			0	56	38				257

London (Imperial)	255	130	385			0	94	145	239			0			0					624
Students 2007	MEng			BEng (Hons) CEng			MSc			PGDip			IEng Degree			HNC	HND	NC	ND	Total Students
	Home	OS	Total	Home	OS	Total	Home	OS	Total	Home	OS	Total	Home	OS	Total	Total	Total	Total	Total	
London (UCL)	83	31	114	58	48	106	16	10	26	4	1	5			0					251
Loughborough	186	8	194	124	16	140	15	43	58	1		1			0					393
Manchester	169	26	195	88	45	133			0			0			0					328
Mid Kent College			0			0			0			0			0					0
Napier	39		39	195	4	199	41	33	74			0	99	3	102					414
New College, Nottingham			0			0			0			0			0					0
Newcastle	168	3	171	144	14	158	125	37	162	15	3	18			0					509
Newcastle College			0			0			0			0			0	68	8	79		155
City College Norwich			0			0			0			0			0	12	15	29		56
Nottingham	256	58	314	44	37	81	34	42	76	4	4	8			0					479
Nottingham Trent			0	61	6	67	44	7	51			0	153	6	159					277
Oaklands College			0			0			0			0			0	43		53		96
Oxford	131	26	157			0			0			0			0					157
Paisley University			0			0			0			0	38		38					38
Perth College			0			0			0			0			0					0
Plymouth	79	5	84	102	10	112	10	4	14			0	127	4	131			12		353
Portsmouth	32	4	36	120	29	149	15	7	22			0	66	6	72			39		318
Students 2007	MEng			BEng (Hons) CEng			MSc			PGDip			IEng Degree			HNC	HND	NC	ND	Total Students
	Home	OS	Total	Home	OS	Total	Home	OS	Total	Home	OS	Total	Home	OS	Total	Total	Total	Total	Total	

Salford	11	3	14	76	12	88	109	33	142	1	6	7	40	9	49					300
Sheffield University	276	27	303	28	17	45	22	43	65	1	1	2			0					415
Southampton Solent University			0			0			0			0			0	74	1			75
Southampton University	178	17	195	57	12	69	59	21	80			0			0					344
South Bank			0	87	32	119	22	19	41	1		1	85	29	114	138				413
Strathclyde	110	2	112	156	5	161			0			0			0					273
Surrey	106	7	113	145	30	175	254	168	422			0			0					710
Swansea	50	30	80	145	41	186	1	21	22			0			0					288
Swansea Institute			0			0			0			0			0	26	7			33
Swindon College			0			0			0			0			0					0
Ulster			0	76		76	18		18			0	49		49					143
Warwick	263	15	278	69	23	92			0			0			0					370
University of Wales, College Newport			0			0			0			0	48	2	50	62	22			134
University of the West of England			0			0			0			0	81	1	82	43	29			154

Students 2007	MEng			BEng (Hons) CEng			MSc			PGDip			IEng Degree			HNC	HND	NC	ND	Total Students
	Home	OS	Total	Home	OS	Total	Home	OS	Total	Home	OS	Total	Home	OS	Total	Total	Total	Total	Total	
Wolverhampton	0	0	0	95	10	105	6	6	12	0	0	0	0	0	0	110	5	0	0	232
Total	5223	790	6013	4420	1043	5463	1303	945	2248	46	23	69	1536	145	1681	1049	543	220	0	17231

This data has been provided by Universities and Colleges. Missing data means that the overall totals shown in this chart are not a true reflection of the total number of students studying civil engineering programmes of study.

Annex 4 Graduate Numbers 2007	MEng			BEng (Hons) CEng			MSc			PGDip			IEng Degree			HNC	HND/FD	NC	ND	Total Graduates
	Home	OS	Total	Home	OS	Total	Home	OS	Total	Home	OS	Total	Home	OS	Total	Total	Total	Total	Total	
Aberdeen	13		13	25	4	29			0			0			0					42
Abertay Dundee			0			0			0			0	23		23					23
Anglia Ruskin University			0			0			0			0	7		7	24				31
Bath	33	3	36	16	3	19			0			0			0					55
Belfast Queens University	24	3	27	36	22	58	11		11			0			0					96
Belfast Metropolitan College			0			0			0			0			0	13	8	18		39
Birmingham	23	9	32	18	10	28	25	35	60	2	2	4			0					124
University of Bolton			0			0			0			0	34	3	37	40				77
Bradford	1	5	6	10	21	31			0			0		1	1					38
Bridgend College			0			0			0			0			0					0
Brighton			0	15	6	21	17	2	19	4		4			0					44
Bristol	41	4	45	7	2	9			0			0			0					54
Burton College			0			0			0			0			0					0
Cambridge	54	5	59			0	7	3	10			0			0					69
Cardiff	53	3	56	29	24	53	10	18	28			0			0					137
City	11		11	22	8	30			0			0			0					41
Coventry	1		1	31	3	34	13	5	18	2		2	20	7	27	36	9			127

Derby																	3			3
Dundee College			0			0			0			0			0		85	12		97
Dundee University	9		9	34		34	15	24	39			0			0					82
Graduates 2007	MEng			BEng (Hons) CEng			MSc			PGDip			IEng Degree			HNC	HND	NC	ND	Total Graduates
	Home	OS	Total	Home	OS	Total	Home	OS	Total	Home	OS	Total	Home	OS	Total	Total	Total	Total	Total	
Durham	32		32	7		7			0			0			0					39
East London			0	33	14	47	13	11	24	11	3	14			0	7	4			96
Edinburgh	32	2	34	22	1	23		13	13		1	1			0					71
Exeter College			0			0			0			0			0	8				8
Exeter University (entry to all engineering)	12		12	15		15			0			0			0					27
Forth Valley College			0			0			0			0			0					0
Glamorgan			0			0	3	6	9		2	2	19	5	24	19	1			55
Glasgow University			0			0			0			0			0					0
Glasgow Caledonian University			0			0			0			0	36		36					36
Greenwich			0	12	10	22	4	3	7			0	5	2	7	10	5			51
Heriot-Watt	19		19	15		15	19	11	30	2	2	4			0					68
Kingston			0	48	4	52	34	10	44	8	1	9	11	2	13					118
Leeds	38	3	41	30	27	57			0			0			0					98
Leeds Metropolitan University			0			0			0			0	35	3	38		45			83
Lincoln College			0			0			0			0			0					0
Liverpool	9	7	16	17	15	32	7	8	15			0			0					63

Liverpool John Moores			0	18	3	21	8		8	13		13			0	15		5				62
London (Imperial)	50	25	75			0	72	110	182			0			0							257
Graduates 2007	MEng			BEng (Hons) CEng			MSc			PGDip			IEng Degree			HNC	HND	NC	ND	Total Graduates		
	Home	OS	Total	Home	OS	Total	Home	OS	Total	Home	OS	Total	Home	OS	Total	Total	Total	Total	Total			
London (UCL)	25	3	28	18	15	33	3	3	6	2		2			0							69
Loughborough	23	1	24	26	3	29	15	53	68			0			0							121
Manchester	24	2	26	12	5	17			0			0			0							43
Mid Kent College			0			0			0			0			0							0
Napier	13		13	50		50	33	9	42	2	1	3	36		36							144
New College, Nottingham			0			0			0			0			0							0
Newcastle	34	1	35	11	3	14	57	76	133	1		1			0							183
Newcastle College			0			0			0			0			0	21	13	23				57
City College Norwich			0			0			0			0			0							0
Nottingham	59	7	66	26	17	43	10	34	44			0			0							153
Nottingham Trent			0	13		13	12	7	19	4		4	24	1	25							61
Oaklands College			0			0			0			0			0	22		17				39
Oxford	28	4	32			0			0			0			0							32
Paisley University			0			0			0			0	41		41							41
Perth College			0			0			0			0			0							0
Plymouth	6		6	21	4	25	8	3	11	1		1	29	5	34			8				85
Portsmouth	8		8	27	9	36	36	10	46			0	14	1	15			2				107
Graduates 2007	MEng			BEng (Hons) CEng			MSc			PGDip			IEng Degree			HNC	HND	NC	ND	Total Graduates		

	Home	OS	Total	Home	OS	Total	Home	OS	Total	Home	OS	Total	Home	OS	Total	Total	Total	Total	Total	
Salford	3		3	9		9	29	10	39	2		2	8	1	9					62
Sheffield University	36	4	40	15	3	18	7	33	40		2	2			0					100
Southampton Solent University			0			0			0			0			0	30	13			43
Southampton University	35	2	37	18	3	21	39	31	70	4	1	5			0					133
South Bank			0	15	3	18	12	11	23			0	10	6	16	24				81
Strathclyde	37		37	34		34			0			0			0					71
Surrey	25	1	26	25	7	32	17	29	46	1	5	6			0					110
Swansea	10	12	22	14	17	31			0			0			0					53
Swansea Institute			0			0			0			0			0	14	6			20
Swindon College			0			0			0			0			0					0
Ulster			0	31		31			0			0	18		18					49
Warwick	30	2	32	14	7	21			0			0			0					53
University of Wales, College Newport			0			0			0			0	8	1	9	20	9			38
University of the West of England			0			0			0			0	15		15	3	5			23
Graduates 2007	MEng			BEng (Hons) CEng			MSc			PGDip			IEng Degree			HNC	HND	NC	ND	Total Graduates
	Home	OS	Total	Home	OS	Total	Home	OS	Total	Home	OS	Total	Home	OS	Total	Total	Total	Total	Total	

Wolverhampton	0	0	0	10	4	14	2	2	4	0	0	0	0	0	0	46	5	0	0	69
Total	851	108	959	849	277	1126	538	570	1108	59	20	79	393	38	431	352	226	70	0	4351

This data has been provided by Universities and Colleges. Missing data means that the overall totals shown in this chart are not a true reflection of the total number of students studying civil engineering programmes of study.