



University College Dublin

REVIEW GROUP REPORT

Periodic Quality Review

UCD School of Civil Engineering

October 2015

Accepted by the UCD Governing Authority at its meeting on 28 June 2016

Table of Contents

Key Findings of the Review Group

1.	Introduction and Overview of UCD School of Civil Engineering	5
2.	Organisation and Management	8
3.	Staff and Facilities	10
4.	Teaching, Learning and Assessment	11
5.	Curriculum Development and Review	14
6.	Research Activity	15
7.	Management of Quality and Enhancement	17
8.	Support Services	17
9.	External Relations	18

Appendix 1: Consolidated List of Commendations and Recommendations

Appendix 2: UCD School of Civil Engineering Response to the Review Group Report

Appendix 3: Schedule for Review Site Visit to UCD School of Civil Engineering

Key Findings of the Review Group

The Review Group has prepared a summary of their key findings in relation to areas of good practice operating within the School and areas which the Review Group would highlight as requiring future improvement. The main section of this Report sets out all observations, commendations and recommendations of the Review Group in more detail. A consolidated list of all commendations and recommendations is set out in Appendix 1.

Examples of Good Practice

The Review Group identified a number of commendations, in particular:

- The Review Group would like to commend the Head of School for his management of the School during a difficult period for Civil Engineering in Ireland.
- The Teaching and Learning Committee is particularly active and has made significant contributions at School and University levels.
- Entry and articulation arrangements for both the Structural Engineering with Architecture (SEA) and Civil Engineering programmes are appropriate and both coursework and research programmes are working well.
- High degree of student satisfaction with modules offered by the School is to be commended; in particular, the Creativity in Design module in the omnibus first-year in Engineering seems to be working well with successful engagement of senior students assisting in delivery of the module.
- The School is recognised for research strength and strong income in particular areas.
- The Review Group commends both the collegial approach of faculty and staff and the positive working environment.
- The SAR was admirably clear, detailed and identified both strengths and weaknesses.

Recommendations for Future Improvement

The full list of recommendations is set out in Appendix 1, however, the Review Group would suggest that the following be prioritised:

- The Review Group recommends that a succession plan for a Head of School be formulated as a matter of urgency including an adequate overlap with the next Head of School.
- The Review Group agrees that it would be in the School's interest that the roles of Head of School and Head of Subject be combined.

- The School Executive Committee should support and advise the Head of School in managing finances and planning for the School. All School committees should feed into the School Executive. Final decisions should remain with the Head of School.
- The School needs to give urgent attention to increasing marketing for both undergraduate and postgraduate programmes in order to increase fee income to the School. In order to increase students' awareness of Civil Engineering in the first-year omnibus engineering programme, it is considered critical that the School offer one or more elective modules in semester 2.
- Increased utilisation of the laboratories for "hands-on" practice and design in the taught curriculum is recommended. This will require an upgrade of the facilities, for which industry support should be sought.
- In terms of research, the School should take greater advantage of collaborative links within UCD (for example, The Energy Institute) and externally.
- The formation of a Research Committee that would deal with strategic research issues is highly recommended. This Committee could identify key potential Industry partners with which the School could develop stronger links. Furthermore, this Committee could develop a research strategy for the School including the management of the laboratories.
- The School should integrate quality enhancement into all its activities on an on-going basis.

1. Introduction and Overview of UCD School of Civil Engineering

Introduction

- 1.1 This report presents the findings of a quality review of the School of Civil Engineering, University College Dublin, which was undertaken on 5-8 October 2015. The School response to the Review Group Report is attached as Appendix 2.

The Review Framework

- 1.2 Irish Universities have collectively agreed a framework for their quality review and quality improvement systems, which is consistent with both the legislative requirements of the Qualifications and Quality Assurance (Education and Training) Act 2012, and international good practice (e.g. Standards and Guidelines for Quality Assurance in the European Higher Education Area, 2015). Quality reviews are carried out in academic, administrative and support service units.
- 1.3 The purpose of periodic review is to assist the University to assure itself of the quality of each of its constituent units, and to utilise learning from this developmental process in order to effect improvement, including:
- To monitor the quality of the student experience, and of teaching and learning.
 - To monitor research activity, including: management of research activity; assessing the research performance with regard to: research productivity, research income, and recruiting and supporting doctoral students.
 - To identify, encourage and disseminate good practice, and to identify challenges and how to address these.
 - To provide an opportunity for units to test the effectiveness of their systems and procedures for monitoring and enhancing quality and standards.
 - To encourage the development and enhancement of these systems, in the context of current and emerging provision.
 - To inform the University's strategic planning process.
 - The output report provides robust evidence for external accreditation bodies.
 - The process provides an external benchmark on practice and curriculum.
 - To provide public information on the University's capacity to assure the quality and standards of its awards. The University's implementation of its quality procedures enables it to demonstrate how it discharges its responsibilities for assuring the quality

and standards of its awards, as required by the Qualifications and Quality Assurance (Education and Training) Act 2012.

The Review Process

1.4 Typically, the review model comprises four major elements:

- Preparation of a self-assessment report (SAR)
- A visit by a review group (RG) that includes UCD staff and external experts, both national and international. The site visit normally will take place over a two or three day period
- Preparation of a review group report that is made public
- Agreement of an action plan for improvement (quality improvement plan) based on the RG report's recommendations. The University will also monitor progress against the improvement plan

Full details of the review process can be found on the UCD Quality Office website: www.ucd.ie/quality.

The Review Group

1.5 The composition of the Review Group for the UCD School of Civil Engineering was as follows:

- Professor Maeve Conrick, Principal, UCD College of Arts and Humanities (Chair)
- Professor Lorraine Brennan, UCD School of Agriculture and Food Science (Deputy Chair)
- Professor Philippe Bouillard, Université Libre De Bruxelles, Belgium (Extern)
- Professor David Waite, University of New South Wales, Australia (Extern)

1.6 The Review Group visited the School from 5-8 October 2015 and held meetings with School staff; undergraduate and postgraduate students; the SAR Co-ordinating Committee; other University staff, including the College Principal. The site visit schedule is included as Appendix 3.

1.7 In addition to the Self-assessment Report, the Review Group considered documentation provided by the School and the University during the site visit.

Preparation of the Self-assessment Report (SAR)

1.8 Following a briefing from the UCD Quality Office, a Self-assessment Report Coordinating Committee (SARCC) was established. Members of the committee, in consultation with staff members and student representatives, drafted sections of the Self-assessment Report. Committee membership was as follows:

- Chair: Dr. Mark Richardson, Head of School (Chair)
- School Head of Teaching and Learning: Dr. Aoife Ahern, Senior Lecturer
- School Head of Research, Innovation and Impact: Prof. Eugene O'Brien, Professor
- School Head of Graduate Studies: Dr. John O'Sullivan, Lecturer
- School Administrator: Mr. Andrew Griffiths, Administrative Officer
- Technical Staff Representative: Mr. John Ryan, Technical Officer
- Graduate Research Student: Ms. Aoife Quinn, B.E. graduate and Ph.D. student

1.9 The SAR was prepared in the period March 2014 to March 2015. The School's self-reflective process was informed by regular on-site meetings and three off-site meetings (March 2014, September 2014 and January 2015). The final off-site meeting was facilitated by the UCD Learning and Development Manager and steered the process of reflection to its conclusion. The final draft of the SAR was circulated to all staff and agreed on 12 March 2015. The SAR was then submitted to the UCD Quality Office.

The University

1.10 University College Dublin (UCD) is a large and diverse university whose origins date back to 1854. The University is situated on a large modern campus about 4 km to the south of the centre of Dublin.

1.11 The University Strategic Plan (to 2020) states that the University's mission is: "to contribute to the flourishing of Dublin, Ireland, Europe and the world through the excellence and impact of our research and scholarship, the quality of our graduates and our global engagement; providing a supportive community in which every member of the University is enabled to achieve their full potential".

The University is currently organised into 6 colleges and 37 schools:

- UCD College of Arts and Humanities
- UCD College of Business
- UCD College of Engineering and Architecture
- UCD College of Health and Agricultural Sciences
- UCD College of Social Sciences and Law

- UCD College of Science

1.12 As one of the largest universities on the island of Ireland, UCD supports a broad, deep and rich academic community in Science, Business, Engineering, Health Sciences, Agriculture, Veterinary Medicine, Arts, Law, Celtic Studies and Human Sciences. There are currently more than 26,000 students in our UCD campus (approximately 16,300 undergraduates, 7,800 postgraduates and 2,200 Occasional and Adult Education students) registered on over 70 University degree programmes, including over 6,300 international students from more than 121 countries. The University also has over 5,400 students studying UCD degree programmes on campuses overseas.

UCD School of Civil Engineering

1.13 The UCD School of Civil Engineering (SCE) is one of six schools in the UCD College of Engineering and Architecture. Formerly, the School of Civil, Structural and Environmental Engineering (renamed in September 2015), SCE is internationally recognised as the leading Civil Engineering school in Ireland (QS discipline rankings). It is situated in the Newstead Building complex on the Belfield campus, in proximity to the UCD School of Architecture, Planning and Environmental Policy location in Richview, but remote from the other 4 engineering schools.

1.14 The School currently has 13 faculty, 2 technical officers, 1 administrator, 1 research engineer and 1 occasional lecturer/tutor. In addition, the School has 1 adjunct lecturer, 11 contract research staff, 15 occasional lecturers; 2 tutors and 12 postgraduate demonstrators. The School has responsibility for 8 programmes, 68 School ('CVEN') modules and the School has recently introduced the on-line delivery of 2 modules.

1.15 The collapse of the Irish economy in 2008 had a negative impact on the Irish construction industry, including civil engineering. The effect on the School was significant, in particular, the fall in interest from school leavers in programmes associated with construction. However, the recent resurgence in both the Irish economy and the construction industry shows significant potential for new growth in student numbers for the School.

2. Organisation and Management

2.1 The key committees in the School at present are (1) School Executive, (2) School Committee, (3) School Teaching and Learning Committee, (4) Transfer Assessment Panel and Graduate Studies and (5) Buildings and Safety Committee.

2.2 The School Executive comprises *ex-officio* members drawn from academic staff and an elected representative from non-academic staff. The School Committee comprises all permanent members of the academic and non-academic staff. This committee meets once a month to discuss issues related to the School's teaching, research and contribution. The SAR makes reference to the fact that the current structure of the School Committee makes it

difficult to deal with all pertinent issues. The establishment of an active Research Committee should help with this issue and will enable the School to develop strategic opportunities for the future. Indeed the lack of such a committee in the overall organisation of the School is notable.

- 2.3 The SAR highlights that there is some confusion over the role of Head of Subject and Head of School and this needs to be clarified.
- 2.4 The School has two academic research centres and all staff seem to be aligned with one of the two centres. This is very positive and ensures a certain level of cohesion in research activity.
- 2.5 The School has a workload model based on teaching load, research supervision, contribution to School, College and University, and professional contribution external to UCD. However, as noted in the SAR and site visit meetings, the School acknowledges that it did not sufficiently accommodate the full range of activities of the School. Further re-working and development of the workload model is required.

Commendations

- 2.6 The School Teaching and Learning Committee is extremely active and has led a range of notable innovations in Teaching and Learning.
- 2.7 The Head of School should be commended on his management of the School through a difficult period for Civil Engineering in Ireland.

Recommendations

- 2.8 The Review Group recommends the formation of a Research Committee that would deal with strategic research issues. This Committee could identify key potential Industry partners with which the School could develop stronger links. Furthermore, this Committee could develop a research strategy for the School and could oversee management of the laboratories.
- 2.9 A clear alignment of Head of School and Head of Subject would be welcome here. The Review Group agrees that it would be in the School's interest that these roles be combined.
- 2.10 The School Executive Committee should support and advise the Head of School in managing finances and planning for the School. All School committees should feed into the School Executive. Final decisions should remain with the Head of School.
- 2.11 The Review Group also felt that a Technical Working Group would facilitate management of the laboratories. This Working Group could involve technical staff, research staff (Postdocs) and academics.

- 2.12 The Review Group recommends that a succession plan for a Head of School be formulated as a matter of urgency. The panel recommends that there should be adequate overlap with the current Head of School.
- 2.13 The Review Group supports the development of a staff-student committee.
- 2.14 The development of a workload allocation model that reflects all activity within the School and the University is recommended.

3. Staff and Facilities

- 3.1 The School is made up of 13 Faculty members, 2 Technical Officers, 1 School Administrator, 1 Research Engineer and 1 Occasional Lecturer. The gender balance is 77% male - 23% female. The average age of Faculty is 50. There has been no Faculty recruitment and significant loss of Technical Officers (6) over the last 10 years.
- 3.2 The School is located in the Newstead Building, close to the Richview Building of the School of Architecture and is 5-10 mins walk from the other engineering buildings. The lecture and project rooms are modern, well-equipped and in good condition. There is one computer laboratory. A second computer laboratory has been recently converted into a large lecture room. Significantly, there is no cafeteria in the building with this absence limiting the scope for personal interaction.
- 3.3 The School has adequate laboratory premises, to which access control has been recently implemented. Most of the equipment is, however, out-of-date or out-of-order and requires maintenance or repair in order to be operational.

Commendations

- 3.4 The Review Group commends both the collegial approach of Faculty and staff and the positive working environment that currently exists.
- 3.5 There are adequate facilities to accommodate both the teaching and research activities.
- 3.6 The safety environment in the laboratory facilities are good. The recently implemented access system has improved the situation. First aid kits and fire extinguishers were available. Exit doors are clearly indicated.
- 3.7 The School has recently hired a Technical Officer who is now in charge of revitalising the laboratory.

Recommendations

- 3.8 The School should develop a clear strategy with regard to staffing, with recruitment based on the current UCD funding model.

- 3.9 Given the importance of laboratories to both teaching and research activities, the School should, as a matter of urgency, develop a plan to renovate equipment and related facilities.
- 3.10 The School should implement a new management model for the laboratories, possibly involving PhD and post-doctoral students.
- 3.11 The School should re-examine the decision to provide a single computer lab, particularly in view of the need for computing facilities for student projects.
- 3.12 The safety environment of the 3D printing room should be improved with particular attention given to provision of a clearly indicated fire exit. When laboratory equipment is operational again in the main laboratory, the corresponding specific safety measures should be clearly indicated.
- 3.13 If the School is convinced that a 'bump space' is essential for the creative and social exchange of views, an initiative should be taken at School level to develop and possibly fund such a space.

4. Teaching, Learning and Assessment

- 4.1 The School offers 8 programmes according to the SAR, though this number has now (apparently) been reduced. Given the relatively small numbers of students undertaking these programmes, reduction in number of programmes is welcome. The SAR indicates that students enter at the undergraduate level through one of two routes: the BSc/BE (Civil Engineering) or the BSc (Structural Engineering with Architecture) and may then progress to either the ME or MEngSc. The 4-year Level 8 BE (Civil Engineering) and various Level 9 degrees are accredited.
- 4.2 The number of students in courses taught by the School has decreased from a maximum of around 350 in 2007-8 to around 120 in 2014. This dramatic decrease in enrolments has been attributed to the decline in the Irish economy since 2008, though the decline has been greater than expected with the likely consequence that there will be a deficit of civil engineering graduates in Ireland. This likelihood was confirmed in discussions with civil engineering industry representatives through the course of the review.
- 4.3 Given the future close coupling of School funding to student enrolments, it is critical that student numbers increase. Attempts to do so are articulated in the SAR though greater attention to this issue is required (as detailed in the Recommendations below).
- 4.4 The proportion of females and internationals in the taught student cohort were 16.4% and 18.9% respectively in 2014, with these percentages substantially lower than desired. There are encouraging signs that the percentage of international taught students is increasing though continuing attention to increasing both females and internationals is required.

- 4.5 The standard of students entering Engineering has remained relatively stable over the last 10 years (at around 500 points) while that of students entering the Structural Engineering with Architecture (SEA) programme has dropped slightly (from a mean of 513 in 2004 to 432 in 2013) reflecting the decreased demand for places in this programme.
- 4.6 Meetings with undergraduate students during the quality review revealed:
- General satisfaction with courses offered through both the Civil Engineering and SEA programmes, though some concerns with courses offered through other Schools.
 - High satisfaction with the 8-month work placement in the SEA programme but less satisfaction with the shorter work placement programme in Civil Engineering.
 - Strong sense that the feedback process from students with regard to course satisfaction was not working well with regards to certain modules.
 - Dislike for courses involving use of MATLAB and desire for more CAD-based training.
 - Very positive toward involvement of 5th Stage students in teaching of 1st Stage students (particularly in the “Creativity in Design” course).
- 4.7 Inadequate exposure of omnibus Engineering students to Civil Engineering in first-year was apparent. Even though the “Creativity in Design” course was popular, it was not recognised to be affiliated particularly with Civil Engineering.
- 4.8 During the visit, the Review Group received the following data regarding the number of students who have spent at least one semester abroad: 2010-11: 2; 2011-12: 5; 2012-13: 1; 2013-14: 0; 2014-15: 0; 2015-16: 3. A list of incoming students could not be provided. Study abroad course arrangements would benefit from greater assistance and better use of Erasmus mobility opportunities on the part of the School and the College of Engineering and Architecture.
- 4.9 Meeting with current and recently completed postgraduate taught students during the review revealed:
- Strong satisfaction with programme content.
 - Excellent preparation for work environment.
 - Satisfaction that jobs were readily available to graduates of the Civil Engineering and SEA programmes.
- 4.10 Inspection of laboratory teaching facilities indicated a need for significant refurbishment/upgrade. Given that employment of additional technical staff in the short term is unlikely, the School will need to draw on its own resources, research income and industry linkages, though UCD central support, in response to a sensible development plan from the School, would be helpful.

- 4.11 Enrolment numbers in the taught postgraduate programmes appear to be lower than might be expected with limited influx of international students. Accreditation of the Masters programmes should render these programmes more attractive to international students.
- 4.12 Discussions with industry representatives revealed scope for increased training of practising civil engineers, possibly via enrolment in Masters courses, though this would require increased on-line offerings (an area in which other institutions – such as Sligo IT – have taken a lead).
- 4.13 The College of Engineering and Architecture Marketing Manager (International) indicated that School staff are very engaged in marketing of School teaching programmes with considerable development expected in this area over the next year or so.

Commendations

- 4.14 Entry and articulation arrangements for both the SEA and Civil Engineering programmes are appropriate and appear to be working well.
- 4.15 The “Creativity in Design” module in the omnibus first-year of Engineering appears to be working well with particularly successful engagement of senior students in assisting with delivery of this module.
- 4.16 Involvement of industry representatives in describing the civil engineering profession to first-year students is viewed positively and could be expanded further.
- 4.17 The high degree of student satisfaction with modules offered through the School of Civil Engineering is to be commended.
- 4.18 Active engagement of School staff in College-driven marketing of teaching programmes is to be commended.

Recommendations

- 4.19 The School needs to give urgent attention to increased marketing of both undergraduate and postgraduate programmes.
- 4.20 In order to increase the awareness of students enrolled in the omnibus first-year Engineering programme, it is considered critical that the School of Civil Engineering offer one or more elective courses in Semester 2 of the first-year omnibus programme.
- 4.21 Greater attention should be given to student feedback in some instances, with action taken as appropriate to improve any areas of deficiency.
- 4.22 Scope exists to seek industry input with regard to course content (for example, increased exposure to CAD and BIM tools may be appropriate).

- 4.23 Increased utilisation of laboratories for “hands-on” practice and design in the taught curriculum is recommended. This will require upgrade in laboratory facilities for which industry support should be sought.
- 4.24 Increased coordination and take-up of study abroad arrangements is required, particularly with regard to course credits and transfers.
- 4.25 Attention should be given to development of on-line modules, especially at the Masters level.

5. Curriculum Development and Review

- 5.1 School programmes were reviewed by Engineers Ireland in early 2015 and accreditation provided to the Bachelor of Engineering (Honours) in Civil Engineering, the Master of Engineering in Civil Engineering and the Master of Engineering in Structural Engineering with Architecture. Key recommendations pertaining to these programmes included the need to:
- extend structural designs on projects to final finished drawing stage using CAD with inclusion of necessary documentation including bills of quantities, health and safety risk assessment, standard operating procedures, etc.;
 - include health, safety and ethical considerations in all case studies;
 - introduce and use Building Information Management (BIM) software;
 - more critically reflect on performance, delivery and impact of studies undertaken;
 - improve facility in engagement with individuals involved in projects from other disciplines and professions;
 - ensure work placements are managed smoothly with outcomes articulated clearly within the normal teaching programme;
 - upgrade laboratory facilities such that they can be used effectively for teaching purposes.
- 5.2 In preparing the SAR, the School (through its very active Teaching and Learning Committee) has undertaken a review of the Bachelors and Masters programmes offered by the School and, as a result of this review, developed a clearer articulation of the overarching aims for the programmes and a series of common programme outcomes. These programme aims and expected learning outcomes are articulated clearly in the SAR, as is the alignment of programme outcomes with Engineers Ireland outcomes.

- 5.3 The increase in the number of programmes and decrease in student numbers over the same time period (since 2007) is notable and suggests a significant increase in teaching load combined with reduced income to the School. This issue requires careful review and may result in a need for reduction in number of programmes and possibly modules offered.
- 5.4 UCD has recently introduced a Curriculum Review and Enhancement process (Strategic Initiative 2) as a component of the UCD Strategy 2015-2010, which will likely result in changes in curriculum structure and content. School staff have been actively involved in the development of the overall UCD plans for this review and, as such, will almost certainly be intimately involved with the implementation of the review and enhancement of modules offered by the School of Civil Engineering.

Commendations

- 5.5 The School Teaching and Learning Committee is to be commended for its active role in curriculum development and review.
- 5.6 As noted earlier, the arrangement of programmes and modules offered by the School of Civil Engineering appears to be working well with both entry and articulation apparently running smoothly.

Recommendations

- 5.7 Recommendations arising from the Engineers Ireland accreditation visit in January 2015 should be reviewed and diligently enacted within a reasonable timeframe.
- 5.8 The increase in the number of programmes in recent years should be reviewed, particularly in view of the decrease in student numbers. The School should also seek to identify opportunities and synergies and develop a strategy to address this.
- 5.9 It is important that the School engage strongly with Strategic initiative 2 of the UCD Strategy 2015-2020, which will involve a variety of curriculum review and enhancement activities.

6. Research Activity

- 6.1 The Research in the School is mostly organised into, and managed through, Academic Centres: the Dooge Centre for Water Resources Research (CWRR) which is active in the fields of Engineering Hydrology and Water Resources Engineering, and the Centre for Critical Infrastructure (CCIR). A research group in Creative Design and 3D printing has also been created recently. The activity or performance of this research group is not addressed in detail in the SAR.
- 6.2 Over the period 2009-2014, the School has published 309 journal papers and 446 conference papers. A slight decrease in both journal and conference papers since 2012 is apparent. The reasons are partially analysed in the SAR (strong year in 2012, Irish conferences). This

research output, together with UCD reputation, enabled the School to be placed within the 101-150 range in the QS ranking in Civil and Structural Engineering up to 2014.

- 6.3 Over the period 2011-2014, the School has, commendably, managed to generate research income of €5.56M (an annual average of €100k per Faculty member). A large part of the CCIR budget is funded by the EU (51%) whereas CWRR is mostly (78%) funded by the EPA. The School has an ERC grant and is coordinating an ITN Marie Curie network.
- 6.4 As mentioned in the SAR, it is considered that the School no longer possesses the critical mass of academic staff required to maintain their very enviable place in the QS ranking.
- 6.5 The School provides a long list of international and industrial partners. The nature of the collaborations, however, were not clearly described in the SAR and were not clarified through this visit.

Commendations

- 6.6 The School is consistently ranked #1 in Ireland in Civil and Structural Engineering and, until recently, held a very enviable 101-150 place in the QS subject ranking.
- 6.7 The research outputs are strong in certain areas.
- 6.8 The research funding secured by the School is notable in some areas.
- 6.9 The number of post-graduate students enrolled in the School is very good and the number of non-European students is commendable.
- 6.10 The School has developed an impressive (albeit small) 3D printing facilities in UCD.
- 6.11 Faculty members are making good use of available databases (Research Gate, Institutional Repository) to promote their work.

Recommendations

- 6.12 The School should develop its own methodology in order to assess research output. One single database should be used (preferably Scopus or WoK) to compare all the Faculty members' performance, not a subset of them. The research outputs appear very unbalanced between academic staff.
- 6.13 The Review Group recommends that the School analyse the decline in recent research outputs, including the drop to the 151-200 range of QS 2015 ranking. The effect of the recent increase in teaching load (due to increasing the number of programmes) and the loss in laboratory technicians offering support to experimental research should be better analysed.

- 6.14 The School should seek to improve integration of its research activity in the Large Institutional Research Centres, particularly in relation to Energy and Environment.
- 6.15 The Review Group recommends that the School improve its use of available international networks in order to increase their participation in international and European projects. This is particularly the case for CWRR which should take advantage of the current EPA funding to foster their international activities.
- 6.16 The School should take better advantage of its industrial network to engage research, leading to co-authored papers.
- 6.17 The Review Group recommends that the School develop a strategy for the research group in Creative Design and 3D Printing and decide if they want to take full benefit of their pioneering initiative at UCD.

7. Management of Quality and Enhancement

- 7.1 It is evident from the documentation provided to the Review Group in advance of the site visit that the School prepared well for the Quality Review. The composition of the SAR Co-ordinating Committee was representative of all groups within the School and there was clear evidence of a self-reflective process which took place as part of the School's preparation. The SAR is well-written and clearly identifies strengths and weaknesses of the School in the SWOT Analysis, as well as making fourteen recommendations for Improvement. The Review Group considered all of the School's recommendations and responded to them under the relevant headings in the Report.
- 7.2 The Review Group felt that Section 7, Management of Quality and Enhancement, could have provided more evidence of the School's approach to promoting quality enhancement on an ongoing basis, outside of, and in addition to, the cyclical Quality Review Process. The Review Group noted that the School undergoes several types of review process, notably programme accreditation, but felt that Management of Quality and Quality Enhancement are qualitatively different from processes such as accreditation, and require engagement across all the activities of the School on an ongoing basis, rather than simply in the context of preparing for a Quality Review.

Commendations

- 7.3 The School prepared well for the Quality Review and for the site visit of the Review Group.
- 7.4 The SAR was admirably clear, detailed and identified both strengths and weaknesses.

Recommendations

- 7.5 The School should integrate quality management and quality enhancement into all of its activities on an on-going basis.

8. Support Services

- 8.1 The School reports good use of main UCD services. The SAR mentions that there is good communication between Head of School/School and management of the various services.
- 8.2 The School makes use of various central services such as Buildings and Services, Bursar's Office, Registry, College Office and International Office.
- 8.3 The use of a dedicated HR Partner to support the School (and the College) is acknowledged in the SAR as a good model. This HR Partner meets regularly with the Head of School to discuss on-going issues in terms of HR management of the School.

Commendations

- 8.4 Location of staff members of the Programme Office in the Newstead building for up to 2 days per week is important in ensuring service is available to all students. This was appreciated by both staff and students.
- 8.5 The School actively links with the student advisor for the College of Engineering and Architecture.
- 8.6 School staff should be commended for their support of the UCD Research Repository in the Library. The School is very active in uploading of research articles into the UCD research repository.

Recommendations

- 8.7 The Review Group recommends that IT Services monitor the computer facilities available to students in the Newstead building. This has recently been reduced and needs monitoring to ensure that adequate access is given to Civil Engineering students.

9. External Relations

- 9.1 The Review Group acknowledged a good level of engagement with other Schools and Institutes in UCD. THE SAR presents an impressive list of international universities with links to the School though, as mentioned earlier, the nature of these links are unclear.
- 9.2 The School is very committed to links with Industry and should be commended for this.
- 9.3 The School is also very committed to developing links with professional bodies. There is a recognition that linking with these bodies is important for maintaining standards with the discipline.

- 9.4 The Review Group acknowledged the large list of connections to Industry. However, they were concerned about the School's ability to maintain meaningful links with such a long list of apparent partners.

Commendations

- 9.5 The School has long established relationships with Industry. These relationships benefit the School in a number of ways including (1) Provision of internships for undergraduate students, (2) Collaboration on research projects, and (3) Contribution to the delivery of the academic programmes. The meeting with the Industry partners highlighted that they are also keen to strengthen their relationships with the School.

Recommendations

- 9.6 The Review Group recommends the formation of an Industry Advisory Committee which would strengthen the links with industry. This Committee could also provide input into the School's Academic Programmes. Formation of such a Committee could also aid in developing and maintaining the national and international reputation of the School.
- 9.7 The Review Group recommends that the School identify key international Universities with which to foster relationships in the future.

UCD School of Civil Engineering – Consolidated List of Commendations and Recommendations

This Appendix contains a consolidated list of all commendations and recommendations made by the Review Group for the UCD School of Civil Engineering and should be read in conjunction with the specific chapter above. *(Please note that the paragraph references below refer to the relevant paragraphs in the report text)*

2. Organisation and Management

Commendations

- 2.6 The School Teaching and Learning Committee is extremely active and has led a range of notable innovations in Teaching and Learning.
- 2.7 The Head of School should be commended on his management of the School through a difficult period for Civil Engineering in Ireland.

Recommendations

- 2.8 The Review Group recommends the formation of a Research Committee that would deal with strategic research issues. This Committee could identify key potential Industry partners with which the School could develop stronger links. Furthermore, this Committee could develop a research strategy for the School and could oversee management of the laboratories.
- 2.9 A clear alignment of Head of School and Head of Subject would be welcome here. The Review Group agrees that it would be in the School's interest that these roles be combined.
- 2.10 The School Executive Committee should support and advise the Head of School in managing finances and planning for the School. All School committees should feed into the School Executive. Final decisions should remain with the Head of School.
- 2.11 The Review Group also felt that a Technical Working Group would facilitate management of the laboratories. This Working Group could involve technical staff, research staff (Postdocs) and academics.

- 2.12 The Review Group recommends that a succession plan for a Head of School be formulated as a matter of urgency. The panel recommends that there should be adequate overlap with the current Head of School.
- 2.13 The Review Group supports the development of a staff-student committee.
- 2.14 The development of a workload allocation model that reflects all activity within the School and the University is recommended.

3. Staff and Facilities

Commendations

- 3.4 The Review Group commends both the collegial approach of Faculty and staff and the positive working environment that currently exists.
- 3.5 There are adequate facilities to accommodate both the teaching and research activities.
- 3.6 The safety environment in the laboratory facilities are good. The recently implemented access system has improved the situation. First aid kits and fire extinguishers were available. Exit doors are clearly indicated.
- 3.7 The School has recently hired a Technical Officer who is now in charge of revitalising the laboratory.

Recommendations

- 3.8 The School should develop a clear strategy with regard to staffing, with recruitment based on the current UCD funding model.
- 3.9 Given the importance of laboratories to both teaching and research activities, the School should, as a matter of urgency, develop a plan to renovate equipment and related facilities.
- 3.10 The School should implement a new management model for the laboratories, possibly involving PhD and post-doctoral students.
- 3.11 The School should re-examine the decision to provide a single computer lab, particularly in view of the need for computing facilities for student projects.
- 3.12 The safety environment of the 3D printing room should be improved with particular attention given to provision of a clearly indicated fire exit. When laboratory equipment is operational again in the main laboratory, the corresponding specific safety measures should be clearly indicated.

- 3.13 If the School is convinced that a 'bump space' is essential for the creative and social exchange of views, an initiative should be taken at School level to develop and possibly fund such a space.

4. Teaching, Learning & Assessment

Commendations

- 4.14 Entry and articulation arrangements for both the SEA and Civil Engineering programmes are appropriate and appear to be working well.
- 4.15 The "Creativity in Design" module in the omnibus first-year of Engineering appears to be working well with particularly successful engagement of senior students in assisting with delivery of this module.
- 4.16 Involvement of industry representatives in describing the civil engineering profession to first-year students is viewed positively and could be expanded further.
- 4.17 The high degree of student satisfaction with modules offered through the School of Civil Engineering is to be commended.
- 4.18 Active engagement of School staff in College-driven marketing of teaching programmes is to be commended.

Recommendations

- 4.19 The School needs to give urgent attention to increased marketing of both undergraduate and postgraduate programmes.
- 4.20 In order to increase the awareness of students enrolled in the omnibus first-year Engineering programme, it is considered critical that the School of Civil Engineering offer one or more elective courses in Semester 2 of the first-year omnibus programme.
- 4.21 Greater attention should be given to student feedback in some instances, with action taken as appropriate to improve any areas of deficiency.
- 4.22 Scope exists to seek industry input with regard to course content (for example, increased exposure to CAD and BIM tools may be appropriate).
- 4.23 Increased utilisation of laboratories for "hands-on" practice and design in the taught curriculum is recommended. This will require upgrade in laboratory facilities for which industry support should be sought.
- 4.24 Increased coordination and take-up of study abroad arrangements is required, particularly with regard to course credits and transfers.

- 4.25 Attention should be given to development of on-line modules, especially at the Masters level.

5. Curriculum Development and Review

Commendations

- 5.5 The School Teaching and Learning Committee is to be commended for its active role in curriculum development and review.
- 5.6 As noted earlier, the arrangement of programmes and modules offered by the School of Civil Engineering appears to be working well with both entry and articulation apparently running smoothly.

Recommendations

- 5.7 Recommendations arising from the Engineers Ireland accreditation visit in January 2015 should be reviewed and diligently enacted within a reasonable timeframe.
- 5.8 The increase in the number of programmes in recent years should be reviewed, particularly in view of the decrease in student numbers. The School should also seek to identify opportunities and synergies and develop a strategy to address this.
- 5.9 It is important that the School engage strongly with Strategic initiative 2 of the UCD Strategy 2015-2020, which will involve a variety of curriculum review and enhancement activities.

6. Research Activity

Commendations

- 6.6 The School is consistently ranked #1 in Ireland in Civil and Structural Engineering and, until recently, held a very enviable 101-150 place in the QS subject ranking.
- 6.7 The research outputs are strong in certain areas.
- 6.8 The research funding secured by the School is notable in some areas.
- 6.9 The number of post-graduate students enrolled in the School is very good and the number of non-European students is commendable.
- 6.10 The School has developed an impressive (albeit small) 3D printing facilities in UCD.
- 6.11 Faculty members are making good use of available databases (Research Gate, Institutional Repository) to promote their work.

Recommendations

- 6.12 The School should develop its own methodology in order to assess research output. One single database should be used (preferably Scopus or WoK) to compare all the Faculty members' performance, not a subset of them. The research outputs appear very unbalanced between academic staff.
- 6.13 The Review Group recommends that the School analyse the decline in recent research outputs, including the drop to the 151-200 range of QS 2015 ranking. The effect of the recent increase in teaching load (due to increasing the number of programmes) and the loss in laboratory technicians offering support to experimental research should be better analysed.
- 6.14 The School should seek to improve integration of its research activity in the Large Institutional Research Centres, particularly in relation to Energy and Environment.
- 6.15 The Review Group recommends that the School improve its use of available international networks in order to increase their participation in international and European projects. This is particularly the case for CWRR which should take advantage of the current EPA funding to foster their international activities.
- 6.16 The School should take better advantage of its industrial network to engage research, leading to co-authored papers.
- 6.17 The Review Group recommends that the School develop a strategy for the research group in Creative Design and 3D Printing and decide if they want to take full benefit of their pioneering initiative at UCD.

7. Management of Quality and Enhancement

Commendations

- 7.3 The School prepared well for the Quality Review and for the site visit of the Review Group.
- 7.4 The SAR was admirably clear, detailed and identified both strengths and weaknesses.

Recommendations

- 7.5 The School should integrate quality management and quality enhancement into all of its activities on an on-going basis.

8. Support Services

Commendations

- 8.4 Location of staff members of the Programme Office in the Newstead building for up to 2 days per week is important in ensuring service is available to all students. This was appreciated by both staff and students.
- 8.5 The School actively links with the student advisor for the College of Engineering and Architecture.
- 8.6 School staff should be commended for their support of the UCD Research Repository in the Library. The School is very active in uploading of research articles into the UCD research repository.

Recommendations

- 8.7 The Review Group recommends that IT Services monitor the computer facilities available to students in the Newstead building. This has recently been reduced and needs monitoring to ensure that adequate access is given to Civil Engineering students.

9. External Relations

Commendations

- 9.5 The School has long established relationships with Industry. These relationships benefit the School in a number of ways including (1) Provision of internships for undergraduate students, (2) Collaboration on research projects, and (3) Contribution to the delivery of the academic programmes. The meeting with the Industry partners highlighted that they are also keen to strengthen their relationships with the School.

Recommendations

- 9.6 The Review Group recommends the formation of an Industry Advisory Committee which would strengthen the links with industry. This Committee could also provide input into the School's Academic Programmes. Formation of such a Committee could also aid in developing and maintaining the national and international reputation of the School.
- 9.7 The Review Group recommends that the School identify key international Universities with which to foster relationships in the future.

UCD School of Civil Engineering – Response to the Review Group Report

The periodic review process has been extremely helpful for the School, especially because of its timing which comes at a crucial time for the School in respect of strategy for renewal. The School's core undergraduate programmes, as for all other Civil Engineering programmes in Ireland, have suffered from unprecedented low enrolments during the country's recent economic recession. This has required a period of survival without resources to invest in staffing and facility enhancement. The current national economic recovery, allied to the University's international student recruitment and a revised financial model for its academic units, provides new opportunities now for the School. The reflective exercise of developing the Self-assessment Report, combined with the Review Group Site Visit and Review Group Report, provides a timely opportunity for building on our strengths while tackling existing and new challenges in a systematic way.

The School wishes to thank the Review Group for their deep engagement with the review, especially their significant analysis of the weaknesses and challenges identified in the Self-assessment Report. The School is taking immediate action on the prioritised recommendations in parallel with the process of preparing the Quality Improvement Plan over the coming months.

With specific reference to the prioritised recommendations identified by the Review Group, the School's initial proposals/comments are outlined below:

- (i) **Recommendation A: The Review Group recommends that that a succession plan for a Head of School be formulated as a matter of urgency including an adequate overlap with the next Head of School.**

Proposal/Comment: The process of selecting a nominee as the next Head of School has now been formally initiated with the College Principal.

- (ii) **Recommendation B: The Review Group agrees that it would be in the School's interest that the roles of Head of School and Head of Subject be combined.**

Proposal/Comment: Given that the process of selecting a nominee as the next Head of School has now been formally initiated, it is proposed to nominate the incoming Head of School as Head of Subject during the overlap period with current Head of School.

- (iii) **Recommendations C: The School Executive Committee should support and advise the Head of School in managing finances and planning for the School. All School committees should feed into the School Executive. Final decisions should remain with the Head of School.**

Proposal/Comment: The conduct of business in the School is being immediately changed to strengthen the role of committees as strategic working groups that will feed into School Executive. The membership of School Executive will be expanded to include chairs of the Buildings/Safety Committee (existing) and Technical Working Group (new) and additionally the School's representative on the College Graduate School Board.

- (iv) **Recommendation D: The School needs to give urgent attention to increasing marketing for both undergraduate and postgraduate programmes in order to increase fee income to the School. In order to increase students' awareness of Civil Engineering in the first-year omnibus engineering programme, it is considered critical that the School offer one or more elective modules in semester 2.**

Proposal/Comment: The School has immediately initiated a specific project on this issue with the College Marketing Team. Research is being organised with focus groups. The Head of School visited 4 potential partner universities in China during January 2016. A major recruitment tour of schools in the United Arab Emirates has been organised for February 2016. Such activity will be sustained in national and international markets, in collaboration with the College Marketing Team, until a critical mass of student FTE's is re-established. The issue of a Civil Engineering module in Semester 2 of Stage 1 will be further discussed with the College Principal/Dean of Engineering when further evidence is available from the research being conducted with the College Marketing Team.

- (v) **Recommendation E: Increased utilisation of the laboratories for "hands-on" practice and design in the taught curriculum is recommended. This will require upgrade of the facilities, for which industry support should be sought.**

Proposal/Comment: As a first step the School has commenced a project in collaboration with the Students Union and relevant engineering student societies to research, design and construct an interactive learning space in the laboratories that will appeal to current student learning styles. The project is part-funded by a grant won competitively from the Student's Union. Industry support for the upgrade of laboratory facilities will influence the selection of members of the reconstituted School Industry Liaison Group.

- (vi) **Recommendations F: In terms of research, the School should take greater advantage of collaborative links within UCD (for example, The Energy Institute) and externally.**

Proposal/Comment: Leveraging further research activity from internal and external links will prioritise greater interdisciplinary research by the School's two academic centres.

- (vii) **Recommendation E: The formation of a Research Committee that would deal with strategic research issues is highly recommended. This Committee could identify key potential Industry partners with which the School could develop stronger links. Furthermore, this Committee could develop a research strategy for the School including the management of the laboratories.**

Proposal/Comment: The membership of the School Research Committee was agreed at the most recent meeting of the School Committee.

- (viii) Recommendations F: The School should integrate quality enhancement into all its activities on an on-going basis.**

Proposal/Comment: The lead on this issue taken by the School's Teaching and Learning Committee will be integrated into the work programmes of all School committees and working groups to better integrate quality enhancement as an underlying culture in the School.



UCD School of Civil Engineering

Quality Review Site Visit -5-8 October 2015

TIMETABLE

PRELIMINARY MEETING - MONDAY, 5 OCTOBER 2015		
Time	Schedule	
17.00-19.00	Review Group meet in the hotel to review preliminary issues, to confirm work schedule and to assign tasks for the site visit – <u>RG and UCD Quality Office only</u>	
19.15 -	Dinner hosted for the Review Group by the UCD Registrar and Deputy President – <u>RG, UCD Deputy President and UCD Quality Office only</u>	
DAY 1 - TUESDAY, 6 OCTOBER 2015		
Time	Schedule	Venue: Newstead Building
09.00 - 10.00	Private meeting of Review Group (RG)	G15
10.00 - 10.45	RG meet with Head of School	G15
10.45 - 11.10	Tea/Coffee break	G15
11.10-11.15	RG move to G88	
11.15 - 12.15	RG meet with SAR Coordinating Committee	G88
12.15 - 12.45	Break - RG review key observations and prepare for lunchtime meeting	G88
12.45 - 13.45	Working lunch (buffet) - meeting with employers (an/or other external stakeholders)	G88
13.45 - 14.15	RG Review key observations	G88
14.15 - 15.15	RG meet with representative group of academic staff - primary focus on Teaching and Learning and Curriculum Issues	G88

15.15-15.20	RG move to G15	
15.20 - 15.30	RG Tea/Coffee break	G15
15.30-16.00	Skype call with College Principal	
16.30-17.15	RG meet with support staff representatives -Admin + Technical	G15
17.15 - 18.15	Tour of facilities	
18.15	RG depart	
18.45 -	RG - working dinner	
DAY 2 - WEDNESDAY , 7 OCTOBER 2015		
Time	Schedule	Venue: Newstead Building
08.45 - 09.15	Private meeting of the RG	G15
09.15 - 10.00	RG meet relevant support service representatives	G88
10.00 - 10.20	Break	
10.20 - 11.00	RG meet with postgraduates(taught + research), recent graduates (PG and UG) & Post docs.	G88
11.00 - 11.15	RG Tea/Coffee Break	G15
11.15 - 12.15	RG meet with School Research and Academic Centres representatives	G15
12.15 - 12.30	Break - RG review key observations	G15
12.30 - 13.15	LUNCH - Review Group Only	G15
13.15 - 14.00	RG meeting with representative group of UG students	
14.00 - 14.15	RG private meeting - review key observations	G88
14.15 - 15.00	RE meet with Head of School, College Finance Manager and College HR Partner to outline School's Financial and Staffing Situation	G15
15.00 - 15.15	Break	G15

15.15 - 16.15	RG meet with recently appointed members of staff	G15
16.15-16.25	Break	
16.25 - 17.15	RG available for private individual meetings with staff	G15
17.15-17.45	RG meet with College VP for Research	
17.45 - 18.30	RG private meeting - review key observations/findings	G15
18.30 -	RG depart	
19.00 -	RG - working dinner	
DAY 3 - THURSDAY, 8 OCTOBER 2015		
Time	Schedule	Venue: Newstead Building
09.00 - 09.30	Private meeting of RG	G15
09.30-10.15	RG meet UCD Vice-President for Research, Innovation and Impact	G15
10.15-10.30	Break	
10.30-11.15	RG meet College Marketing and Engagement Manager	G15
11.15-11.45	Tea/Coffee Break	G15
11.45 - 12.30	RG prepare draft RG Report	G15
12.30 - 13.15	Lunch	G15
13.15-14.30	RG finalise draft of RG Report and feedback commendations / recommendations	
14.30 - 14.45	RG meet with Head of School to feedback initial outline commendations and recommendations	G15
14.55-15.00	RG move to G88	
15.00-15.15	Exit presentation to all available staff of the unit summarising the principal commendations/recommendations of the Review Group.	G88
15.30 -	Review Group depart	