



QUALITY REVIEW
PEER REVIEW PANEL REPORT
*SCHOOL OF BIOLOGICAL, ENVIRONMENTAL AND EARTH
SCIENCES*

Date: 3rd – 5th December 2019

“By embedding a strong quality-enhancement ethos, we will use our quality processes to ensure a culture and experience of best practice in the delivery of our academic mission, demonstrating our commitment to continuous evolution and improvement”

(UCC’s Strategic Plan 2017 – 2022, p.23)

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List of Panel Members

Refer to Appendix A for detailed panel profiles.

Name	Position/Discipline	Institution
Dr Máire Leane (Chair)	School of Applied Social Studies	University College Cork
Dr Patrick Harrison ¹	Department of Physiology	University College Cork
Professor Ivan Couée	Ecosystems-Biodiversity-Evolution Institute	University of Rennes
Professor David Harper	Department of Earth Sciences	Durham University
Professor Grace McCormack	Zoology, School of Natural Sciences	National University of Ireland, Galway
Ms Orla Redmond	Student Reviewer	University College Cork
Review Coordinator		
<i>Dr Geraldine Fahy</i>	<i>Quality Enhancement Advisor, Quality Enhancement Unit²</i>	<i>University College Cork</i>

Part 1 - Overall Analysis

1.1 Context

The School of Biological, Earth and Environmental Science (BEES) is one of the largest academic units within the College of Science, Engineering and Food Science (SEFS) at University College Cork (UCC). Despite its relatively recent formation (2010), it has a long history of teaching and research within the University through its cognate disciplines of Environmental Science, Geology, Plant Biology and Zoology & Ecology. There are currently 19 different (UG, PG, diploma) programmes offered at the School, together with 119 undergraduate (UG) modules. The School currently has 29 academic staff, five administrative staff and 11 technical staff. BEES holds a Bronze Athena Swan award since 2018.

BEES is largely based in Distillery Fields, which is a c. 15-minute walk from the UCC main campus. The School operates across three core buildings containing teaching space, offices, general laboratory and specific research spaces. The Mission Statement of the School of BEES is “*to advance and apply our understanding of the natural world through excellence in research, teaching and innovation*”. The School’s most recent Strategic Plan operated from 2012 – 2017, it is currently in the process of developing a new Strategic Plan which will take into account UCC’s Strategic Plan (2017-2022) and UCC’s Academic Strategy (2018-2022).

¹For personal reasons, Dr Harrison was unable to participate in the All Staff meeting & the informal dinner on December 3rd, the Senior officers meeting, External Stakeholder meeting, and working dinner on December 4th.

²Dr Silvia Brandi from the Quality Enhancement Unit, University College Cork shadowed the panel as part of her induction.

1.2 Methodology and Site Visit

The Panel site visit for the School took place over three days in December 2019. The timetable was comprehensive and enabled consultation with key stakeholders, including senior management of the University, School staff, students, and external stakeholders. There was engagement with the Head of School (HoS), School Manager, and the Heads of Discipline. The Panel brought together national and international, external reviewers with peer expertise in the areas of plant sciences, geology, palaeontology, and evolutionary biology. Internal reviewers provided knowledge of institutional and organisational structures within UCC. The student reviewer was a second year MPlan student at UCC, having completed a joint BA in Geography and Sociology. A Review Coordinator from the Quality Enhancement Unit (QEU) accompanied the Peer Review Panel throughout to facilitate the review process and to support the Review Panel in formulating and agreeing the final Panel Report. The entire Panel contributed to the production of the final Panel Report and commended the process for facilitating the Panel to use their experience in a constructive way which enabled structured feedback. The Panel was unanimous in its commendations and recommendations and there was no discord.

1.3 Objectives of the Quality Review

The overarching objectives of academic quality review at UCC are to enable Schools, through evidence-based self-evaluation, to:

1. Reflect on and promote the strategic enhancement of their academic activities to ensure an outstanding learning experience for all students (enhancement dimension);
2. Evaluate the effectiveness of their processes for assuring academic standards and provision, in line with the University's academic mission and strategy (assurance dimension).

Thus, peer review goes beyond quality assurance to also embrace continuous quality enhancement. The Peer Review Panel report reflects these objectives in the recommendations and commendations outlined to support the School of BEES in further refining its priorities and optimising its activities in the pursuit of its ambitious drive for excellence within the international and national arena of higher education.

1.4 Overall Analysis of Self-Evaluation Process

1.3.1 Self-Evaluation Report (SER)

It was apparent to the Panel that the School put a lot of effort into developing their SER; accordingly, the School of BEES Quality Review Committee comprised a representative group from the school, reflecting a broad range of experiences. Overall, the committee members produced a well-written, cohesive self-evaluation document. However, while the SER was very detail-specific in terms of student and staff numbers, descriptions of facilities, student support in place, etc. it would have been useful, at times, to get more analysis/outcomes rather than processes.

The discussion of the Teaching and Learning Strategy is detailed in terms of the number and topics of modules offered in the School, provides examples of student feedback and notes that staff at BEES are continually assessing and improving their teaching across the curriculum and are committed to realising the goals of UCC's Academic Strategy (2018-2022). More information on the specific workings of the School in terms of programme and module development, change processes, assessment patterns and feedback mechanisms would have been welcome and would have helped to articulate a clearer thread for the overall Teaching and Learning Strategy. The absence of such information means that developments/enhancements within the School – e.g. in relation to research-led teaching, e-learning, blended learning, innovative pedagogical practice and assessment – are perhaps under-represented.

The SER suggests that the School operates well in terms of collaboration, communication and leadership with numerous standing committees, School assemblies, and structures to facilitate communication in place. The School also appears to be very proactive in terms of their student engagement and communication (e.g. 10:20 review initiative, CANVAS, BEES social media); the effectiveness of these strategies from a student perspective was something the Panel choose to tease out during the site visit meetings with the staff, and the undergraduate and postgraduate students.

1.3.2 Research SWO and overall SWOT Analysis

A research SWO identified some areas of weakness including quality and quantity of space, quality of equipment, uneven staff workload, staff isolation, no 24-hour building access and a lack of IT support. The School SWOT analysis that followed identified similar weaknesses, but also highlighted communication within the School as a potential issue.

1.3.3 Benchmarking

The School of BEES benchmarked against the School of Natural Sciences (SNS), Trinity College Dublin. The plan for the benchmarking exercise appeared comprehensive; however, the resulting information could have been more detailed and presented in direct comparison with BEES rather than as highlights of the good and bad aspects of the SNS. A comparative focus was provided for some aspects, largely to do with space and the modernity of the labs, with BEES feeling that the quality and quantity of both at the SNS are far superior.

1.3.4 Developments since last review

The last periodic quality review of the School of BEES took place in 2011/12. The current SER includes a summary of the recommendations made at this review, and the key actions taken by the School to implement those recommendations.

1.4 Good Practice Case Study

A 'Case study of Good Practice' was not included in the SER; however, some good examples of good practice were presented to the Panel during the site visit.

1.5 Tour of the Facilities

The panel was given a full tour of the core Schools facilities including teaching space, general laboratory and specific research spaces in the North Mall campus. The panel acknowledges the issues inherent with BEES being located in Distillery Fields, which is a c. 15-minute walk from the UCC main campus. The Panel also acknowledges the high cost involved in refurbishing and maintaining these facilities but urges that the resources and equipment required for supporting the technical and practical aspects of the programmes be safeguarded.

Part 2 – Findings of the Panel

2.1 School Overview

The Panel was very impressed by the effective leadership of the School, the strong sense of collegiality and loyalty amongst staff, and the excellent buy-in of staff to the review process. There was a very positive atmosphere, with staff across all domains – academic, administration and technical – appearing to work effectively together. The School clearly enjoys considerable esteem within the College of SEFS, and across the University. There was evidence of innovation and agility in responding to change – for example through its interdisciplinary programmes, which closely align with the “Connected Curriculum” objectives of the University’s Academic Strategy (2018-2022). The School has a significant research output, with externally funded research income of over €30,000,000, and currently holds 3 of the 4 European Research Council (ERC) grants in UCC. Staff at BEES are also very active in a number of dedicated research centres, including the Marine and Renewable Energy Ireland Centre (MaREI), and the Irish Centre for Research in Applied Geosciences (iCRAG).

2.1.1 Mission, vision, aims and objectives

The School’s mission is “to advance and apply our understanding of the natural world through excellence in research, teaching and innovation”. Reference to the School’s previous Strategic Plan (2012-2017) was highlighted in the SER. The School is currently undertaking a revision of its strategic plan and the panel was provided with a draft copy during the site visit. This new plan also includes a Vision statement “to maintain and advance our standing as an internationally recognised centre of excellence for research and learning in the natural sciences”.

The Panel was impressed by the true vision of research-led teaching implemented by the School. The Panel also noted excellent industry engagement through work-placement and the goodwill that external stakeholders had for the School. External stakeholders commended BEES on their quick adaptation to changes in industry, and on their graduates, particularly the multi-faceted skill-set of the MSc graduates. The involvement of the School in public, civic and community engagement was evident. This involvement is particularly timely, in relation to the Connected Curriculum framework, to the Sustainable Development Goals of the UN, to the urgent societal issues of global change and sustainability, and to the high interest of the general public for environmental issues and biodiversity.

2.1.2 Unit details including staff and student profile

The School has 27.05 FTE academic staff, with 14.35 support staff and 8.35 technical staff. Undergraduate FTEs are 358.04 with postgraduate students being 135.39. The all staff-student ratio is 1:11.92, with the academic staff-student ratio being 1:18.24³. The School runs a diversity of taught and research-based programmes and has strategic partnerships with Teagasc, the University of Montana and Minzu University of China. Currently the School offers nine undergraduate programmes (NFQ Level 8), two diplomas (NFQ Level 8), one postgraduate diploma (NFQ Level 9), three taught MSc programmes (NFQ Level 9), four taught MRes programmes (NFQ Level 9) and one evening diploma (NFQ Level 7)⁴.

The School has recently introduced two new programmes: BSc Agricultural Science and BSc Environmental Sciences with Environmental Management (dual degree with Minzu University of China). The Minzu programme is a completely new initiative for UCC with students being taught in China by UCC staff. A key concern for the Panel, however, was that these initiatives were adding

³Source: IT services from Data Warehouse (March 2019 data)

⁴Source: School of BEES SER (2019)

complexity and workload with little evidence of an effective mechanism for managing these within the current workload system; it was also felt that workloads in terms of new initiatives fell unevenly on staff.

2.1.3 School organisation, planning and communication

BEES functions well as a School, and there appears to be considerable goodwill amongst the staff towards colleagues across disciplines. It was obvious to the Panel that while there were distinct disciplinary differences, interaction and activity across, and between, disciplines are strongly encouraged and evident. Nonetheless, the panel has overall concerns regarding staffing in BEES; these concerns are threefold and include (1) posts that have been agreed upon not being filled, (2) BEES losing the leadership of professorships in certain areas due to post holders being seconded to senior positions outside of the School, and (3) the extra staffing resource requirements related to the Minzu programme. A staffing plan submitted by BEES in April 2019, largely requesting staff to support the Minzu programme teaching, was greatly affected by the pause on recruitment in UCC in September 2019. The panel strongly recommend that BEES develop a new staffing plan; it is critical that this staffing plan, particularly in respect of new staff appointments, be drawn up with reference to the overarching Strategic Plan for the School, taking account of long-term developmental needs to ensure balance across the various disciplines represented within the School.

The panel recognised that there were many committees across BEES with varying schedules and agendas. The HoS informed the panel that the Academic Staff meeting occurs every second month with an All Staff meeting occurring in the intervening month. The School Executive Management Committee (SEMC) meets every two weeks. There are seven main committees operating across BEES with two sub-committees also in place. However, BEES staff commented that the majority of BEES committees are “*think tanks*” – largely advising but not making major decisions and that there is an obvious trade-off in BEES between democratic decision-making and efficiency. The Panel concur, agree that the School communication structures are too complex, and lack clarity as to who actually makes decisions and how these decisions are communicated to all staff. The Panel consider that there is a need for key, effective and efficient organisational structures to be put in place regarding committee agendas and the timings of meetings across the academic year to avoid repetition and “*meeting for the sake of meeting*”. The HoS, in consultation with the SEMC, should further ensure that all relevant committees have adequate, and meaningful, student representation.

2.2 Evaluation of Academic Standards

2.2.1 Student “life-cycle”

The School attracts a diverse population of students across the different disciplines with enrolment primarily coming through the conventional CAO route. Students spoke highly of their experience in the School; the Panel, in turn, were impressed by the enthusiasm of the students that they met.

BEES staff are actively working towards incorporating UCC’s Academic Strategy (2018-2022) across the School; the Panel was very impressed with the Connected Curriculum mapping exercise carried out by BEES and their obvious strong commitment to preparing students for the future by combining academic with professional-, community-, and field-based learning. Each degree programme offers a placement module where students are required to do at least four weeks in relevant employment, keep a daily activity log and give a seminar on their experience. The Panel were also impressed by the strong applied fieldwork components in many of the degree programmes offered.

2.2.2 Programme delivery and curriculum planning

The School currently has 20 distinct programme offerings from Level 7 to Level 9 on the National Framework of Qualifications (NFQ) (Appendix C). The Panel was satisfied that programme provisions are correctly placed on the NFQ, and recognise the importance of this teaching to BEES FTE income. However, the Panel did question whether having this many programmes was the optimum use of the School's expertise and resources. The postgraduate taught (PGT) programmes appear to recruit well for the School; enrolment for the MSc (Applied Environmental Geoscience) in 2019/20 was 19 students and for the MSc (Marine Biology) was 14 students (Appendix D). The postgraduate research (PGR) Masters recruits less well with 5 Masters by Research students currently (2019/20) enrolled⁵. Given the high overall number of programmes, the Panel recommends that the School should develop a framework to systematically review and rationalise the programme portfolio. Requiring a data driven approach and an agile mind-set, this framework should include looking at programme design and currency; targets for recruitment; assessment and student workload; industry links and employability; and assuring that excellence is evidenced across all programmes.

2.2.3 Staff-student communication structures

The Panel's consultation with students suggested that while staff are highly student-focused and most operate an open door policy for students, communication mechanisms at programme and school level are not consistently effective in supporting dissemination of key information to students, or indeed, in facilitating ongoing student feedback to staff. There appears to be more structured communication channels open to undergraduate (UG) students compared to postgraduate (PG) students. The Panel recommends that the School take steps to ensure effective communication, coordination and coherence of programmes from the student perspective.

2.2.3.1 Undergraduate students

Both formal and informal communications with undergraduate students were commented on very positively. UG students were very positive about the 10:20 reviews and staff open-door policies, they feel that they are listened to by BEES staff and that they have sufficient time (even socially during fieldwork trips) to tell staff what is working and what is not. However, in relation to the 10:20 reviews, students, while feeling that they are beneficial, questioned the focus of these meetings stating that they feel that they are a wellbeing-check rather than practical advice on how to balance work-, home- and university-life. Information from the HoS suggests that consistent problems can be flagged as a result of the 10:20 reviews leading to email exchanges between Heads of Discipline with the aim of working through any potential issues uncovered, however it was evident to the Panel that there are no apparent official policies surrounding feedback from the 10:20 reviews. The Panel believes that this is a missed opportunity for BEES and a more formal approach to the dissemination of feedback from the 10:20 reviews may benefit staff and students.

The issue of feedback in general arose several times; it became apparent to the Panel that, while the majority of staff give students the opportunity to evaluate a module, there is no requirement for staff to review or implement this feedback. For example, students and staff indicated that the mechanism, and amount, of assessment feedback varies greatly amongst staff. The Panel suggest that the School implements a consistent School-wide policy around the quality, timing and delivery of student feedback, and that this information is shared with students. In addition, the School should ensure mechanisms for disseminating feedback from external examiners, both to identify areas of good practice as well as areas for action and development. The implementation of the University's new Virtual Learning Environment, CANVAS, provides an opportunity to standardise UG student communication, streamline submission of assignments, standardise assessment feedback

⁵Source: Admissions Office (December 2019)

mechanisms and ensure the look and the feel of the student interface are consistent. Additionally the Panel recommends that consideration should be given to the consistent recording of lectures via Panopto as many students flagged the very real difficulties they have in reconciling their academic work and the paid employment they are financially obliged to undertake.

2.2.3.2 Postgraduate students

Postgraduate students had mixed feelings regarding communication within BEES. There appears to be a genuine open-door policy for students within the School. However, in discussions with PG students, the Panel noted an absence of a unified PG culture in terms of seminars, career development, external engagement, employability, and structured support for tutoring. Confusion also surrounded the issue of payment for PG demonstrators with some being paid and some not. The Panel recommends that all PG students be invited to a timely, school-specific, orientation session and that they receive the PG handbook; the Graduate Studies Committee and research supervisors should also engage with students to conduct a training needs analysis and familiarise students with PG module options available.

Only two of the 10 PG students that met the panel had participated in a progress review meeting, despite all being at different stages of study. The lack of consistency in BEES surrounding the implementation of UCC's Progress Reviews for Research Students policy concerned the Panel who recommend that the School's Graduate Studies Committee, in consultation with research supervisors, should immediately organise and facilitate annual PGR student progress reviews in line with UCC policy.

Another issue that arose in the meeting with the PG students was of supervision; students felt that communication between PhD students and supervisors is very ad hoc with no consistently scheduled meetings. Some students with two supervisors reported limited, or in some cases no, communication between supervisors. In terms of communication outlets to postgraduates, some commented that BEES Research Committee is sometimes useful but often gets pushed back due to unavailability of senior staff members.

2.3 Evaluation of Student Learning Experience

2.3.1 Teaching and learning

The evident commitment to reflective education and innovative, research-led teaching in the School was impressive. The Panel was impressed by some of the initiatives presented by staff that facilitate opportunities for modules to be more student-led and less lecturer-led (e.g., the flipped classroom initiative). However, UG students thought that many of the programmes could benefit from additional employability information, e.g., information on career-types, what avenues may be open to students, etc. Students would therefore like to see more workshops on potential career pathways, making contacts in industry, etc.

In relation to external facilitators and lecturers for some programmes and modules, students reported frustration over a lack of communication if classes were cancelled or rescheduled. The Panel also had concerns about how BEES ensure the quality of the teaching carried out by external facilitators. Some of this concern was lessened by the HoS who assured the Panel that strategies were in place to maintain quality in these instances including student reviews and external examiners reports. The Panel suggests that all lecturers, including visiting, part-time staff and external facilitators, are invited and encouraged to engage with committees within the School and the University on matters relating to Teaching and Learning and are advised of opportunities for professional development as offered by CIRTL.

2.3.2 Assessment

BEES staff recognised that in the past students were over-assessed and have reviewed assessment types and loads to ensure students are not overburdened by assessment clustering and have a good variety of assessment types (e.g. Wiki pages, MCQs, group work, etc.). A School-wide policy in relation to assessment, which specifically addresses Principle 3 of the University's Academic Strategy: "*Assessment practices will be effectively aligned with learning outcomes*" is recommended. This policy should focus on programme level approaches (as opposed to module-by-module), addressing the student workload distribution; the balance between continuous assessment and final exams; and improved communications to students around processes, dates, schedules, etc. A critical issue for students was the delay in getting feedback on continuous assessment. Students reported that, in some instances, they do not get feedback until they receive their overall module mark – in the form of a grade – thus missing the opportunity for learning through formative feedback.

2.3.3 Learning resources (staffing, physical, technical, other)

Issues surrounding the physical space that incorporate the School of BEES are largely twofold; 1) BEES location in the UCC's North Mall campus – which led to BEES staff feeling that the School is part of a "*detached campus*" - 2) Physical resources and the facilities of the School itself.

Staff and students expressed concern over the lack of amenities available on the North Mall campus (compared to the Main campus) including suitable student social spaces, and adequate library and study spaces. Additionally, staff and students highlighted the difficulty of students having to go to and from the campuses for lectures and the problems that can arise if sessions are timetabled one after the other. Potential safety issues using the path to and from the Distillery Fields campus in the dark were also mentioned. The Panel was shown a dedicated student space in the Cooperage however, it was unclear to the Panel, and to the students spoken to, who can actually use this space. The Panel therefore recommends that, in the first instance, the potential users of this space are informed of its availability, and secondly, the HoS, in conjunction with the Space Working Group, should notify staff and students of the space currently available for students, that they may not currently be aware of, and to optimize usage of any such available space.

The lack of resources and facilities in BEES itself was also presented as problematic including laboratory equipment, transport vehicles, communal staff space, and lecture theatres (no large lecture theatre on the North Mall campus). Staff also commented that the two building model (in which BEES is housed) often proves difficult in terms of moving people and equipment. To this end, the Panel strongly recommends that the School's Space Working Group develop a more formal process for moving equipment between sites, e.g., between BEES buildings, and between BEES and the research institutes and *vice versa*.

The lack of physical space also appears to affect undergraduate teaching as certain practical classes (e.g., BL1002) with large student numbers need to be run multiple times, increasing workloads and putting pressure on staff, and PG demonstrator, time. The location of audio-visual screens in two laboratory style teaching rooms, along with the unsuitability of high lab stools for long periods of sitting, render some of the learning and teaching spaces challenging for both students and staff. A lack of space has also led to researchers being cautious when applying for large grants for postdocs and PhD candidates as BEES has run out of physical space to put them in. Postgraduate students also emphasised the issue of the lack of physical space in laboratories and the impact this can have on research, e.g., lack of suitable storage for sensitive samples, *in situ* PhD-level experiments being carried out in laboratories also used by undergraduates.

2.3.4 Student support

Students spoke favourably of their experience in the School and it is evident that there is a highly affirmative support and pastoral care culture for students. The HoS mentioned a desire to have a dedicated pastoral care officer assigned to each degree programme (e.g., to follow students through their time in BEES) however it was suggested by staff that students tend to go to certain staff members they feel comfortable approaching compared to others and so may continue to do this even with a dedicated support. This sentiment was echoed by the students. Additionally the Panel has concerns about the emotional loads of staff members assigned to these potential pastoral care officer roles and urges caution in proceeding with this plan.

2.3.5 External links/community engagement/employability

It is evident that the School enjoys considerable goodwill from alumni and industry, and provides a valuable service in terms of addressing skills needs for local industry. The Panel met with a representative group of external stakeholders, including employers, work placement hosts and alumni; it was clear that the School is addressing skills needs and providing quality graduates for key services and industries in the region. There was a strong will, amongst this group, to engage more widely with the School and offer support in the form of guest speaking, work placement, career direction and curriculum advice; such support could be leveraged to enable students to enhance and develop the essential soft skills required for career progression.

2.4 Staff

2.4.1 Staff Profile

As mentioned above, the School has 27.05 FTE academic staff, with 14.35 support staff and 8.35 technical staff. Due to the large number of programmes delivered by the School, most of the academic faculty are involved in academic administration roles as Programme Directors or Co-Directors. To ensure fair workload distribution for all staff, a transparent workload allocation model should be implemented. This model should take account of the administrative duties of academic staff – especially in relation to the Programme Director roles – and ensure that staff have sufficient time to engage in research, learning, and teaching activities to advance their own career objectives. The School should map the academic administrative functions with its professional capacity, and align the requirements for programme support to ensure that academic staff are primarily engaged in academic pursuits and student support, rather than administration.

2.4.2 Staff Development Objectives

While the Panel observed some good exemplars of teaching practice and a desire for professional development amongst staff, the majority of staff stated that due to their high teaching loads, they rarely have the time to avail of professional development opportunities. The School's planned programme rationalisation exercise will hopefully free up staff time a little; the Panel believes that, with changing learning environments, staff need to remain current in the areas of Teaching & Learning and should be encouraged to engage with programmes offered by CIRT⁶. In addition, postgraduates engaged in tutoring should also engage in the programmes offered by CIRT and this should be required and facilitated by the School.

⁶Centre for the Integration of Research, Teaching and Learning

Part 3: Commendations and Recommendations and Observations

3.1 Commendations

In an ethos of quality enhancement, whereby good practice is acknowledged and disseminated, the Panel notes the following areas for commendation:

- High levels of collegiality between academics, technicians and administrators, and high quality of multi-disciplinary interactions, evident
- High level of international academic relationships, through research projects, teaching collaborations (China), field trips and internships (UK, Portugal)
- Adult Continuing Education (ACE) programmes offered by the School of BEES were commended by external stakeholders (e.g., Diploma in Geology)
- Admirable practical skills modules for Masters students (e.g., the Sea Survival [MSc Marine Biology])
- Commendable professional development courses (e.g., Freshwater Monitoring Programme, Diploma in Environmental Science and Social Policy, etc.)
- School appears to be very responsive to the needs of external stakeholders and industry requirements (e.g., MSc Applied Environmental Geoscience)
- Commitment of the School to public engagement and outreach activities
- Strong applied fieldwork components in many of the degree programmes offered
- School demonstrates a strong commitment to creating an optimal learning environment for students that interfaces very well with high quality research
- Obvious commitment of staff to both student welfare and the student experience
- Highly affirmative learner support (e.g., pastoral care for students; acknowledgement of, and flexibility surrounding, student work life outside of University)
- School demonstrates a high level of awareness of, and interaction with, UCC's Academic Strategy (2018-2022), specifically in areas related to the Connected Curriculum (Priority One)

3.2 Recommendations to the School

3.2.1 Strategic

- Head of School, in consultation with the SEMC, to promptly finalize their new Strategic Plan; this plan should include an action plan that will include the short-, medium-, and long-term objectives and vision of the School over the next 5 years.
- Head of School to engage with the College Financial Analyst, before the end of semester one 2020/21, to develop their business plan; this business plan should include a clear staffing plan,

an evidence-based resource requirements list (including space and transport), with all plans clearly aligned with the relevant budgets.

- Head of School should liaise with the College Alumni & Development (A&D) fundraiser as a priority to identify potential areas for philanthropic investment.

3.2.2 *Space*

- Head of School and School Manager should engage with administrative staff about optimization of their working space before the end of semester one 2020/21.
- Space Working Group should immediately review the quality of the environment in the Bottling Storage space with a view to it being managed in a similar manner to the individual lab spaces, e.g., person in charge, user list, etc.
- Space Working Group to develop a more formal process for moving equipment between sites, e.g., between BEES and the research institutes and *vice versa*.
- Teaching & Learning, Student Experience & Curriculum Development Committee should review the current laboratory teaching spaces, particularly from the perspective of audio-visual, for example the School should look at placement of IT screens in labs and teaching spaces to maximise student experience.
- Before the end of semester one 2020/21, the Head of School, in conjunction with the Space Working Group, should discuss with staff and students' issues regarding access to space currently available for students, and to further optimize usage of any available space.
- SEMC, in consultation with the Space Working Group, should immediately deal with low-cost improvements in relation to space including putting a bench in the molecular biology and plant sciences laboratory, and fixing the carpet tiles in the technician's office.

3.2.3 *Leadership and Management*

- SEMC should develop an immediate plan for effective implementation of existing UCC policies (e.g., PhD progress reviews), rationalization of programme offerings, executing small-scale refurbishments together with clarification and rationalization of administrative workloads of academic staff.
- School Committees should have agenda-based rather than calendar-led meetings with adequate, and meaningful, student representation.
- School should reinstate the Staff – Student Committee with immediate effect.
- Teaching & Learning, Student Experience & Curriculum Development Committee should develop a policy surrounding student feedback (including student module evaluation data) in

terms of how best to provide consistent, optimized timely feedback before the end of semester one 2020/21.

- Annual review of the remit, operations and progress of all committees should be carried out by the SEMC.

3.2.4 Communication

- SEMC should immediately review its communication mechanisms, specifically communication with students; this should include timing and mechanism of communication including timetable changes, circulation of postgraduate booklet. This should be done using a variety of resources, e.g., email, Canvas and BEES social media.

3.2.5 Teaching, Learning, Assessment and Student Experience

- Teaching and Learning, Student Experience and Curriculum Development Committee should develop a School policy surrounding assignment submission, and give serious consideration to adopting online submissions for all assignments.
- Teaching and Learning, Student Experience and Curriculum Development Committee, should give consideration to the development of a School-wide policy on the implementation of Panopto.
- Teaching and Learning, Student Experience and Curriculum Development Committee should review their existing research skills modules (BL2002, BL3004) in third year to ensure students further their technical writing skills.
- HoS should ensure that students and staff, who are learning and teaching in locations remote to UCC, can avail of supports around learning and teaching, including the opportunities to provide feedback on learning experiences and opportunities to avail of the teaching and learning supports offered by CIRTL.

3.2.5.1 Postgraduate students

- Graduate Studies Committee should facilitate the development of a forum for postgraduate students, including those based off-campus, to enable them to interact and network with each other both professionally and socially.
- Graduate Studies Committee should ensure that all postgraduates are invited to a timely, school-specific, orientation session and receive the postgraduate handbook. This orientation session should be in place by the start of the next academic year (2020/21).
- Graduate Studies Committee, in consultation with Research Supervisors, should organise and facilitate annual postgraduate research student progress reviews in line with UCC policy.

- Graduate Studies Committee and research supervisors should engage with students to conduct a training needs analysis and familiarize students with postgraduate module options available, for example PG7026, PG7048 and PG7039.

3.2.6 External engagement

- School Manager, in conjunction A&D and the SEMC, should initiate the development of a graduate database.
- School should apply to the President's Strategic Fund, and the Cork University Foundation, to ensure that BEES museum specimens are correctly curated, managed and displayed to enable their use for outreach events and recruitment activities and to be part of a wider university cultural project to raise public awareness about the scientific heritage of UCC.

3.3 Observation to the College

- Head of College, liaising with the School and the University, should develop, as a priority, a short- to medium-term plan for funding of new buildings developments for the School of BEES.

3.4 Observations to Buildings and Estates

- Director of Buildings and Estates should urgently arrange the installation of ventilation in the Cooperage building as currently temperatures are leading to unsafe working conditions.
- Director of Buildings and Estates should arrange increased lighting, frequency of security patrols, and effectiveness of the CCTV on the route from the North Mall campus to the main campus, and around the BEES buildings with immediate effect.
- Director of Buildings and Estates should develop, and implement, a plan for a long-term solution to the roof leaking issues in the Cooperage.

Appendix A - Panel Profiles: Quality Review of the School of BEES

<p>Professor Ivan Couée</p>	<p>Prof. Ivan Couée, alumnus of the Ecole Normale Supérieure Paris-Saclay and of Trinity College Dublin, is Professor of Plant Sciences (Ecosystems-Biodiversity-Evolution Institute, University of Rennes 1, Brittany, France), specialised in the molecular mechanisms of nutrition-development-stress response integration in higher plants. He has been the leader of successive Plant Stress research groups and co-directed the Ecosystems-Biodiversity-Evolution Institute over its transition from traditional botany and zoology to genomic ecology and environmental sciences. He has guided for their projects and internships many postdocs and Ph.D./M.Sc. students from various countries (France, Ireland, Italy, Kazakhstan, Morocco, Spain, UK, USA). His work is published in Ecology Letters, Trends in Plant Science, PNAS, Global Change Biology, EMBO Reports, Bioinformatics, Plant Physiology, New Phytologist, ... and he is the co-inventor of phytoremediation patents. Prof. Ivan Couée has been involved in numerous French (CNRS, INRA, Institut Paul-Emile Victor) and international (Trinity College Dublin, University of Glasgow, Universität Ulm, IVIA-Valencia) projects, and has organized several scientific meetings, including a CNRS Course-in-Residence on environmental genomics. He functions as referee for scientific journals and selection committees in the fields of Plant Sciences, Environmental Sciences, Biotechnology and Ecology. He has been teaching molecular physiology and biochemistry of plants, primarily at the University of Rennes 1, but also at the Universities of Glasgow, Bordeaux, Tours and Versailles, and he is the author of a textbook of cellular and molecular biology.</p>
<p>Professor David Harper</p>	<p>David A.T. Harper is a palaeontologist, specialising in fossil brachiopods and numerical methods in palaeontology. He is Professor of Palaeontology in Earth Sciences, Principal of Van Mildert College, and was Deputy Head of Colleges (Research and Scholarly Activities) in Durham University. He is a former President of the Palaeontological Association and the International Palaeontological Association, and is currently Chair of the International Commission on Stratigraphy.</p> <p>Harper was previously Professor of Palaeontology and Head of Geology in the Natural History Museum of Denmark, University of Copenhagen. He has published over 10 books and monographs, including a couple of influential textbooks, as well as over 250 scientific articles and, together with Øyvind Hammer, the widely used software package PAST. In recent years he has been addressing some of the major events in the history of life, for example the Cambrian Explosion, Great Ordovician Biodiversification Event and the end Ordovician mass extinctions. His research programmes have taken him to many parts of the world including Australia, Chile, China, Greenland, Russia, Svalbard and Tibet. His research has been recognized by foreign memberships of the Royal Danish Academy of Sciences and Letters, the Royal Swedish Physiographic Society, an</p>

	Einstein Professorship in the Chinese Academy of Sciences and a D.Sc. from Queen's University Belfast.
Dr Patrick Harrison	<p>Patrick Harrison is senior lecturer in molecular physiology with research interests in development of somatic cell gene editing for therapeutic use in genetic disorders such as cystic fibrosis, and currently serves as European Editor of the journal Gene Therapy. He teaches physiology and molecular biology at all levels and has trained 11 PhDs to graduation.</p> <p>Patrick has worked at UCC for nearly 20 years and is currently a member of the University's QEC and has previously served as Head of department of Physiology and chair of science faculty's curriculum development committee.</p>
Dr Máire Leane (Chair)	Máire Leane (PhD) has a background in social policy and lecturers in the School of Applied Social Studies at UCC. She has held a number of leadership roles in UCC including: Associate Dean of Graduate Studies (CACSSS); Vice- Head of College (Research) (CACSSS) and Dean in the Office of the Vice President and Registrar. She is currently Chair of the UCC Autism Friendly Initiative and the UCC University of Sanctuary Working Group.
Professor Grace McCormack	<p>Grace McCormack is a Professor in Zoology at NUI Galway. Her interests lie in evolutionary biology and particularly in using molecular data to understand how organisms are related to each other and the impacts this may have on conservation and on the evolution of organismal traits. The interaction between animals and their parasites/pathogens over evolutionary time is also of interest as is the use of this information in applied science such as biodiscovery (marine sponges) and apiculture (bees). Grace has published over 60 research papers and book chapters and currently has a team of six PhD students and a research assistant thanks to funding by the EU, the Irish Research Council, Department of Agriculture Food and the Marine, and NUIG.</p> <p>Grace served as a member of the NUIG School of Natural Sciences' Executive committee from 2008 to 2015 and again in 2016-2018. She was Head of Zoology from 2010-2015 and has been a member of the University's Governing Authority since 2016. One of the founding members of the University Women's Network at NUIG she has also served as Chair of the School's Equality Diversity and Inclusion committee 2016-2018, was a member of the College of Science's EDI committee during the same time period and the University's working group on development of workload allocation models best practice.</p>
Ms Orla Redmond	Orla has been a UCC student since 2015 having completed a joint BA in Geography and Sociology, and is now in Year 2 of UCC's MPlan Program. During her time here she's been active in different societies, primarily UCC's SciFi Society as; Public Relations Officer, Secretary, and currently hold the position as Ex-Officio on the committee. Orla's time in UCC and being involved with the University has allowed her to gain insight on what students should experience academically and in extracurricular activities.

Appendix B – Peer Review Panel site visit timetable

- Tuesday 3 December: The Panel arrives for a briefing from the Quality Enhancement Programme Manager, followed by a meeting with the Head of School and School staff, and a tour of the School facilities.
- Wednesday 4 December: The Panel meets with the Head of College, students, staff and relevant senior officers. This is followed by a meeting with External Stakeholders. A working private dinner is held that evening for the Panel in order to draft the report.
- Thursday 5 December: The Panel meets with the Head of School. A closing presentation is given by the Panel to all members of the School. Panel members depart.

Tuesday 3 December 2019	
Venue: Tower Room 2 (unless otherwise specified)	
12.00 – 13.00	Convening of Panel members. Briefing by Quality Enhancement Programme Manager and Quality Enhancement Advisor, followed by lunch.
13.00 – 13.55	Private meeting of Panel <i>Panel agree issues from the SER that warrant further exploration, review feedback summaries from each reviewer, and agenda topics for the individual site visit meetings.</i>
13.55 – 14.15	<i>Transition to the North Mall campus</i> Venue: BEES Board Room (Enterprise Centre)
14.15 – 15.15	Meeting with Head, School of BEES <i>(to be joined by the School Manager at 14.55)</i> <i>Discuss actions arising from the SER and developments to date, strategic priorities of the School and overview of educational provision.</i>
15.15 – 15.45	Tea/coffee for Panel
15:45 – 15:50	Move to Teaching Lab 1+2 (Butler Building) for Meeting with School Staff
15.50 – 16.45	Meeting with School staff <i>Discuss issues such as strategy, communications, research & education, staffing, teaching & learning, curriculum & assessment.</i> Venue: Teaching Lab 2 (Butler Building)
16.45 – 18.00	Tour of School facilities <i>Incl. Butler Building, Enterprise Centre, Cooperage</i>
19.00	Informal dinner for members of the Panel & staff members of the School Venue: Jacob's on the Mall

Wednesday 4 December

Venue: Tower Room 2

08.45 – 09.00	Convening of the Panel
09.00 – 09.45	Meeting with Head of SEFS College <i>(to be joined by the College Financial Analyst at 09.25)</i> <i>Panel discuss College strategy and priorities. The links between College/School financial resource allocations process, staffing resources and infrastructure.</i>
09.45 – 10.30	Enhancing Student Learning Experience <i>Opportunity for the School to showcase good practice and enhancements to the student learning experience, e.g., Case Study of good practice, 10:20 review initiative, BEES website, BEES social media, innovative assessments, capturing student feedback, etc.</i>
10.30 – 11.00	Private meeting of the Panel (with tea/coffee) <i>Panel agree issues to be discussed in upcoming meetings with students, programme directors, UCC senior officers, external stakeholders</i>
11:00 - 11:45	Representatives of undergraduate students: BSc (Hons) Applied Plant Biology (Year 3) BSc (Hons) Applied Plant Biology (Year 4) BSc (Hons) Ecology and Environmental Biology (Year 3) BSc (Hons) Ecology and Environmental Biology (Year 4) BSc (Hons) Environmental Science (Year 3) BSc (Hons) Environmental Science (Year 4) BSc (Hons) Geology (Year 3) - 2 x students BSc (Hons) Geology (Year 4) BSc (Hons) International Field Geosciences (Year 4) BSc (Hons) Zoology (Year 3) BSc (Hons) Zoology (Year 4)
11:45 - 12.30	Representatives of Postgraduate students: MRes Environmental Science – 2 x students PhD Plant Science MRes Plant Science PhD Geology MRes Geology PhD Zoology MRes Zoology MSc Marine Biology
12:30 – 13:15	Lunch and private meeting of the Panel

13:15 – 14.15	<p>Meeting with Programme Directors</p> <p><i>Discussion on monitoring and review of programmes to include indicatively, programme & module approval processes, student progression, External Examiner reports, external accreditation/recognition (where appropriate), supports for learners, placement (where appropriate).</i></p> <p>BSc (Hons) Geology BSc (Hons) Environmental Science Programme Coordinator, MSc Marine Biology Head of Discipline - Plant Science Programme Coordinator, BSc Environmental Sciences with Environmental Management; 'Minzu' MSc Applied Environmental Geology Head of Discipline – Zoology and Ecology Coordinator of undergraduate work placement module</p>
14:15 – 15:00	<p>Delivering the Academic Strategy (2018 – 2022)</p> <p><i>Discussion on BEES Connected Curriculum mapping exercise, the Minzu collaboration, other aspects of relevant School practice</i></p>
15:00 - 15.30	<p>Meeting with Deputy President & Registrar</p> <p><i>Discussion of UCC's Strategic Plan (2017-2022) and Academic Strategy (2018-2022)</i></p>
15.30 – 16.15	<p>Meeting with Senior Officers of the University</p> <p>Director of Research Support Services (deputising for Vice President for Research & Innovation) Vice President for Teaching & Learning</p>
16.15 – 17.15	<p>Meeting with External Stakeholders (with tea/coffee)</p> <p>Representative from Road Materials Consultants Grass and Forage Development Manager, Goldcrop Ltd Associate, Engineering Geology Lead, Arup Managing Director, EHA Soft Solutions Director, Fota Wildlife Park Representative from O'Callaghan Moran & Associates, Environmental & Hydrogeological Consultants</p> <p><i>The Panel meets with past graduates, employers of graduates and other stakeholders as appropriate to discuss views on the quality of education received and the quality of the graduates.</i></p> <p>Venue: Tower Room 2</p>
18.00 – 20.30	<p>Working private dinner for members of the Panel to commence drafting the report.</p> <p>Venue: Meeting Room 2, River Lee Hotel</p>

Thursday 5 December

Venue: Tower Room 2

08.45 – 09.00

Convening of the Panel

09.00 – 09.15

Private meeting of Panel

09.15 – 10.00

Meeting with Head of School

Clarification and discussions of main findings by Panel.

10.00 – 11:30

Private meeting of Panel to finalise drafting the report (with tea/coffee)

11:30 – 12:00

Formulating the closing presentation

12:00 – 12:15

*Transition to **North Mall Campus** for Closing presentation*

12:15 – 13:00

Closing presentation

Closing presentation to all staff, to be made by the Chair or other member(s) of Panel as agreed, summarising the principal findings of the Panel. This presentation is not for discussion at this time.

Venue: Teaching Lab 2 (Butler Building)

Appendix C - Programmes in BEES

Diploma

- Dip in Geology (ACE)
- Dip in Biological Sciences
- Dip in Environmental and Geological Sciences

BSc

- BSc in Agricultural Science (first intake September 2019)
- BSc in Applied Plant Biology -- BSCRBL
- BSc in Earth Science -- BSCE
- BSc in Ecology and Environmental Biology -- BSCREB
- BSc in Environmental Science --- BSCRES
- BSc in Environmental Science with Environmental Management (dual degree with Minzu University of China)
- BSc in Geology --- BSCRGL
- BSc in International Field Geosciences -- BSCRGS
- BSc in Zoology -- BSCRZY

MSc

- MSc in Applied Environmental Geology -- MSCAEG
- MSc Marine Biology – MSCMBY
- MRes Plant Biology --- PB MRS
- MRes Animal Behaviours and Welfare -- ABW MRS
- MRes Environmental Science – ES MRS / ESM MRS
- MRes Geological Sciences GS MRS
- PGDip/MSc in Freshwater Quality Monitoring -- PDFQM
- PGCert in Marine Biology (conversion) -- PDMBY

Appendix D – Current programme headcount data

Qualification	UG_P G	Mode of Study	EU/Internationa l	2019/20 Current Headcount				Tota l
				Year 1	Year 2	Year 3	Year 4	
BSc (Hons) Biological, Earth and Environmental Sciences - Applied Plant Biology (CK402/CK404 entry routes)	UG	Taught	EU		7	10	12	29
BSc (Hons) Biological, Earth and Environmental Sciences - Applied Plant Biology	UG	Taught	International					0
BSc (Hons) Biological, Earth and Environmental Sciences - Earth Science	UG	Taught	EU		4	7	7	18
BSc (Hons) Biological, Earth and Environmental Sciences - Ecology and Environmental Biology	UG	Taught	EU		21	13	14	48
BSc (Hons) Biological, Earth and Environmental Sciences - Ecology and Environmental Biology	UG	Taught	International				1	1
BSc (Hons) Biological, Earth and Environmental Sciences - Environmental Science	UG	Taught	EU		25	22	22	69
BSc (Hons) Biological, Earth and Environmental Sciences - Environmental Science	UG	Taught	International					0
BSc (Hons) Biological, Earth and Environmental Sciences - Geography	UG	Taught	EU			1	1	2
BSc (Hons) Biological, Earth and Environmental Sciences - Geology	UG	Taught	EU		12	10	10	32
BSc (Hons) Biological, Earth and Environmental Sciences - International Field Geosciences	UG	Taught	EU		2	3	2	7
BSc (Hons) Biological, Earth and Environmental Sciences - Zoology	UG	Taught	EU		22	22	29	73
CK412 B Agricultural Science (Hons)	UG	Taught	EU	22				22
Diploma in Biological Sciences - Special Purpose Award	UG	Taught	International	1				1
Diploma in Environmental and Geological Sciences - Special Purpose Award	UG	Taught	International	1				1
CKR53 MSc (Applied Environmental Geoscience)	PG	Taught	EU	14	1			15
CKR53 MSc (Applied Environmental Geoscience)	PG	Taught	International	4				4
CKR38 MSc (Marine Biology)	PG	Taught	EU	10				10
CKR38 MSc (Marine Biology)	PG	Taught	International	4				4
CKR55 Postgraduate Diploma in Freshwater Quality Monitoring and Assessment	PG	Taught	EU	3				3
CKR55 Postgraduate Diploma in Freshwater Quality Monitoring and Assessment	PG	Taught	International	11				11
CKU14 Postgraduate Certificate in Marine Biology	PG	Taught	EU	4				4

2019/20 School of BEES current programme headcount data (source: Admissions Office, December 2019)