

Programmatic Review

Phase 1

CIT School of Building & Civil Engineering

Report of the Review Panel March 2019

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Executive Summary

Overview

The Panel has undertaken its review of the School of Building & Civil Engineering which is a constituent School of the Faculty of Engineering & Science at Cork Institute of Technology. The School contains three Departments: the Department of Architecture, the Department of Civil, Structural & Environmental Engineering and the Department of Construction. The School student population is in excess of 950 with approximately 55 staff. The School delivers taught and research programmes, both full time and part time, from Level 6 to Level 10.

The Phase 1 Programmatic Review submission provides an overview of the School and its activities over the period from 2014-2018, since the previous Programmatic Review was completed in 2014.

The Panel was very appreciative for discussions with the Head of School and Heads of Departments, teaching and support staff, industry stakeholders and students (undergraduate and postgraduate). In all the various discussions, the people we met were open, enthusiastic and supportive of our review activities.

The overall impression is of an experienced, well respected, engaged and enthusiastic educational institution. The Panel was very impressed by the clear sense of engagement by the School staff and learners whom they met. The Panel was also pleased by the positive assessment of the School by the learner representatives. The Panel recognises the high level of engagement with industry across a broad range of activities. In discussion with employers, the high quality of the programmes delivered by the School was acknowledged. The Panel notes that the School has considered, evaluated and addressed, where appropriate, the recommendations of the previous programmatic review. It was acknowledged that the previous Programmatic Review occurred at a low point in the demand cycle and the Panel was impressed at pro-active measures taken to successfully weather the storm. The School focused on strong bedrock programmes in key areas/departments to develop fundamental skills for industry from Level 7 to Level 9. The School also developed a suite of Continuous Professional Development offerings in emerging technologies. They are committed to continuous development of dynamic modules in areas such as the digital age/BIM, critical thinking, lean construction and a commitment to high quality mandatory work placement.

The Panel wishes to acknowledge the significant progress made by the School across a broad spectrum of activity including course development, staff development, specialist teaching facilities for BIM, a new collaborative space studio, research and student engagement since the last Programmatic Review.

The Panel acknowledges that the external context in which the Institute and the School operate presently is challenging. External factors impinging on School operations include:

- a) Formation of Munster Technological University: The designation process over the coming months and years is likely to present challenges and opportunities for the School and the Institute as a whole. Related activities in built environment programmes at IT Tralee will need to be considered in terms of opportunities for collaboration and consolidation.
- b) Physical environment/facilities: While acknowledging significant investment in IT equipment and BIM/ collaborative space studio in the School, the availability of adequately resourced physical

laboratory facilities to support School teaching, research and industry collaboration is a significant cause of concern. In particular, concern arises from the lack of laboratory space for undergraduate programmes and also for research work. There is an acute need to address laboratory and other space requirements.

c) Teaching and research equipment: Much of the School's laboratory equipment is in need of upgrading – both to keep pace with technological advances in test equipment; end-of-life replacement of extensively used equipment; and equipment required for master's level research projects.

d) Diverse external stakeholder needs: Balancing the requirements of school leavers, the relevant professional bodies and industry/employers can be challenging. In particular, the distinction and identity of the level 7 qualifications at a time when many school leavers are recalibrating their personal expectations in respect of Level 8 qualifications, without a quantum shift in ability of the applicant pool. Additionally, the distinction and identity of the level 8 qualifications in engineering at a time when the professional body in Ireland has increased the threshold for educational standard of a chartered engineer to Level 9, despite Level 8 still being recognised internationally under the Washington Accord agreement.

Phase 1 Review Panel Findings

Commendations

1. The Panel commends the leadership of the School for successfully managing the School through the most prolonged crisis for Irish HEI built environment programme enrolments, during the economic crash. There is clear evidence of strong leadership which has restored enrolment levels across the School through a series of measures including formalising support of industry professionals (Continuing Professional Development courses). Notwithstanding austerity measures nationwide, there has been investment, both in staff and in new technologies, underpinning pedagogical developments in BIM and space to develop critical thinking skills. The support for staff undertaking PhD programmes is very significant.
2. The Panel commends the staff of the School. There is clear evidence that staff are committed to advancing the education and research activities within the School. The teaching staff of the School is composed of highly experienced staff with extensive professional experience who are committed to ongoing professional development as research-active lecturers. This cohort of highly experienced practitioners who are now increasingly research-active provides a solid base for built environment scholarship in the new landscape of Ireland's technological universities.
3. The Panel commends the learners of the School. The students that we met were passionate about their studies and their desire to get the best possible qualification. They were confident and forthright in sharing their views on the best aspects of life in CIT (e.g. support from the staff) and their 'shopping list' for the Institute to make improvements (e.g. facilities, funded studio materials, coursework deadlines etc).
4. At a time of worldwide downward trends of interest from school-leavers in STEM programmes (other than in Asia), the Panel commends the level of engagement and liaison with primary and secondary schools. We had evidence of some fantastic examples of interaction with schools including the excellent iWish, EYF and TY Architecture initiatives. The far-sighted work at primary school level is especially commended.

5. The Panel commends the strong links with Industry. There is clear evidence of widespread respect for the School's regional impact, leading to an active Advisory Group and collaborations which have many benefits for the School's activities.

Phase 1 Requirements

1. The Panel is putting forward a requirement in terms of facilities. The School is very conscious of the need to improve its facilities in support of student learning and research, especially in engineering studies. Significant progress should be achieved in the short to medium term. This will require support directly from the Institute and the emerging MTU. However, the School also needs to leverage both competitive research funding and from its strong links with industry in a mutually beneficial partnership. Regional test facility capacity should be grown through equipment acquisition and replacement funded from a combination of industry sponsorship and industry partnership in applied research grants proposals.
2. The Panel is putting forward a requirement in terms of work placement structure across the School. The introduction of mandatory work placement is taking place in succession to existing electives but should not be allowed to grow organically programme-by-programme. In consultation with stakeholders, not least the School's Industry Advisory Panel, a School-wide systematic approach to guidelines, learning outcomes and ECTS weighting should be developed to ensure that the proposed increased level and scope of Industrial Placement is consistent across programmes from the perspective of the student, host organisation, module co-ordinators, School-based and employer-based supervisors. An integrated approach to the learning outcomes across the programmes should be considered, transferring existing learning outcomes from other modules where possible to avoid inefficient use of student workload and over-assessment of selected outcomes. Consideration needs to be given to achievement of learning outcomes for students who cannot be placed for extenuating reasons.

Recommendations

1. The Panel recommends that the School leverage its multidisciplinary strength to integrate interdisciplinary learning through joint projects across programmes at an appropriate level of learning per programme through formal alignment of such activities in relevant module descriptors across programmes. This should be done in a way that integrates or transfers learning outcomes from other modules to enhance the student learning experience without adding to overall student and staff workload in achieving these outcomes.
2. The Panel notes the commitment to staff development and commends the supports for research development. The Panel recommends establishment of a mentoring programme for research and postgraduate supervision to support new research supervisors.
3. In the migration to a Technological University, research development needs to be complimented by ongoing recognition, development and reward of teaching excellence. The Panel recommends well-publicised supports for scholarship in teaching and learning through formalising communities of practice with support from the TLU.

4. The Panel recommends that the School develop a more ambitious and comprehensive International Strategy for students and staff with the assistance of the CIT International Office. This will require strategic planning in targeting specific countries and partners to internationalise the student experience. This includes increasing the attractiveness of the programmes to the growing number of mobile international students in an increasingly competitive market and increasing the demand from Irish students to travel abroad during their studies (ERASMUS, Study abroad, placement, study tours etc.). Increased staff mobility should be considered in a synergistic way to grow collaboration opportunities in support of this strategy.
5. The Panel recommends a review of retention strategy. The School should build on the current excellent actions to develop a more comprehensive and co-ordinated approach to achieving the ambitious stated target of achieving a 50% improvement. These actions should particularly focus on supporting career guidance professionals in advising secondary school leavers on programme selection and student support for those with low scores in particular Leaving Certificate key subjects in the first semester of Year 1.
6. The Panel recommends a review of experiential learning across all programmes with a view to strengthening the effectiveness of existing good practice in respect of field and sites visits. These activities and the assessment of related learning should be formally scheduled into module descriptors in all cases where their timely use can deeply enhance achievement of the module's learning outcomes.
7. The Panel recommends that the School consider part-time participation and provision across all programmes, targeted for mature learners. All disciplines should consider in Phase 2 how their programmes and modules could be delivered to better suit part-time participants, including the increased use of eLearning, without diminishing the holistic student learning experience of the full-time class cohort.
8. The Panel recommend co-ordination of continuous assessment at programme level, both in respect of learning outcomes being assessed and the submission deadlines of assignments worth a significant proportion of the module's marks. A full schedule of all assessment work, including submission and feedback dates, for each semester of each programme should be prepared to guard against any unreasonably high spikes in week-by-week student workload. Using one submission to address multiple learning outcomes across different modules should be considered, to potentially reduce the volume of assessments.
9. The Panel recommend a more structured approach to student learning from continuous assessment through improved timeliness of feedback. Division of form of assessment of each learning outcome, through either end-of-semester examination or continuous assessment, should be based on a clear distinction between an assessment tool and a learning tool.
10. In the case of continuous assessment, the assignment should be graded and feedback comments provided prior to the next relevant assessment of the learning outcome, be that by end-of-semester examination or another relevant continuous assessment task.
11. The Panel recommends a review of student learning costs in the ever-evolving learning environment. A review should be conducted in respect of controlling to an agreed acceptable level the personal financial outlay by students on non-discretionary spending required for independent study (e.g. higher than average laptop specifications, cutting edge software, materials, printing costs etc). This particularly applies to studio-based teaching and learning.

Review Panel Membership

Prof Emeritus Mark Richardson (Chair)

Emeritus Professor, College of Engineering and Architecture, University College Dublin.

Ms Maria Kyne

Dean of Faculty of ASET, Limerick Institute of Technology

Mr Sean Mc Laughlin

Cork County Architect (Retired)

Mr John O'Mahony

Director ARUP

Dr Ken Thomas

Head, School of Engineering, Waterford Institute of Technology

Dr Breda Kenny

Head, School of Business, Cork Institute of Technology

SWOT Analysis Review

The Panel welcomed the School's SWOT analysis as part of the submission. During the review the Panel formulated a further SWOT analysis to underpin their subsequent recommendations, based on the evidence gathered during the site visit, supplementing documentation provided by the School.

<p style="text-align: center;">Strengths</p> <ul style="list-style-type: none"> • Quality of graduates • Quality of current learners across all levels • Relevance of programmes • Enthusiasm and competence of staff • Adherence in teaching to fundamental academic principles that underpin practice in the discipline area • Pride • Industry engagement – highly active Advisory Panel • Responsive to changes in external environment • Supportive staff career development framework • Secondary/primary level schools' interaction and engagement • Guest lectures and relationship with key industry stakeholders for teaching and research 	<p style="text-align: center;">Weaknesses</p> <ul style="list-style-type: none"> • 1974 building with engineering laboratories unsuited to current teaching and research requirements • Potentially inconsistent involvement from elective to mandatory work placement across the School's programmes • Retention and drop out issues, especially in the early years • Barriers to interdisciplinary work • Students' perceived lack of co-ordinated scheduling of weekly independent study work load to meet assessment submission deadlines • Inconsistent student experience across departments - limited field/experiential opportunities in some depts. • Inconsistent timeliness of feedback (if any) on continuous assessment. • Continuous assessment – lack of distinction between assessment tool and learning tool • Lack of delegated authority at level 10
<p>Opportunities</p> <ul style="list-style-type: none"> • MTU – ethos, culture and brand • Deeper industry links through more formal/informal contacts consequent on more extensive work placement programme • Delegated authority at level 10 • Contract research – lab based testing 	<p>Threats</p> <ul style="list-style-type: none"> • MTU – alignment of discipline areas • MTU – expectations beyond resources • Retention • Erosion of the value of the level 7 - from a student perspective.

<ul style="list-style-type: none">• Drive change and development at accreditation body level.• Further engagement with Regional Skills Forum• New Apprenticeships• Innovative progression routes from level 7, 8, 9, structured CPD – life-long learning.• Mechanical, Electrical QS• Industry Collaboration – BIM• Potential for learning outcomes to be met through interdisciplinary overlapping modules – BIM• Facilities Management course development with the Dept. of Construction• Internationalisation – curriculum and student profile – inbound/outbound	<ul style="list-style-type: none">• Enhancing staff research profiles at the expense of scholarship in teaching and learning• Threat to graduate attributes in respect of deep understanding of scientific and engineering principles in a digital learning environment where soft skills are increasingly emphasised at undergraduate level.
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Summary of Key Findings and Recommendations

Building on the Guidelines for the Review Panel and the approach adopted by the previous Phase 1 Review Panel (April 2013 Report), we addressed the question:

- **Is there evidence of a thorough, effective and reflective review which identifies challenges, addresses shortcomings, and which lays the foundations for a successful development of the faculty/college over the next five years?**

The Panel found that the School's Phase 1 submission, supported by evidence garnered during the site visit, demonstrated evidence of a "**thorough, effective and reflective review which identifies challenges, addresses shortcomings**". Looking to the next 5 years, it must be stated that the review was conducted in a period of uncertainty for the School regarding the next 5 years, with imminent anticipation of the formation of the Munster Technological University (MTU) – potentially as early as 2020. This uncertainty inhibited provision of a specific 5 year plan in the School's submission documentation and therefore both the School and the Review Panel explored areas (including 'known unknowns' and 'unknown unknowns') that need to be anticipated and addressed with careful planning and commitment across all levels in the School and Institute, in order to ensure successful development during this significant period for the School, Institute and region. The Review Panel has therefore commented in general and in detail in the spirit of seeking to assist the School in building on existing solid "**foundations for a successful development of the School over the next five years**". It is acknowledged that some recommendations on programme delivery and assessment are somewhat detailed and perhaps out-of-place for Phase 1 of the review but are forwarded in the context of capturing potentially valuable insights in a student-centred review process:

Physical Facilities

The engineering facilities in the School are located in Block A and B of the main (1974) building on the Bishopstown Campus; the Architecture Factory, since 2014, in the Melbourne Building on the Bishopstown Campus; and in the shared CIT/UCC Cork Centre for Architectural Education (CCAЕ) in Nano Nagle Place, since 2018 in Cork City Centre.

There is a significant contrast between the quality of teaching facilities in the main building, dating from 1974, and those elsewhere in the School. High quality design studios contrast with cramped engineering laboratories equipped with older technology test equipment that has had to be maintained rather than replaced during a decade long recession. State-of-the-art lecture and seminar rooms in the CCAЕ contrast with classrooms built in 1974 for a 'chalk and talk' style of teaching. Faced with resourcing challenges, some engineering schools internationally are over-relying on on-line videos of test methods and data derived from simulations to take the place of 'hand-on' laboratory experience. This is not an option for a career-focussed engineering education provider such as CIT, where the engineering laboratory should be at the heart of the student learning experience from Level 7 test method tuition to Level 9 applied research projects. This issue was not raised by the previous Review Panel (2013), most probably in recognition of the State's perilous financial situation during the IMF/ECB 'bail out'. Nevertheless, impressive teaching and learning facilities have been developed around new programme opportunities in BIM (SPA certificate), benefitting undergraduates programmes as well as CPD for practitioners. However more now needs to be done on core laboratory teaching facilities by the Institution for Level 7 and Level 8 students. Additionally, the expectations of Level 9 students for adequate research facilities in engineering need to

be accommodated. This will require some ‘pump priming’ through internal and external funding until such time as research activity of staff in the Technological University scenario yields a pipeline of overheads from research funding to maintain high quality facilities. The matter should be addressed as early as possible in the formation of the Technological University.

- The Panel is putting forward a requirement in terms of facilities. Significant progress should be achieved in the short to medium term in the provision of high-quality teaching facilities in the Department of Civil, Structural and Environmental Engineering, most particularly in respect of laboratory accommodation and equipment. The scope for this to be a regional resource for the industry should be explored, both in support of CPD and applied research by regional SME’s and entrepreneurs, with a view to leveraging part-funding from industry in a mutually beneficial partnership involving industry sponsorship and collaboration in applied research grant proposals.

Stakeholder Links – Industry Co-operation in Support of Work Placement

The School is moving from work placement being an elective to being mandatory. The Panel is enthusiastic about this development but does not underestimate the onus it places on students, staff and the host organisation in ensuring that learning outcomes are successfully achieved and assessed in a fair and consistent manner. The School values its links with industry, both in the region and nationally, and is committed to continuing to develop and strengthen such links in a spirit of collaborative partnership. Roll-out of mandatory work placement is both an opportunity and a threat to the School’s reputation and relationship with industry in the region. It requires careful management as it scales up.

There are a range of different types of stakeholder links in place which are reflective of the range of stakeholders and partners involved. Significant among these, the School of Building & Civil Engineering has an active Advisory Panel which initially met in June 2015 and meets twice per year; the Advisory Panel has met on 9 occasions to date and most recently met in January 2019. The Advisory Panel consists of senior professionals from industry who provide advice and guidance, primarily of a strategic nature, to the School. This Advisory Panel has been invaluable in assisting the School and guiding its strategic development. It is a key area of commendation for the School. The scaling up of work placement should be managed in consultation with the Advisory Panel to maximise ‘buy-in’ from industry in a shared understanding of the transfer of selected learning outcomes to the host organisation.

- The Panel is putting forward a requirement in terms of mandatory work placement across the School. The introduction of mandatory work placement should not be allowed to grow organically programme-by-programme. In consultation with stakeholders, not least the School’s Industry Advisory Panel, a School-wide systematic approach to guidelines, learning outcomes and ECTS weighting should be developed to ensure consistence across programmes from the perspective of the student, host organisation, module co-ordinators, School-based and employer-based supervisors.

Leveraging the School’s Multidisciplinary Programme Portfolio

The School offers programmes across the full spectrum of construction related disciplines. These embrace architecture, architectural technology, civil engineering, construction management, environmental and energy engineering, interior architecture, quantity surveying and structural engineering. The list of 37 offerings range from Higher Certificate (Level 6) to Research PhD (Level 10) and now include more programmes (part-time) since the last review: Level 7 Certificate in Building

Information Modelling (BIM) Technologies; Level 8 single module certification in Fire Safety Certification; Level 8 single module certification in Fire Safety Engineering; Level 9 Postgraduate Diploma in Civil Engineering (Environment & Energy); Level 9 Postgraduate Diploma in Structural Engineering. Some of these part-time programmes have previously been offered through the National Springboard Programme. A further programme development opportunity (Facilities Management) was raised during the site visit. The previous Review Panel (2013) cautioned that the Institute was in danger of lacking focus in education, with a high number of programmes, some of which had small enrolments only supportable by using shared modules. It was recommended that a concerted study be carried out to define core competencies and the courses offered on that focus. It may be stated that such a conservative approach was wise counsel at a time of low ebb in Ireland's economy. However the School has weathered that storm and the new offerings played a role in both survival and in serving an industry need that has potential to grow. Looking forward, now is a time for risk-taking and to view the School's multi-disciplinarity and wide range of programmes as an opportunity for enhancing the student experience rather than a challenge to the sustainability of the School's offerings.

Ideally, programme development should be balanced across all the School's departments over the next five years. To that end, the widespread use of interdisciplinarity through joint projects, with students on different programmes, should be explored and formally integrated into relevant module descriptors and course schedules in a manner that ensures sustainability and not once-off exercises organised now and again by enthusiastic lecturers as add-ons to existing student schedules. The Review Panel do not underestimate the challenge of achieving this co-operation between programmes in the three departments. However we believe that now is the time to mirror change in construction industry practice through widespread adoption of Building Information Modelling as an interdisciplinary tool that brings design and construction professionals together in their shared responsibility as never before. The School has taken a lead in Ireland in respect of education facilities that support BIM. Now is the time to press home that advantage.

- Harnessing the benefits of new technologies, especially BIM, the Panel recommends that the School leverage its multidisciplinary strength to integrate interdisciplinary learning and projects into programmes at an appropriate level per programme through formal alignment of such activities in relevant module descriptors across programmes. Learning outcomes should be integrated in a co-ordinated manner that transfers learning outcomes from other modules to avoid adding to overall workload in achieving these outcomes. This recommendation will not be easy to implement but the long-term benefits will include enhanced student experience, greater sense of shared purpose among the staff of the School with greater likelihood of interdisciplinary research; and strengthened reputation of the School among external stakeholders. The School has that opportunity and the introduction of BIM provides the catalyst for change now.

Research and Innovation

The School has an active and vibrant postgraduate research programme in place under the Sustainable Infrastructure Research and Innovation Group (SIRIG). The School's success in EU project participation is commended. Further plans for research strands to support activity in other areas will unfold as further research funding opportunities are envisaged following TU designation. Overall responsibility for the research group currently lies with the Head of School, providing a direct link between the research group and the Faculty of Engineering & Science Executive. This is consistent with the overall research strategy of the Faculty. It is anticipated that a delay in Delegated Authority to Level 10 will soon be resolved – an

application has been ready for some time but has not been progressed in anticipation of the formation of Munster Technological University, thus superseding the need for the application.

The Review Panel welcomes the current and anticipated growth in research activity. The Panel note that research activity is currently self-driven by individual staff members and is supported by the School through a reduction in contact hours where appropriate. However, it is acknowledged that the allocation of hours given does not cover all of the time required to write research proposals, conduct research and publish the work. The Panel would like to see development of a mentoring programme for research and postgraduate supervision to support new research supervisors. This should include guidance to early career researchers on future important research metrics, notably in respect of impact, in the context of a Technological University strategy which should give clear guidance on applied research and Technology Readiness Levels.

- The Panel recommends that a mentoring programme be put in place to support new research supervisors, in the context of clear guidance on key research metrics of the new Technological University.

Staff Development

The School facilitates staff development through supporting further study and attendance at seminars, conferences and training courses. The Institute has a dedicated Teaching & Learning Unit (TLU) which sponsors an on-going programme of teaching and learning focused talks and seminars; a staff mentoring programme for newly recruited staff. The Institute also provides an MA in Teaching and Learning. The School supports staff undertaking a wide range of external staff development activities through financial support and facilitation in tandem with Institute supports for staff undertaking Masters and PhD level studies. In the period since the last review an impressive total of 8 staff members in the School have gained qualifications at Masters (4) and PhD (4) level.

In anticipation national developments in respect of introducing technological universities to the HEI landscape, the Institute has committed significant resources to a staff PhD scheme in recent years. Staff have been supported by payment of fees and supporting expenses incurred together with a substantial reduction in the teaching load of the staff member involved. The Review Panel greatly welcome this development and were impressed by staff's commitment to grow research activity on foot of this support. The School needs to value and support research-informed teaching across the disciplines to facilitate a seamless connection between research and teaching in the Technological University.

The Review Panel anticipate that growth in research activity will put pressure on the distribution of staff workload across teaching, research and institute/community engagement. It may be anticipated also that achievements in research will increasingly spill over into criteria for promotion. This can create difficulties, given that evidence of research excellence is more easily quantifiable than evidence of teaching excellence. The Review Panel wish to encourage the School not to lose focus on teaching excellence during a period of significant growth in research activity in the early years of transition to a Technological University, with ongoing staff support in the scholarship of Teaching & Learning within and across the disciplines covered in the School.

- The Panel recommends that, complementary to support for new research supervisors, there should be well-publicised supports for scholarship in teaching and learning through formalising communities of practice within the School, with support from the TLU.

Internationalisation

International developments are of relevance to the School. The construction industry remains one of the largest industrial sectors in the world economy at 13% of GDP. There is a significant growth in the middle classes in the Asia-Pacific region who are willing to invest in the education of their children to tertiary level. Government policy in Ireland is to encourage this market to look to the Irish higher education landscape. Recruitment of international students has many advantages, not least the internationalisation of a campus to the benefit of all students in their learning experience. The School's current international vision is largely focussed on growing ERASMUS links, but a wider canvass of international opportunities will undoubtedly open up under the 'Technological University' brand. These opportunities should be explored to enhance the learning experience of students on the programmes, while bolstering the programmes sustainability. However, the School cannot pursue this effectively alone, given the intensity of competition in the international market. Support will be required at Institute level. This will require strategic planning in targeting specific countries and partners to internationalise the student experience. This includes increasing the attractiveness of the programmes to the growing number of mobile international students in an increasingly competitive market and increasing the demand from Irish students to travel abroad during their studies (ERASMUS, Study abroad, placement, study tours etc.). Increased staff mobility should be considered in a synergistic way to grow collaboration opportunities in support of this strategy.

- The Panel recommends that the School develop a more ambitious and comprehensive International Strategy for students and staff with the assistance of the CIT International Office.

Retention

The School experiences disappointing non-progression rates from Level 7, Year 1 students, at over 40%. This reflects the experience of Level 7 programmes generally across the Faculty. The School's Level 8 programmes have lower non-progression rates but, at 28-35% over the last 5 years, are above the Faculty norm of 24-33% in the same period. A matter of deep concern is the non-progression rates in Architectural Technology and Interior Architecture over this period– 27-69% and 18-75% respectively. Some distortion in data may occur from external transfer students but the figures for construction-related programmes nationally is high. The Review Panel learned from staff and student interviews that a common reason for drop-out in first year was 'wrong choice of programme'. It is thought that transition from second to third level must also be a major factor. The non-progression rates in the last 5 years are probably at a historically high level for construction-related programmes and should decrease as the economy improves. Nevertheless action should be taken, especially in respect of Architectural Technology and Interior Architecture.

- The Panel recommends a review of retention strategy. The School should build on the current excellent actions to develop a more comprehensive and co-ordinated approach to achieving the ambitious stated target of achieving a 50% improvement. These actions should particularly focus on supporting career guidance professionals in advising secondary school leavers on programme selection, complemented by targeted student supports by the School in the first semester of Year 1.

Delivery and Assessment

Teaching delivery and assessment is at the core of the mission of the Institute and the School adheres to all Institute Quality Assurance Policies and Procedures in the broader academic context of the requirements of Quality & Qualifications Ireland (QQI). The mission of the Institute to provide career-focused education can be assisted by the clear goodwill towards the School from the region's employers in respect of accommodating more field trips. Teaching delivery must continuously evolve to take account of changes in learning styles, especially occasioned by the impact of new technologies in the digital age and the reality that many 'full-time' students effectively study 'part-time' due to the need to hold down a part-time job to fund their education. The Review Panel noted that relatively high costs associated with materials for design studio assignments were typically borne by the students themselves. Assessment as and for learning is an important consideration in developing the overall assessment strategy at a programme and module level. Assessment scheduling and feedback is a key concern for the student body and needs consideration by year leaders and course coordinators.

The session with students highlighted a number of areas of relevance to the programmatic review process. Through a word association exercise, the following are the words that students put forward as describing dominant impressions of the student experience:

- "Projects"
- "Busy"
- "Working hard"
- "Deadlines"
- "Exhausted"
- "Assessments"

Further impressions from students included:

- Feedback on assessment is not consistent. In some cases, no feedback is given beyond the grade. Where feedback is given, a general view is that there is a lack of time provided to incorporate feedback from one CA assignment to the next.
- No evidence of CA from different modules being scheduled in a co-ordinated way across the semester workload.
- Most students are working part-time, typically of necessity.
- Approachable staff is the best thing about CIT.
- Overall positive in terms of resolving problems once communicated to staff. Students attend course board meetings, complete module feedback forms and have engaged with ISSE.
- Positive view towards work placement and the preference is for longer duration to 'settle in'
- Work-based learning through field trips and site visits: valuable but not enough in the programme to prepare you for the internship and work place – mature student view
- Work ethic, level of interest, engagement, motivation and level of maturity are all important factors in course completion/success
- No time to engage with Innovation week, Enactus, Hakathon on campus due to high contact hours and projects

The Review Panel considered the reality that 'most students are working part-time, typically of necessity' and it is therefore probable that many are not achieving the number of independent study hours that module co-ordinators have prescribed in the descriptors. Part-time working combined with full-time

study would also account for impressions of exhaustion linked to a constant battle to meet assessment deadlines. Balancing this against the overwhelmingly positive impression of student satisfaction with their learning environment, the Review Panel wish to share some advice with the School. It is acknowledged that some are somewhat detailed and perhaps out-of-place for Phase 1 of the review but are forwarded in the context of capturing potentially valuable insights in a student-centred process:

- The Panel recommends a review of experiential learning across all programmes with a view to strengthening the effectiveness of existing good practice in respect of field and sites visits.
- The Panel recommends the School consider part-time participation and provision across all programmes, targeted for mature learners. All disciplines should consider in Phase 2 how their programmes and modules could be delivered to better suit part-time participants, including the increased use of eLearning, without diminishing the holistic student learning experience of the full-time class cohort.
- The Panel recommend co-ordination of continuous assessment in respect of learning outcomes being assessed and the submission deadlines of assignments worth a significant proportion of the module's marks. A full schedule of all assessment work, including submission and feedback dates, for each semester of each programme should be prepared to guard against any unreasonably high spikes in week-by-week student workload. Using one submission to address multiple learning outcomes across different modules should be considered to potentially reduce the volume of assessments.
- The Panel recommend a more structured approach to student learning from continuous assessment through improved timeliness of feedback. Division of form of assessment of each learning outcome, through either end-of-semester examination or continuous assessment, should be based on clear distinction between assessment tool and learning tool
- In the case of continuous assessment, the assignment should be graded and feedback comments provided prior to the next relevant assessment of the learning outcome, be that by end-of-semester examination or another relevant continuous assessment task.
- The Panel recommends a review of student learning costs in the ever-evolving learning environment. The School and students may find it synergistic to increasingly rely on students' own computer devices to aid learning, in place of School-based infrastructure that is limited in availability by number of devices and CIT campus hours of operation. A review should be conducted in respect of controlling to an agreed acceptable level the personal financial outlay by students on non-discretionary spending required for independent study (e.g. higher than average laptop specifications, cutting edge software, materials, printing costs etc). This particularly applies to studio-based teaching and learning. For example, could a change in practice be introduced whereby soft copies are used with data projection during interim reviews to reduce significant printing costs for students?

Actions taken arising from recommendations of previous reviews

The Phase 1 submission documentation presents a summary of the recommendations and conditions made for each Department in Phase 2 of the previous programmatic review and the actions taken. All conditions have been met and the recommendations have been addressed.

A recommendation to Faculty arising from the Faculty Programmatic Review 2014 that opportunities be provided for “multi-cultural” teamwork has not been progressed in any formal manner. However, Recommendations #1 and #3 of this report may assist in achieving this in the long-term.

Overview of faculty/college plans for the coming 5 years.

Appendix 1 outlines specific plans from the School’s 2015 Strategic Plan, action on which will spill over into the coming 5 years. The Faculty and School is currently developing its definitive plan in response to the launch of the new CIT Strategic Plan 2018-2023, launched in December 2018. It was clear from the interactions with staff that the following areas will be considered:

- School Industry Advisory Panel- will continue to play a key role in informing future strategic actions and decisions.
- Graduate surveys – strong links with Alumni office in place and ongoing dialogue with graduates is to be continued.
- Multi-cultural - study abroad/internationalisation focus needs further consideration.
- Plans for next 5 years. – student mobility – in bound/ out bound to be planned for at undergraduate as well as postgraduate level. It was noted that there is a significant Erasmus cohort on Level 7 programmes.
- Financial implications - a factor for students needs to be considered in any future planning
- Consider metrics around student, staff mobility.
- Level 10 delated authority – a key priority.
- Plan for new programme for the next 5 years per department – retention is the main focus.
- Architecture – tracks and streaming within current programmes
- Engineering - plans for Integrated masters
- Construction– focus on points - entry requirements.
- Postgrad level – more scope to offer specialist areas such as facilities management.

Appendix 1: Faculty Themes and Proposed Actions over Next 5 Years

(NB Extracted verbatim from the faculty document)

The CIT Strategic Plan 2018 - 2023 *Empowering & Enriching Through Knowledge* was launched in mid-December 2018 with the following mission:

To provide student-centred, career-focused education and research for the personal, professional and intellectual development of the student and for the benefit of the broader society in the region and beyond

It is envisaged that this mission statement will be delivered through a series of strategic objectives identified in the strategic plan.

It is also envisaged that a cascade of strategic planning activity at Faculty and School level will proceed during Semester 2 of the current academic year in response to the launch of the new CIT Strategic Plan.

The CIT Academic Plan is also currently being developed through the CIT Academic Council and is likely to be finalised during Semester 2 of this academic year; this plan will also influence future strategic planning activity.

Themes and Proposed Actions

The current School Strategic Plan as presented in Chapter 9 (and Appendix G) has led to significant activity to meet its aims and objectives as outlined in Chapter 9. In that context the themes and actions identified below are closely related to the current School Strategic Plan and will remain as the School priorities until a new School Strategic Plan is developed in the context of the wider Institute Strategic Planning process. The aims of the current School Strategic Plan again are:

- To develop and enhance the School and its offerings
- To allow students reach their full potential within a supportive teaching, research and learning environment
- To foster and develop excellence in teaching, research and learning

Table 10.1 presents a summary of each of the objectives of the current School Strategic Plan with some commentary and future targets set as appropriate for specific objectives.

The School will strive to meet the objectives outlined in this Strategic Plan and the new School Strategic Plan which is likely to be developed in 2019

Objective	Brief Commentary
Maintain & Increase Student Registrations	<p>Full time equivalent (FTE) student registrations are currently approximately 750 and will continue to rise. Increased enrolments will take place including through improved student retention and targeted new programmes development.</p> <p>Target: 30% increase in FTE student registrations by 2024</p> <p>Continue to implement all appropriate student retention measures, at every level within the Departments and School as appropriate.</p> <p>Target: Reduce the current School-wide non-progression rates by 50% by 2024</p> <p>Continue to promote School offerings with all stakeholders and continue to contribute to all Faculty and Institute initiatives.</p> <p>Continue to promote diversity and specifically continue to promote opportunities for female students in STEM and in Construction-related areas.</p>
Target Potential New Student Markets/Cohorts	<p>Continue to address this objective including through online delivery and through existing and potentially new CPD offerings.</p> <p>Increase activity in the International student marketplace in conjunction with the CIT International Office.</p> <p>Target: Increase international student numbers by 25% by 2024.</p>
Maintain Relevance of Programmes	<p>The relevance of School programmes will be continuously reviewed through mechanisms such as Programme Boards, the School Advisory Committee and on-going interaction and liaison with Professional Body Accreditation Bodies and Processes.</p> <p>The School and its constituent Departments will continue to respond to specific programme requirements on an on-going basis.</p> <p>The School and its constituent Departments will remain cognisant of relevant emerging trends across the Industry Sector including the developing BIM and general IT space.</p> <p>Target: Interdisciplinary BIM-led module to be delivered on the Final Year of Level 8 Programmes across the School in the Academic Year 2019/2020.</p>

<p>Targeted Programme Development</p>	<p>Programme development will continue in a targeted fashion in the context of student demand, industry demand and programme viability.</p> <p>The development of part-time CPD programmes (and single multiple models Special Purpose Awards) will continue; full time programmes will also be developed as appropriate including a One-Year Level 8 add-on BSc (Hons) in Building Information Modelling and Management and an Integrated 5-Year MEng programme. Target: BSc (Hons) in Building Information Modelling and Management to be delivered in 2019/2020. Target: Integrated MEng in Structural Engineering Programme to be offered in 2020/2021.</p> <p>The School will target relevant industry specific programme developments as appropriate under the Springboard National Programme.</p> <p>The School will also target, as appropriate, new opportunities under the New National Apprenticeship Programmes.</p> <p>Programme development opportunities that may develop in the context of the MTU designation will be explored and implemented as appropriate.</p>
<p>Research & Innovation Development</p>	<p>Research development within SIRIG will continue and focus where appropriate on longer term and larger projects with both existing and new partners. Increased research collaboration will also take place with other research groups in CIT. New and developing research areas within SIRIG will be encouraged and supported. Target: Increase research funding over the 5-year period to 2024 by 25%. Target: Increase the number of Peer Review Journal Publications by 25% over the 2019-2024 period.</p> <p>Research accreditation at PhD Level 10 will be sought, most likely within the context of the Munster Technological University process. Target: PhD Accreditation to be achieved within one year of MTU designation.</p> <p>The School will take an active role in any development related to a National Centre for Excellence for Construction.</p>

	<p>Target: CIT will be an active partner in the development of a National Centre for Excellence for Construction.</p> <p>A larger research space for SIRIG is planned to be provided in the new CIT Learning Resource Centre Building.</p> <p>Improved and increased research laboratory facilities and space will be sought (see Physical Facilities objective below).</p> <p>The overall aims of the Strategic Plan for SIRIG (see Section 4.6) will continue to be pursued.</p> <p>Target: Continue to implement the Strategic Plan for SIRIG.</p>
Develop Potential Income Streams	<p>The School will support and contribute to the proposed new Faculty-wide STEM academy providing the appropriate resource to support the development of income generating activity in the teaching and research/innovation/testing areas.</p> <p>The School will continue to seek potential income streams as appropriate.</p> <p>Income generated will provide a resource for investment and further development.</p> <p>Target: Increase income generation from applied research projects and CPD taught activity.</p>
Maintain & Expand Professional Body Accreditation of Programmes	<p>The School is committed to maintaining and expanding professional body accreditation of School programmes.</p> <p>Target: All current programme accreditations to be maintained.</p> <p>Target: RIAI accreditation to be achieved for the BSc (Hons) in Architectural Technology Programme in 2019.</p>
Promote and Facilitate Staff Development	<p>The School and its constituent Departments will continue to support and facilitate staff development in a wide range of different ways and will continue to support to the fullest extent practicable existing and new CIT initiatives for Staff Development.</p>

Promote and Facilitate Opportunities for Students	<p>The School will continue to support and facilitate student opportunity in a wide range of different ways.</p> <p>Student work placement on School Programmes to date has been undertaken on a voluntary/elective basis.</p> <p>Target: Mandatory work placement will be a feature of Level 8 Programmes across the School.</p> <p>Target: An elective module will be provided on all Level 7 programmes to increase student opportunity.</p>
Facilitate Industry Links, Collaborations and External Engagement	<p>The School will continue to drive its external engagement agenda including through its School Industry Advisory Panel, its links with UCC and with other Higher Education Institutions, its links with local and regional industry, its links with external organisations including professional accreditation bodies and other engineering and scientific organisations as appropriate and its links with its graduate community.</p>
Maintain & Enhance the Physical Facilities	<p>The School will continue to seek new teaching and learning and laboratory facilities. Current facilities are inadequate for 21st Century Construction-related Higher Education.</p> <p>Target: Provision of a high quality Engineering Laboratory Facility to double the existing space to 1000m².</p> <p>Target: Provision of new IT Facilities for School Programmes</p> <p>Target: Provision of new Teaching & Learning Facilities.</p> <p>Target: Provision of new Office Accommodation for School Staff.</p> <p>Note: These targets are dependent on a significant injection of funding.</p>

Table 10.1 School Strategic Plan Objectives and Brief Commentary for the Period 2019-2024

Appendix 2: Timetable of Programmatic Review



Programmatic Review of the CIT School of Building & Civil Engineering – Phase 1

THURSDAY, MARCH 14TH, 2019

- 10.00 AM – 10.30 AM Panel Convenes - **Identification of Areas for Discussion** - *Conference Room*
- 10.30 AM – 11.30 AM **Institutional Context, Meeting 1 of 2**
Head of School
- 11.30 AM – 12.45 PM **School structure. Overview of actions and developments in past 5 years (incl. recommendations of last Programmatic Review)**
Head of School, Heads of Department - Conference Room
- 12.45 PM – 1.30 PM *Panel Lunch (Bistro)*
- 1.30 PM – 3.00 PM **Academic Portfolio. Plans for next 5 years**
Head of School, Heads of Department – Council Room
- 3.00 PM – 4.30 PM **Engagement with Enterprise**
Head of School, Heads of Department, Nominated Staff – Council Room

Dr. Joe Harrington, Head of School
Katherine Keane, Head of Department of Architecture
Des Walsh, Head of Department of Civil, Structural & Environmental Engineering
Dr. Daniel Cahill, Head of Department of Construction
Deirdre Ryan, Dept. of Architecture
Ann Rogers, Dept. of Architecture
Derek O' Leary, Dept. of Architecture
Ted McKenna, Dept. of Civil, Structural & Environmental Engineering
Brian O' Rourke, Dept. of Civil, Structural & Environmental Engineering
Dr. Mary Moloney, Dept. of Civil, Structural & Environmental Engineering
Kieran Ruane, Dept. of Civil, Structural & Environmental Engineering
Joe Kehoe, Dept. of Construction
Dr. Gillian Carey, Dept. of Construction
Jason Collins, Dept. of Construction

4.45 PM – 5.30 PM **Plenary Session with Industry Representatives – Council Room**
External Stakeholder Group Only

Employers

Sean Kearns, Reddy Architecture

Turlough Clancy, Henry J Lyons

Garrett O' Callaghan, Jack Coughlan & Associates

Glenn Hanna, AECOM

Cian Roche, Sisk Group

Dave Cotter, Sisk Group

Brendan Brice, RPS

Graduates

Kian Buckley, Jack Coughlan & Associates

Susan Lilley, Henry J Lyons

Anna Pietrzak, Arup

Paul Glavin, Glavloc

Ciaran O' Donnell, CIT

5.30 PM – 6.00 PM Private Panel Meeting – Summary of Impressions from Day 1 - *Conference Room*

7.30 PM – 9.30 PM Panel Dinner - *Kingsley Hotel, Victoria Cross, Cork*

FRIDAY, MARCH 15TH, 2019

8:45 AM – 9:00 AM Private Panel Meeting – **Areas for Discussion** - *Council Room*

9.00 AM – 10.00 AM **Research**

CIT Head of Research, Dean of Graduate Studies, Head of School, Heads of Department, Research-Active Staff - Conference Room

Dr, Niall Smith, Head of Research

Dr. Stephen Cassidy, Dean of Graduate Studies

Dr. Joe Harrington, Head of School

Katherine Keane, Head of Department of Architecture

Des Walsh, Head of Department of Civil, Structural & Environmental Engineering

Dr. Daniel Cahill, Head of Department of Construction

SIRIG Research Active Staff

Dr. Niamh Power

Dr. Vesna Jaksic

Brian O' Rourke

Dr. Garrett O' Sullivan

Dr. Mary Moloney

Dr. Jim Harrison

Denise Barnett

Kieran Ruane

Dr. G. Carey

Dr. Marc O' Riain

Dr. Sarah Mulrooney

Ted McKenna

10:00 AM – 11:00 **Meeting with Staff**

AM

*Academic, Technical and Support Staff - **Council Room***

All School Staff invited to this Session

11:00 AM – 11:15 **Institutional Context, Meeting 2 of 2**

AM

Prof Hugh McGlynn, MTU Project Director

11:15 AM – 12:15 **Meeting with Students - *Council Room***

PM

Dept. of Architecture

AT1: Ross Duggan;

AT2: Aisling O'Leary;

AT3: Roy Bruton

AT4: (Marcus) Zhao Quing Tia;

IA2: Stephen Lehane;

IA: Norbert Kot

IA: Emma Rossiter

Dept. of Civil, Structural & Environmental Engineering

DSE4: Erin O' Connor

DSE4: Simon Purcell

CE3: Shane O' Donovan

CE2: Michael Clifford

CE1: Kate Mulligan

Common: Donal Og Coleman

Common: Colm Eoin McSweeney

Taught Postgrad DSE5: Cormac MacMurchu

Taught Postgrad CE5: John Hegarty

Postgrad Ross O' Sullivan

Postgrad Shane Merritt

Dept. of Construction

QS4: Paul Desmond

QS3: Kate O' Brien

Con2: Joshua Byrne

Cmgt2: Pdraig Duggan

Cmgt4: Sam Power

Cmgt3: Tim Long

12:15 PM – 14:00 **Draft Conclusions** - *Conference Room over Lunch*
PM

14.00 PM Feedback on Preliminary Findings from Phase 1