



**University College Dublin**

**REVIEW GROUP REPORT**

**Periodic Quality Review**

**UCD School of Civil Engineering**

**August 2023**

**Accepted by the UCD Governing Authority at its meeting on 24 October 2024**

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**Appendix 1:** UCD School of Civil Engineering Response to the Review Group Report

**Appendix 2:** Site Visit Timetable - UCD School of Civil Engineering

## **Key Findings of the Review Group**

The Review Group has identified a number of 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 general comments, commendations and recommendations of the Review Group in more detail.

*Please note that the numbers below refer to the relevant paragraph in the body of the Report.*

### **Examples of Good Practice**

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

- 2.7 The Review Group commends the School, as led by the Head of School, on its very successful operation of teaching, research and administration.
- 2.8 The Review Group observed, and commends, the strong sense of collegiality amongst staff, and mutual respect between faculty, staff and students.
- 2.9 The Review Group commends the School for its highly competent and committed technical staff and for the development of the School's laboratory facilities.
- 3.7 The Review Group recognises the consolidation of the School's status as the number one school for Civil and Structural Engineering in Ireland, their improved QS World University Rankings and the overall strong reputation of their educational programmes.
- 4.7 The Review Group commends the School for the quality and breadth of individual research endeavours and profiles across the staff.
- 7.5 The Review Group commends the School for the way in which it has fostered very good relationships between external stakeholders and the School, including industry and other academic stakeholders, which has contributed to a strong commitment to the School by all.

### **Recommendations for Future Improvement**

The Review Group recommends that the following actions be prioritised:

- 2.14 The School needs to balance operational needs and strategic development and be proactive in carving out space for its agenda at the College level. During the site visit it was also clear that several stakeholders share the importance of addressing this issue. Therefore, the Review Group recommends the development of a School vision and mission that will drive strategic developments and decision-making over the next three to five years.
- 2.17 The Review Group recommends that the School increase the implementation of a model of distributed leadership to support the Head of School in the achievement of the School's vision and mission and the development of all staff.

- 2.23 The Review Group recommends that the School undertakes a risk assessment of the Chang'an-Dublin International College (CDIC) programmes as a matter of priority, to evaluate, and revise, the structure, delivery, management and oversight of CDIC.
- 4.14 The Review Group recommends the development of an internationally oriented research and impact strategy, which identifies focal thematic areas with high international research potential. This should be complemented by, and harmonised with, an infrastructural development plan and a teaching and learning plan, encompassing estate, equipment, the student experience, and industry engagement. These should inform the development of an enhanced research identity for the School and include criteria to measure success of implemented measures, such as the UK Research Excellence Framework (REF), both at strategic and operational level.
- 4.16 The Review Group recommends that the School research strategy guides the recruitment of two full professors, to include one University-funded strategic hire, and one School-funded hire. These appointments must have a strong international network and a proven scientific leadership profile and should be encouraged to provide research leadership and the continued development of the School's vision.

# 1. Introduction and Context

## Introduction

- 1.1 This report presents the findings of the Periodic Quality Review of the UCD School of Civil Engineering, University College Dublin, which was undertaken on 20-24 March 2023.

## 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 Quality 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; and 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 *Universities Act 1997* and 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 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 Review Group Report's recommendations. The University will also monitor progress against the Quality Improvement Plan.

Full details of the review process can be found on the UCD Quality Office website: [www.ucd.ie/quality](http://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 Suzanne Guerin, Head of School, UCD School of Psychology (Chair)
  - Associate Professor Deirdre Healy, UCD Sutherland School of Law (Deputy Chair)
  - Professor Fiona Bradley, Head of the Civil Engineering Discipline and Professor of Structural Engineering Design (Infrastructure & Environment), University of Glasgow (UK)
  - Professor Paolo Burlando, Head of the Department of Civil, Environmental and Geomatic Engineering and Professor and Chair of Hydrology and Water Resources Management, Institute of Environmental Engineering, ETH Zurich (Switzerland)
- 1.6 In addition to the Self-Assessment Report, the Review Group considered documentation provided by the School and the University during the site visit. The review site visit schedule is included as Appendix 2.
- 1.7 This Review Group Report has been read and approved by all members of the Review Group.

## **Preparation of the Self-Assessment Report (SAR)**

- 1.8 The School embraced the process of Periodic Quality Review, which commenced with a briefing from the UCD Quality Office in March 2022. The School Quality Review Self-Assessment Report (SAR) Committee was constituted in June and a whole-school Away Day was held in September 2022, in order to identify the School's strengths, opportunities and aspirations. A number of key issues were identified through the process, and particular attention was drawn to some of these findings in the context of drafting the SAR.
- 1.9 The chapters of the SAR were assigned to the SAR Committee members, with the exception of the graduate student representative, and the post-doctoral researcher representative. A Google Drive folder was set up with formatted templates prepared for each chapter.
- 1.10 Further meetings of the SAR Committee took place on 18 October (review of the first working draft of the SAR) and 16 November 2022 (review of the final draft of the SAR, prior to circulation to School for feedback).
- 1.11 The draft SAR was also sent to the UCD Quality Office for feedback on 29 November, and this feedback was provided on 6 December, and the SAR Committee met shortly thereafter to further develop and update the SAR. The final meeting of the SAR Committee took place on 23 January 2023, and the final version of the SAR and associated appendices was sent to the UCD Quality Office on 31 January.

## **The University**

- 1.12 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.
- 1.13 The University Strategic Plan (to 2024) 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 national and global engagement; providing a supportive community in which every member of the University is enabled to achieve their full potential”.
- 1.14 The University is currently organised into six 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
- 1.15 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 38,000 students, including over 2,000 PhD students, over 5,000 international students in overseas operations, and over 10,000 international students on the main UCD campus, with 144 nationalities in total represented in the student body.

## **UCD School of Civil Engineering**

- 1.16 The UCD School of Civil Engineering is located in the Newstead Building on the UCD Belfield campus. The School is currently top in the QS World Subject Rankings in Ireland (101-150 in the world), a position held since 2020.
- 1.17 The School delivers education and undertakes research within the broad area of Civil Engineering. The main areas of expertise are in Structures, Geotechnical and Geophysical Engineering, Transportation and Highway Engineering and Water, Wastewater and Environmental Engineering. The School is home to two research centres, namely the Centre for Critical Infrastructure Research (CCIR), and the Dooge Centre for Water Resources Research (CWRR). The CCIR was established in 2008, with key research themes of Structural Health Monitoring, Transport Policy and Infrastructure, and Mobility for Smart Cities. The CWRR was established in 1989, and activities cover the broad spectrum of water resources engineering (water supply, water and wastewater treatment, hydrology and remote sensing, flood protection, pollution and environmental protection).
- 1.18 The School is going through a period of expansion, due to the delivery of the significant dual degree Civil Engineering Infrastructure programme within CDIC, which commenced in September 2018. The School is highly dependent financially on this programme. The School

currently has 22.4 Faculty FTEs (13 permanent FTEs), 2 Administrative Staff FTEs (1 permanent, School Manager, and 1 temporary Senior Executive Assistant), 3 Technical Staff FTEs (1 permanent Senior Technical Officer, 2 permanent Technical Officers), with 1 further Technical Officer post to be filled in 2023, and 13 Research Staff FTEs (all temporary).

- 1.19 The School currently has two Ad Astra Fellows, who are centrally appointed faculty on 5-year temporary contracts. These are both appointed at Lecturer/Assistant Professor level.
- 1.20 The School currently has 35 full-time PhD students, and 3 part-time PhD students registered. There are also 6 visiting PhD students, and 1 visiting faculty member undertaking research within the School.
- 1.21 The School is delivering 3- and 4-year undergraduate programmes, and 1- and 2-year taught graduate programmes on the Belfield campus. In addition, the School is delivering a dual 4-year undergraduate degree programme in Civil Engineering Infrastructure in China, in CDIC in Xi'an, and a dual Master of Engineering programme in Civil Engineering with Columbia University (New York).



## **2. Organisation, Management and Staffing of the School**

### **General Comments and Context**

- 2.1 The School engaged actively and positively with this periodic quality review and the Review Group was pleased to have the opportunity to meet and have productive dialogue with a wide range of people. The Review Group thanks all staff, students and stakeholders for their engagement and support of the process which made it enjoyable for the Review Group members.
- 2.2 The Review Group recognises that the partnership with CDIC has been a significant development for the School and is clearly a key influence on the School's current structure, activities and plans.
- 2.3 There has been important growth in faculty and research staff in the School since the last quality review, though this growth has been mostly in junior and temporary staff connected to/funded by the School's partnership with CDIC.
- 2.4 The Review Group is concerned about the low proportion of senior faculty appointments in the School, with a particular gap at the level of professor (where there is only one Full Professor).
- 2.5 School structures are positioned to support activity in a range of key areas and staff are to be commended on their involvement in multiple School, College and University committees and activities.
- 2.6 Whilst the School shared examples of plans, initiatives and developments, the School did not appear to have a clear strategic vision to underpin and inform all of these decisions and activities in an explicit and structured way.

### **Commendations**

- 2.7 The Review Group commends the School, as led by the Head of School, on its very successful operation of teaching, research and administration.
- 2.8 The Review Group observed, and commends, the strong sense of collegiality amongst staff, and mutual respect between faculty, staff and students.
- 2.9 The Review Group commends the School for its highly competent and committed technical staff and for the development of the School's laboratory facilities.
- 2.10 The School is made up of skilled and engaged staff across faculty, administrative, technical and research roles. The team represents a strong resource to support the recommendations made in this report for strategic development.
- 2.11 The number of temporary staff in the School poses challenges for strategic development. Recognising the risk of a reliance on temporary faculty, the Review Group commends the School on its plans for four permanent faculty posts.

- 2.12 The staff speak very positively about the supportive context in the School, including having access to mentors and other support systems and mechanisms for individual scientific growth and development.
- 2.13 There is clear evidence of engagement with and positive experience of UCD's Performance for Growth (P4G) programme and encouragement of engagement in the promotions process for faculty.

## **Recommendations**

- 2.14 The School needs to balance operational needs and strategic development and be proactive in carving out space for its agenda at the College level. During the site visit it was also clear that several stakeholders share the importance of addressing this issue. Therefore, the Review Group recommends the development of a School vision and mission that will drive strategic developments and decision-making over the next three to five years.
- 2.15 The Review Group recommends that the School implement a structured process to engage all staff in leading the development of a School vision and research and impact strategy, drawing on available UCD supports for this process.
- 2.16 The Review Group recommends that the School develops the leadership potential of the current staff cohort through more delegation of leadership roles with supportive training.
- 2.17 The Review Group recommends that the School increase the implementation of a model of distributed leadership to support the Head of School in the achievement of the School's vision and mission and the development of all staff.
- 2.18 The Review Group recommends the formulation of a faculty plan to convert highly qualified temporary staff to permanent staff, and support continued and coherent developments in this area, including the potential impact of planned retirements at senior level.
- 2.19 The high teaching load borne by non-tenured faculty and the apparent absence of a formal structured strategy to increase tenured faculty may lead to issues in quality of teaching. The Review Group recommends that the School considers a rationalisation of teaching related duties to reduce the load on junior faculty, thus allowing them to develop a research identity in the context of the School strategy.
- 2.20 Given the balance of faculty at different levels of seniority, it is important that the supports for engagement with the promotion process are identified and implemented more formally within the School. The Review Group recommends that the School considers involving senior faculty within the College in mentoring and/or exploring the possible recruitment of mentors from other Schools via a cross-disciplinary mentoring programme.
- 2.21 The Review Group recommends that the School carefully examines all progression and promotion mechanisms, including non-tenured to tenured staff, assistant professor to associate professor, and associate professor to professor, to ensure that highly qualified staff are supported to engage with these processes and pathways.

- 2.22 Noting the planned growth in faculty and research numbers, the Review Group recommends that current support staff numbers are reviewed and promotion pathways for support staff are enhanced. At a minimum, the Review Group recommends that the School consider hiring a new technical support staff member and create a small budget for the purchase of everyday equipment.
- 2.23 The Review Group recommends that the School undertakes a risk assessment of the CDIC programmes as a matter of priority, to evaluate, and revise, the structure, delivery, management and oversight of CDIC.
- 2.24 The Review Group recommends that the School develops a model of using its budget to support the implementation of its strategic plan. For example, it should elaborate a budget plan to increase the attractiveness of the School to new hires at strategic/senior level and also examine ways to reduce the risk associated with the strong dependence on income generated by CDIC.

### **3. Quality of Programmes and Student Learning Experience**

#### **General Comments and Context**

- 3.1 The programmes are very warmly received by students and industry alike with particular reference made to the range of options in Civil Engineering courses, access to practical experience, and employability following completion of programmes.
- 3.2 There is a general perception from the student body that UCD has the best reputation for Civil Engineering. As there is a relatively large population of students in the University it was felt that there were great opportunities to make new friends and the campus accommodation was also commended by students.
- 3.3 The School contributes to the common first year of the DN150 Engineering Programme, before students move to specialise in year 2. The School then offers a range of pathways to students, reflecting options for career pathways (e.g., BSc Engineering Science, Bachelor of Engineering, Master of Engineering) and specialisms (e.g., MEngSc Structural Engineering, MEngSc Water, Waste & Environmental Engineering).
- 3.4 The School delivers a common curriculum in the first year which facilitates multi-disciplinary skill acquisition, friendship across discipline specific courses and a very good grounding in fundamental engineering principles. While students may find first year more theoretical, it appears that their overall expectations for the programme are being met.
- 3.5 The Review Group was provided with data that indicates high student retention and performance, with high proportions of students exiting with First Class Honours or Second Class Honours, Grade 1 qualifications in their chosen programme.
- 3.6 The opportunity to undertake an eight-month work placement in Stage 4 of the 5-year integrated masters programme, and Stage 1 of the 2-year Master of Engineering programmes clearly supports excellent graduate employment figures. It was noted that many UCD graduates obtain graduate employment as a result of these placements. However, there are more internships offered than are taken up by students due to the cohort size, which, if the situation persists, may create disappointment among industry partners.

#### **Commendations**

- 3.7 The Review Group recognises the consolidation of the School's status as the number one school for Civil and Structural Engineering in Ireland, their improved QS World University Rankings and the overall strong reputation of their educational programmes.
- 3.8 The Review Group observed a very collegiate and positive teaching and learning environment with support for staff and students alike, supported by initiatives such as the Newstead Staff-Student Forum meetings.
- 3.9 The Review Group noted very good examples of innovation in CVEN 10060 and 20080 and other recently introduced courses. Opportunities for students to compete in national competitions such as Engineers Without Borders were praised, as were industry-informed and supported

case studies, and the options to take modules from across the University and study abroad in their third year.

- 3.10 The recent programme of investment in laboratories, supported by highly committed and professional laboratory technicians, to enhance the student learning experience, modernise the equipment and ensure that practical demonstrations are core to module learning outcomes is to be commended.
- 3.11 A positive student experience during and at the end of their programme was evident in the increases in student numbers, good student retention figures and feedback from students that they would come to UCD if offered the option again. Excellent male to female ratios were also noted in the student cohort.
- 3.12 The Review Group welcomed the excellent employer feedback regarding the quality of the graduates. Engagement with industry and regular reviewing of the School's programmes ensures the skills and learning journey align with industry and professional expectations.
- 3.13 The Review Group observed excellent engagement by staff in Teaching and Learning awards and training initiatives. Several staff have received distinction in Teaching Awards for instance and there appear to be very good innovations occurring in course delivery such as content for the College Webinar on Teaching Innovations.
- 3.14 The Review Group noted the strong academic and pastoral support systems for students. In particular, international students felt that UCD Global supports international students with a lovely warmth.

## **Recommendations**

- 3.15 The Review Group felt there would be benefits to developing more opportunities to market Civil Engineering to students during the first year common curriculum. Increasing the explicit link to Civil Engineering themes will help increase the motivation of students to specialise in this area.
- 3.16 The Review Group recommends that the School further improves the mapping of real-world engineering experience in courses at undergraduate level. Some courses have poor attendance, which students linked to overly theoretical content, and students felt that real world application/discussion would improve engagement (including in second year generally). Moreover, training in soft skills and critical thinking could be expanded or made more explicit than it appears in the current curriculum.
- 3.17 The Review Group recommends that the School implements mechanisms to ensure that all staff involved in delivering a programme have a holistic understanding of the programme structure and the place of their module(s) within it, and more effectively communicate this to students.
- 3.18 The Review Group recommends that the School carefully evaluates any envisaged development of new study programmes to avoid dispersion of students. The School should capitalise on existing strengths and expand only in newly identified areas that reflect the

School's strategic vision and can be supported by staff's existing expertise or by planned staff growth.

- 3.19 The current faculty resources, in particular the number of temporary staff, clearly impacts on planning. If new programmes are envisaged the School will need to invest in and commit resources to attract highly qualified junior faculty and maximise their experience of the School as a stimulating, inclusive, contemporary and productive scientific work environment, with clear pathways for professional development.
- 3.20 The Review Group notes that the School is very dependent on the CDIC programme, not just in terms of financial dependence but also in terms of the clear imbalance between the numbers of students enrolled in the CDIC programme and in Dublin. The School should work towards a more balanced ratio and consider a wide range of target markets for first year recruitment, including widening participation pathways, which currently sit at 17%.
- 3.21 The Review Group heard feedback which indicated that there were specific criticisms relating to the Design and Communication course and the integration of the Civil Engineering and Structural Engineering with Architecture Programme. A preference for studio design classes rather than architectural theory and relevant topics that reflect the overall focus of the programme such as more Total Station experience should be considered.
- 3.22 While it is appreciated that the programmes are periodically reviewed and revised, the Review Group recommends that the School balances the dependence on external inputs from the professional world with greater attention to the evolution of international academic programmes.
- 3.23 The Review Group recommends that the School considers complementing the Industry Advisory Board with an Academic Advisory Board in order to balance the academic and practice-based forces that inform programme design and content.

## **4. Quality of Postgraduate Research Education and Research Activity**

### **General Comments and Context**

- 4.1 The staff at UCD have a very good reputation in research areas that are attractive to postgraduate students and there are strong links between postgraduate education and research activity in the School as observed in the thematic focus of the two MEngSc programmes.
- 4.2 Postgraduate taught courses such as Structural Engineering with Architecture are attractive to students and the two main research groups specialising in Structural Health Monitoring and Water Engineering are both positive draws for students. Staff research regularly forms the basis for student projects at postgraduate level and there is a very good research community with a positive and encouraging atmosphere.
- 4.3 Research themes and named centres (CCIR and CWRR) have evolved in recent years, with increased connections to other Schools and Colleges in UCD and greater interdisciplinary research activity and collaboration. The School also contributes to the UCD Energy Institute.
- 4.4 Recent hires have broadened the core expertise in the School, for example in Water Research, and there are now different skill sets such as hydrology, water quality, biodiversity and waves, CWRR is investigating potential new equipment at the moment and envisage future hires as potentially relating to coastal and offshore engineering.
- 4.5 The Review Group noted that students they met during the site visit included some who had worked in the structural engineering industry and had come back to UCD for a Masters degree. In addition, all the PhD students they met had studied for their Masters degree at UCD.
- 4.6 The Review Group notes the range of challenges in the recruitment and experience of PhD students. Students experience difficulties due to low stipends and there is a need to review remuneration of PhD students, for example, for grading.

### **Commendations**

- 4.7 The Review Group commends the School for the quality and breadth of individual research endeavours and profiles across the staff.
- 4.8 The Review Group noted that the School has a very good postgraduate community, with evidence of very positive relationships between staff and students, very good quality of supervision and contemporary, interesting research themes.
- 4.9 The School attracts high quality international postgraduate and PhD students, as well as postdoctoral fellows, who have access to very good research facilities and opportunities for teaching, as well as a sports scholarship, which was attractive to some students.
- 4.10 There is good differentiation from comparable institutions with respect to the length of Masters degrees, research themes and the delivery of unique courses such as Structural Engineering with Architecture, which is not offered elsewhere in Dublin. The School offers both one- and two-year taught Masters programmes – the option of a one-year Masters degree in

comparison to other institutions which only offer two-year programmes positively influenced prospective postgraduate students.

- 4.11 The Review Group observed that there are examples of good practice within the School relating to monitoring research output and related comparative research criteria (i.e., benchmarking) although these comparisons tend to be national rather than international.
- 4.12 The Review Group noted that staff are committed to the publication, dissemination, consolidation and improvement of all research output, and there are regular meetings with staff from UCD Research to review funding opportunities.
- 4.13 The Review Group welcomed the use of a buddy to support new staff. In addition, the financial support available to staff to fund a PhD student and evidence of successful project acquisition by individual academic staff was also positive.

## **Recommendations**

- 4.14 The Review Group recommends the development of an internationally oriented research and impact strategy, which identifies focal thematic areas with high international research potential. This should be complemented by, and harmonised with, an infrastructural development plan and a teaching and learning plan, encompassing estate, equipment, the student experience, and industry engagement. These should inform the development of an enhanced research identity for the School and include criteria to measure success of implemented measures, such as the UK Research Excellence Framework (REF), both at strategic and operational level.
- 4.15 The School should strategically expand research into societal challenges to strengthen the School's identity, attractiveness and uniqueness of expertise, and build upon the existing cooperation with other Schools in the College or other Colleges and networks of the academic centres by scaling-up interdisciplinary research from project-based to thematic scientific partnerships.
- 4.16 The Review Group recommends that the School research strategy guides the recruitment of two full professors, to include one University-funded strategic hire, and one School-funded hire. These appointments must have a strong international network and a proven scientific leadership profile and should be encouraged to provide research leadership and the continued development of the School's vision.
- 4.17 The School should implement a structured process to engage all permanent staff in leading the development of a School vision and research strategy, for example, by transforming the Research and Impact Committee into a strategic body, which leads on this area while also providing input and support to the Head of the School.
- 4.18 The Review Group recommends that the School examine and reflect on barriers to PhD recruitment e.g., job perspectives, perceived lack of careers, general reputation/image problem of academia and how students can be supported to address these. Possible solutions include engagement with industry partners, development of funding opportunities, and access to industry donors through the UCD Foundation.



- 4.19 When PhD recruitment has been successful, the Review Group recommends that the School improves onboarding of PhD students so that they are inducted and supported in the transition into full time research in a well coordinated, timely and empathetic manner.
- 4.20 The Review Group recommends that the School considers whether growth in research activity, including growth in faculty, students and funding, is impacted more by structural factors or the absence of a strong strategic vision. The School should consider how the development of a vision for the School might support the team in addressing or overcoming structural issues.

## 5. Management of Quality and Enhancement

### General Comments and Context

- 5.1 The School has experienced a steady rise in the QS Subject Rankings for Civil and Structural Engineering in recent years and is now placed at number one in Ireland and 101-150 globally. According to this measure, the School's academic, citation and H-index scores have all increased. However, the QS rankings have shown a slight drop in employer scores over the past number of years.
- 5.2 Programme Directors manage the day-to-day running of the School's programmes and oversee their development and Year Heads are assigned for each Stage across all programmes for Stages 1 to 4. The Review Group observed that this is quite a complex programme governance structure given the size of the School.
- 5.3 The School has very good quality assurance mechanisms in place with regard to teaching and learning. The School's programmes have been accredited by Engineers Ireland since 2019 with no conditions attached or deficits listed. The next accreditation is due to take place in Spring 2024. The MEngSc programmes and 4-year BE CDIC programme have not been submitted for accreditation by Engineers Ireland as they would not fulfil the relevant requirements.
- 5.4 The School also engages in regular reviews of its activities. For example, Vision and Values statements and programme structures and content are reviewed annually. Its participation in the UCD pilot Academic Advising Project has also generated concrete outputs including a new website as well as handbooks for class representatives and academic advisors.
- 5.5 The Review Group observed an apparent shortage of opportunities for reflection and long-term planning with respect to teaching and learning, with most of the work in this regard described as 'firefighting'. Notably, the reliance on temporary staff has made it difficult to plan ahead. As a result, undergraduate students did not always have a good understanding of why they were doing particular modules or how individual modules fit into the wider curriculum.
- 5.6 With regards to student feedback, the School has set up a Newstead Staff-Student Forum and is participating in the pilot study for the new UCD feedback system. Student participation in the National Student Survey is also relatively high and results show increases in five out of nine indicators.
- 5.7 The Review Group observed that some issues were evident with respect to official student feedback mechanisms. Participation levels are variable, often depending on the extent to which module coordinators engage with the process, and students are not always informed of any changes made as a result of their feedback. While these issues are not unique to the School, they are worthy of note given the School's participation in the pilot study for the new UCD feedback system which aims to 'close the feedback loop.'
- 5.8 The School has developed research quality mechanisms for graduate students, including appointing a Head of Graduate Studies, holding regular town hall meetings and arranging student orientations. These activities complement and exceed the minimum UCD requirements.

- 5.9 The Review Group observed that quality assurance mechanisms for staff research activity were not as well articulated. Research success was described as ‘self-assessed’ and did not appear to involve any kind of systematic analysis, or reflection or benchmarking against other universities internationally. The School does however have access to reports showcasing its performance against key metrics and has produced a strategic plan with KPIs against which performance can be measured. In addition, it should be noted that the School is performing well against key metrics.

### **Commendations**

- 5.10 The Review Group commends the School for attaining the number one position in Ireland on the QS Subject Rankings for Civil and Structural Engineering, which reflects its upward trajectory with regard to teaching and research activities.
- 5.11 The Review Group commends the School for its success in obtaining accreditation for its programmes from Engineers Ireland with no conditions attached or deficits listed.
- 5.12 The Review Group commends the School for running events such as the SOAR Away Day and Teaching and Learning Day to create space for reflection and planning.

### **Recommendations**

- 5.13 The Review Group recommends that the School reviews existing programme governance structures and considers rationalising or simplifying these structures, where appropriate.
- 5.14 The Review Group recommends that the School develops and/or institutionalises themed Away Days on topics such as research, teaching and learning and infrastructural development, in order to facilitate strategic reflection, management of quality and enhancement, and future planning.
- 5.15 The Review Group recommends that the School creates a student handbook to provide tailored guidance, information and support to students.
- 5.16 The Review Group recommends that the School implements measures to ‘close the feedback loop’ and demonstrate engagement with student feedback, drawing on the existing Newstead Staff Student Forum and best practice within the University.

## 6. Support Services

### General Comments and Context

- 6.1 The School appears to have forged good or very good working relationships with key units and colleagues across the University including UCD Human Resources, the College Office, UCD Registry and the Student Desk, Bursar's Office and College Finance Manager. However, the level of engagement with College support services and structures seemed to vary between staff.
- 6.2 Most notably, the Review Group observed that the School's physical infrastructure is not keeping pace with current or planned growth. The major issue facing the School concerns the pausing of the construction of the new Centre for Creativity to which the School was due to relocate. Staff noted that current facilities are already over-stretched and will be unable to accommodate additional staff or students. This may result in lectures taking place elsewhere on campus, which could adversely impact students' sense of belonging to the School.
- 6.3 Student footfall in the main Civil Engineering building was described as low and there was a sense that the School is less attractive to students because of its distance from other schools in the College. Students themselves highlighted a lack of dedicated study and research spaces, noting that existing study and research spaces often double as teaching spaces. This is problematic as students must complete a lot of group work and currently have to go to the Science West Building to find study spaces. Some staff are also currently sharing offices. While the School's efforts to maximise existing capacity through creative use of space are admirable, these arrangements are not ideal.
- 6.4 The new Centre for Creativity building would not necessarily have addressed these needs, as research spaces would not have been co-located with the School. The pause in construction thus presents an opportunity for the School to create a bespoke infrastructural development plan tailored to its needs and vision. The School has an excellent reputation with industry stakeholders and would be well-placed to attract donations to fund or part-fund a new building or annex. In the interim, the School could explore opportunities for creating shared space across the College or use existing finances to fund study spaces for students within the School.
- 6.5 The Review Group was impressed with the quality of the School's lab facilities and the effective use of in-house and university-level schemes to fund purchases of research equipment. However, some funds could also be set aside to cover purchases of everyday equipment (e.g., saws) that are required but not connected to a research project.
- 6.6 Technical support staff were highly praised by staff and students, but are experiencing increased workloads due to a growth in academic staff numbers. Further planned growth in student numbers will place additional pressure on lab space and technical support staff. While promotion pathways are available, technical support staff cannot avail of the same opportunities for promotion as academic staff.
- 6.7 While the School's administrative staffing levels were deemed sufficient, additional staff may be required if the School continues to grow. Given the small numbers, a contingency plan may need to be developed in case a key staff member becomes unavailable.

## **Commendations**

- 6.8 The Review Group commends the School for fostering strong relationships with key units and colleagues across the College and University.
- 6.9 The Review Group commends the School's outstanding technical support staff who were universally praised by faculty, staff and students.
- 6.10 The Review Group commends the School's first-rate lab facilities and effective use of funding schemes to enable the purchase of research equipment thus maintaining lab spaces and operation at state-of-the-art level.

## **Recommendations**

- 6.11 The Review Group recommends that the School works more closely with central university services, such as UCD Research, Innovation and Impact, UCD Estate Services, UCD Teaching and Learning and UCD Human Resources, to develop a holistic strategic vision, research and impact strategy, teaching and learning strategy, and infrastructural development plan.
- 6.12 The Review Group recommends that the School intensifies its cooperation with UCD Foundation to attract donations to support the growth of the School with regards to faculty, facilities and space.
- 6.13 The Review Group recommends that the School works with UCD Estate Services to make more creative use of space across the School and College aiming to enhance the student study and social environment in the Civil Engineering building (e.g., setting up study pods and shared study rooms, adding couches). This process should be informed by the School's infrastructural development plan.

## **7. External Relations**

### **General Comments and Context**

- 7.1 The School has strong links with professional, industry, and academic partners, as evidenced by the high level of attendance and engagement by these stakeholders in the site visit.
- 7.2 The Review Group observed that Industry Advisory Board meetings became less frequent during the COVID-19 pandemic, though there is clear evidence of support for and engagement with this forum.
- 7.3 The collaboration with CDIC has a significant influence on the School, both in terms of potential challenges and opportunities.
- 7.4 The two existing research centres and their networks demonstrate significant national and international contacts and collaborations and offer a framework for other developments in the School.

### **Commendations**

- 7.5 The Review Group commends the School for the way in which it has fostered very good relationships between external stakeholders and the School, including industry and other academic stakeholders, which has contributed to a strong commitment to the School by all.
- 7.6 Given the professional nature of the School's programmes, the presence of a formal structure for engagement with the sector through the Industry Advisory Board and the evidence of periodic revision to this structure is also commended.
- 7.7 The School engages external examiners for periodic curricula assessment to ensure dynamic adaptation to and anticipation of market needs, and staff also serve as external examiners in other institutions. The Review Group commends the School for maximising the learning from these processes.
- 7.8 The School's contribution to the external research context via staff involvement in programmes including EU COST actions, editorial roles in prestigious peer reviewed journals and leadership roles in the U21 network is also commended.

### **Recommendations**

- 7.9 As noted in 3.22, the Review Group recommends that the School considers complementing the Industry Advisory Board with an Academic Advisory Board.
- 7.10 The Review Group notes that external relationships may be seen as currently serving a supportive role, however it encourages the School to consider the potential contribution these partners can make to the School's strategic development.
- 7.11 While individual staff are involved in important national and international collaborations, organisations and professional bodies, the Review Group encourages exploration of the

development of institutional connections, scaling up to enable research groups within the School to collaborate on large scale international initiatives in strategic areas.

- 7.12 Within UCD, the Review Group recommends that relations should be strengthened with key units that can support the School to tackle the increasing needs posed by the complexity of contemporary interdisciplinary research nationally and internationally, for instance by further promoting the participation in EU research consortia in response to EU funded research programmes, for instance by further promoting the participation in EU research consortia in response to EU funded research programmes.
- 7.13 Outreach and marketing activities, including community engagement and open days, need to be carefully examined by the School to ensure that external groups understand the nuance of the differences in the career paths of Civil Engineers compared to other Engineering disciplines, with a goal of increasing the number of students coming to UCD to study with the School.
- 7.14 Given the importance of external relations, the Review Group recommends active monitoring of the range of external activities that are carried out to ensure that staff are recognised for the important work that they do in this area and that this contribution is recognised in areas such as promotion.

## **UCD School of Civil Engineering Response to the Review Group Report**

The School found the Quality Review process to be a valuable opportunity for reflection and strategic discussion, commencing with a School Away Day facilitated by UCD Agile, which focussed on Strengths, Opportunities, Aspirations, and Results. The School Self Assessment Review Committee was a strong and committed group, and the members of the Committee worked hard on the preparation and production of the Self Assessment Report.

The School thanks the Quality Review Group for their time and commitment to the review process, and for their positive engagement with all groups and individuals with whom they met during their busy site visit schedule. The School has received and reviewed the Review Group Report with interest, and has the following commentary on the commendations and high-level recommendations made by the Review Group.

The Review Group commended the School on its strong sense of collegiality, which is a deeply espoused value that contributes to the success of the School. The School was also commended for the strengthening of its external relations, particularly with international research partners, and with industry, both of which are important to the School. Also of key importance to the School (and highlighted by the Review Group) are the laboratory, field and practice-based practical elements, which are key components of our research and teaching programmes. These are strongly supported by our technical staff, and recent investment in laboratory facilities and equipment evidence the value the School places on these resources.

The School agrees that its mission and vision need to be more clearly articulated, in order to drive decision making over the next 5 years. The School has identified areas for strategic development (climate change, renewable energy, data analytics and digitisation), and recruitment over the past year has been aligned (and will continue to be aligned) to these thematic areas, encompassing recruitment at all faculty levels, but with a particular focus at professorial level.

The School sees the value of the model of distributed leadership, in supporting the work of the Head of School, and developing staff. The introduction of the College recommendations on terms for committee membership and leadership in 2020, at both College and School-level (3 to 5 years) has opened up opportunities for staff. It is acknowledged however that a significant workload still rests with the Head of School.

While the School is clearly financially dependent on income from the Chang'an Dublin International College (CDIC) at present, it believes that the responsibility for the structure, delivery, management and oversight of CDIC is not solely a matter for the School of Civil Engineering, and therefore an assessment of the risks associated with the programmes delivered in CDIC should be undertaken at a College-level, or indeed at a University-level, extending to the three joint Colleges in China.

The School has identified key areas for strategic development, and as noted above recent and planned recruitment are aligned to these areas of focus. These key thematic areas build on existing strengths and research expertise within the School, and align closely with the School's research centres. Additional recruitment will provide opportunities for greater international research collaboration and impact, and



focussed development and expansion of our educational offerings, which will enhance the identity of the School.

Senior leadership in the School is critical, and the impending retirement of the sole full professor, and the current absence of faculty at professorial level are significant. The School staffing plan for the coming year includes the recruitment of a full professor. The School also plans to make a case for a senior-level strategic hire, to drive its strategic plans, and enhance its international profile.

The School will commence the preparation of a Quality Improvement Plan (QIP), outlining how it will address the Review Group Report recommendations.



## Site Visit Timetable - UCD School of Civil Engineering

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| <b>SESSION 1</b><br><b>Review Group Planning Meeting</b><br><b>Monday, 20 March 2023</b><br><b>Room 213, Tierney Building, UCD</b> |  |
| <i>All times are local Irish time</i>  |  |
| 17:00-18:00  | Preliminary Comments and areas for discussion  |
| 18:00-18:15  | Break  |
| 18:15-19:00  | Timetable Review, assignment of Review Group roles for meetings/questions, additional information requests |
| 19:30  | Dinner hosted for the Review Group by the Registrar & Deputy President or Nominee                          |

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| <b>SESSION 2</b><br><b>Core Activities &amp; Stakeholder Feedback</b><br><b>Tuesday, 21 March 2023</b><br><b>Review Group Baseroom and small group stakeholder meetings: Room G15</b><br><b>Large group stakeholder meetings: Room G87</b> |   |
| <i>All times are local Irish time</i>  |   |
| 09:00-09:30  | Review Group only – Key observations & preparation for next session   |
| 09:30-10:15  | SESSION 2.1, Stakeholder meeting – College Principal & Dean of Engineering  |
| 10:15-10:30  | Review Group only – Key observations & preparation for next session   |
| 10:30-11:15  | SESSION 2.2, Stakeholder meeting – Head of School   |
| 11:15-11:30  | Review Group only – Tea/Coffee Break  |
| 11:30-12:30  | SESSION 2.3, Stakeholder meeting – School Research Innovation and Impact Committee                                      |
| 12:30-13:00  | Review Group only – Key observations & preparation for next session   |
| 13:00-14:00  | SESSION 2.4, Stakeholder meeting – Working Lunch w/ Employers & other External Stakeholders                             |
| 14:00-14:30  | Review Group only – Key observations & preparation for next session   |
| 14:30-15:45  | SESSION 2.5, Stakeholder meeting – School Teaching and Learning Committee (focus on Teaching & Learning and Curriculum) |
| 15:45-16:00  | Review Group only – Tea/Coffee Break  |
| 16:00-16:30  | SESSION 2.6, Stakeholder meeting – Programme Directors and Year Heads   |
| 16:30-16:40  | Review Group only – Key observations & preparation for next session   |
| 16:40-17:10  | SESSION 2.7, Stakeholder meeting – School Administrative Staff  |
| 17:10-17:40  | SESSION 2.8, Stakeholder meeting – School Technical Staff   |
| 17:40-18:30  | SESSION 2.9, Tour of School facilities  |
| 18:30  | Review Group departs  |

**SESSION 3**  
**Core Activities & Stakeholder Feedback**  
**Wednesday, 22 March 2023**  
**Review Group Baseroom and small group stakeholder meetings: Room G15**  
**Large group stakeholder meetings: Room G87**

*All times are local Irish time*

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| 09:00-09:30 | Review Group only – Key observations & preparation for next session  |
| 09:30-10:30 | SESSION 3.1, Stakeholder meeting – Taught and Research Postgraduate Students   |
| 10:30-10:45 | Review Group only – Key observations & preparation for next session  |
| 10:45-11:45 | SESSION 3.2, Stakeholder meeting – Undergraduate Students  |
| 11:45-12:00 | Review Group only – Tea/Coffee Break   |
| 12:00-12:45 | SESSION 3.3, Stakeholder meeting – College Finance Manager & Head of School (School financial situation)                       |
| 12:45-13:45 | Review Group only – Working Lunch  |
| 13:45-14:45 | SESSION 3.4, Stakeholder meeting – New Staff (appointed within the last 3 years)   |
| 14:45-15:00 | Review Group only – Key observations & preparation for next session  |
| 15:00-16:00 | SESSION 3.5, Stakeholder meeting – Support Service representatives (e.g. UCD Registry, UCD Library, UCD Estate Services, etc.) |
| 16:00-16:15 | Review Group only – Key observations & preparation for next session  |
| 16:15-17:00 | SESSION 3.6, Stakeholder meeting – Postdoctoral Researchers and Research-funded staff  |
| 17:00-17:30 | Review Group only – Drafting of key initial commendations/recommendations  |
| 17:30       | Review Group departs   |

**SESSION 4**  
**Core Activities, Stakeholder Feedback & Exit Presentations**  
**Thursday, 23 March 2023**  
**Review Group Baseroom and small group stakeholder meetings: Room G15**  
**Large group stakeholder meetings: Room G15**

*All times are local Irish time*

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| 09:00-09:45 | Review Group break – Key observations & preparation for next session  |
| 09:45-10:15 | SESSION 4.1, Stakeholder meeting – UCD International Dean, Provost BDIC, CDIC and GDIC (via Zoom)                           |
| 10:15-10:30 | Review Group only – Tea/Coffee Break  |
| 10:30-11:00 | SESSION 4.1a, Stakeholder meeting – CDIC students (via Zoom)  |
| 11:00-12:30 | SESSION 4.2, Review Group Report Drafting Session   |
| 12:30-13:15 | Review Group – Working Lunch  |
| 13:15-14:45 | SESSION 4.3, Review Group Report Drafting Session   |
| 14:45-15:00 | SESSION 4.4, Review Group meeting w/ College Principal to outline key findings (commendations & recommendations)            |
| 15:00-15:15 | Review Group only – Break   |
| 15:15-15:30 | SESSION 4.5, Review Group meeting w/ Head of School to outline key findings (commendations & recommendations)               |
| 15:30-15:45 | SESSION 4.6, Review Group meeting with all available School staff to outline key findings (commendations & recommendations) |
| 15:45       | Review Group departs  |