



# Report of the Quality Review Group to the Bernal Institute

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UL QSU Website	<a href="http://www.ul.ie/quality">www.ul.ie/quality</a>
Unit Website	<a href="https://bernalinstitute.com/">https://bernalinstitute.com/</a>
QQI Website	<a href="http://www.qqi.ie">www.qqi.ie</a>

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## The UL Quality Review Process

The University of Limerick (UL) follows an established process for quality assurance (QA) and quality improvement (QI) in line with that originally developed jointly by the Irish Universities Association (IUA) and the Irish Universities Quality Board (IUQB), the latter whose functions are now carried out by Quality and Qualifications Ireland ([QQI](#)). The review process involves an approximate seven-year cycle during which each unit works to improve the quality of its programmes and services and undergoes a rigorous self-evaluation prior to a quality review by internationally recognised experts in the relevant field.

The common framework adopted by the Irish universities for their QA/QI systems is consistent with both legislative requirements and international good practice. The process itself evolved as a result of the Universities Act, 1997, in which the responsibility for QA/QI was placed directly on the individual universities. The process now complies with the [Qualifications and Quality Assurance \(Education and Training\) Act 2012](#), as amended by the [Qualifications and Quality Assurance \(Education and Training\) \(Amendment\) Act 2019](#). The UL Quality Support Unit (QSU) website ([www.ul.ie/quality](http://www.ul.ie/quality)) provides details on the process.

Academic units are reviewed against international standards as described in the document *Quality Review Process for Academic Units*, which is available on the [QSU website](#). The planned schedule of quality reviews for both academic and support units is available on the [QSU website](#).

The UL quality review process comprises the following three phases:

1. Pre-review phase, in which the unit under review conducts a self-evaluation exercise and writes a self-assessment report (SAR).
2. Review phase, in which a quality review group comprising external experts, both national and international, review the SAR, visit the unit, meet with stakeholders and produce a report (this report), which is made publicly available on the [QSU website](#).
3. Post-review phase, in which the unit considers the report and responds to the recommendations of the QRG, devises plans to implement them and reports implementation progress to the University Quality Committee and UL senior management.

The recommendations made by the quality review group (QRG) form the basis of a quality improvement plan (QIP) prepared by the QSU for the unit under review. Once the site visit is over, the unit sets about evaluating and implementing the recommendations, as appropriate.

Approximately seven to nine months after receiving the QIP template from the QSU, the head of unit provides a summary overview of progress to the university's Quality Committee. Committee members are afforded the opportunity to discuss and evaluate progress.

Approximately 18 months after receiving the QIP template, the head of unit, Provost and Deputy President, Vice President Research, Dean (where relevant) and Director of Quality meet to formally review progress and to agree on any remaining actions to be taken.

## Summary Details of the Bernal Institute

Established in November 2016, the [Bernal Institute](#) is the largest research institute at the [University of Limerick](#). Bernal incorporates into one unified flagship institute three preceding entities: the Materials and Surface Science Institute (MSSI), established in 1998; the Stokes Institute, established in 2004; and the Bernal Project, launched in 2013. MSSI encompassed internationally competitive research expertise in materials science, Stokes specialised in commercialising research in the microfluidics space, and the Bernal Project recruited global leaders to enhance the work of both entities.

Situated at the heart of the university campus, the Bernal Institute's physical footprint represents an investment of in excess of €100 million in buildings as well as laboratory research and state-of-the-art characterisation equipment. The research takes place within 15,000 m<sup>2</sup> of high-quality, multipurpose research space, which includes 91 individual research laboratories. The Bernal community comprises 66 Principal Investigator (PI) members, who oversee the work of 100 postdoctoral researchers ('postdocs') and 260 PhD students. The PIs are supported by 20 Bernal core staff (i.e., Bernal employees), which include instrument scientists, technical support staff and administrative staff.

Bernal's vision is to become the leading international research institute for the scientific design and manufacture of structured materials to meet global grand challenges, particularly in the areas of health, energy and the environment. As a translational research organisation, Bernal's mission is to develop disruptive technologies related to health, energy and the environment with a view to creating a legacy of scientific achievement in structured materials research that benefits future generations. These disruptive technologies will employ world-leading technologies to radicalise approaches to address global challenges.

Bernal's work is based on the following values and culture:

- Visionary – our team members are thought-leaders
- Integrity and excellence – is at the heart of everything we do
- Entrepreneurial – we pride ourselves on a can-do attitude that is proactive, dynamic, creative and agenda-setting
- Collaborative – we value strong and long-standing partnerships
- Equality and diversity – we are committed to equality, diversity and inclusion

## **Preliminary Comments of the Quality Review Group (QRG)**

The Quality Review Group (QRG) appreciated the complexities of carrying out this review of the Bernal Institute in a virtual environment. The QRG would like to thank the institute for its welcome and the Quality Support Unit for its support before and during the virtual visit.

The QRG based its work on the self-assessment report (SAR) and the appendices provided by the Bernal Institute, as well as on extensive material supplied in response to QRG requests. The SAR provided a very frank and constructive analysis of the strengths and weaknesses of the institute. The meetings with various stakeholders during the virtual visit were also constructive and informative. Despite some of the limitations inherent in the online format, the QRG is confident that it was able to triangulate evidence in a robust manner and focus on some of the key questions facing the Bernal Institute at this stage of its development.

A number of key challenges arise from the organisational structures within which the Bernal Institute operates in the context of the broader UL landscape, and these clearly have an impact on the effectiveness of the institute's operation, as indicated in the high-level recommendations. However, there are a number of steps that the Bernal Institute leadership can undertake to facilitate the achievement of their ambitious vision for the institute, as detailed in the specific recommendations below.

The QRG was highly impressed with the development in research infrastructure and research culture at all levels since the inception of the institute. This has very clearly led to significant improvements in the quality of research outputs and the ability to attract important national and, increasingly in the future, international funding. The ability to tackle interdisciplinary challenge-led research is enabled both within and across the initially identified research clusters, although successes could be communicated more clearly through a variety of channels. Success could be further enabled by increases in dedicated general

technical and research administrative support, as well as some means of enabling Bernal academics to devote sufficient time and effort to the creation of high-level output and attracting substantial research income. Both support and a stronger voice for early-career researchers, as well as improved research links between the institute and departments/schools, would also consolidate this upward trajectory.

The discussions with various representatives of the Bernal Institute highlighted their enthusiasm and appreciation of the environment and the opportunities to develop and expand their research careers. The early-career staff particularly appreciated the networking and collaboration opportunities and support as well as access to excellent infrastructure which is highly beneficial to their career development. The need for a clear replacement and maintenance strategy for core equipment was highlighted several times.

Students at the institute commended the support from PIs/supervisors for their research progression and expressed their satisfaction with the infrastructure available to them. They also spoke highly of the instrument scientists within the institute and their provision of support, training, and assistance.

The QRG considers that the role of the Research Office has been pivotal for the success of proposals submitted to the EU, and this is fully appreciated by the PIs.

Pillar representatives for the institute highlighted the progression of Health & Safety over the last number of years and that it has improved and become an integral part of research culture within the institute.

The communication of the Bernal vision to both internal and external stakeholders is important. It is clear that enormous strides have been made in the area of relationships and engagement over the last two to three years with a stakeholder map in place. It will be important to build on this to create an action plan that will be mutually beneficial across all parties. Engagement with strategic industry partners to help define research areas of mutual interest offers great potential.

The Bernal Institute has reached an important milestone in its development and has made remarkable strides since its inception. The QRG has every confidence that it will build significantly on this success.

## QRG Commendations and Recommendations

### Commendations

The QRG commends the following:

1.	The clearly articulated ambitious strategy of the Bernal Institute, which builds on its research strengths and is underpinned by appropriate quantitative KPI measures and risk management procedures.
2.	The highly professional, committed and effective Bernal Leadership team with its clear vision and dedication to deliver on the ambitious strategy of the institute.
3.	The rigorous management tools and procedures for regular review and updating of the institute's strategic aims, KPIs and risk register.
4.	The impressive level of research activity, indicated by a significant increase in high-quality research outputs in highly ranked journals, the notable success in submitting competitive

	proposals for prestigious ERC grants, the ambition to diversify research income and the quality of other research outputs, which is clearly on an upward trajectory.
5.	The evidence of increasing interdisciplinarity across research clusters focused on challenge-led research.
6.	The institute's supportive research culture and clear community spirit, particularly in the PhD student and postdoctoral researcher community.
7.	The creation of the Bernal People team and YESBernal to foster the mentorship of the institute's researchers, which has helped contribute to the strengthening of the institute's identity and culture.
8.	The excellent support provided to students by supervisors and PIs, as well as administrative assistants and instrument scientists, which facilitates the achievement of research objectives and outputs.
9.	The implementation of a membership model and the Pilot of the Performance & Development Review System (PDRS Pilot) which helps to prioritise research quality and performance and support researcher development.
10.	The high-quality facilities, extensive infrastructure and equipment portfolio, which is one of the Bernal Institute's greatest strengths both nationally and internationally.
11.	The clear and important emphasis on health and safety in research which is recognised and appreciated by the students of the institute.
12.	The creation and implementation of a Business Development Unit to promote engagement of the academic community with local industry and foster the sustainability of the Bernal Institute, with the role of the current manager being particularly valued by external stakeholders.
13.	The development of a comprehensive quality management system (QMS) that should underpin all aspects of the institute's operation.
14.	The clear supervisory elements of the Supervisory Board (SVB) terms of reference.

The QRG recommends the following:

### Level 1 recommendations

No.	Recommendation	Commentary
1.	Work with UL senior management on aligning the research strategies of UL and Bernal and on understanding the role of the Bernal Institute in driving the research agenda at UL, underpinning this alignment with appropriate mechanisms and procedures to deliver on such strategy.	<p>This will ensure the effective alignment of research strategies and the introduction of much-needed procedures for the recruitment, progression and retention of research talent, as well as the effective support of infrastructure and strategic direction of future development within (and outside) the Bernal Institute.</p> <p>For example, clarifying the financial model for institutes and having a dedicated research representative role within each department and school could relieve some of the tension between departmental/school activities, such as teaching, and research for Bernal members. It would also provide better links into research criteria for recruitment, promotion and progression.</p>
2.	Work with UL senior management on the effective implementation of robust Equality, Diversity & Inclusion (ED&I) aspects in all HR-related policies. This should be supported by clear promotions criteria for each academic grade and the formalised inclusion of promotion-readiness discussions during PDRS meetings.	Implementation of robust ED&I will support the Bernal Institute's strategic goal 2 ( <i>Empower members to reach their full potential</i> ) and UL's <i>Broadening Horizons</i> strategic goal 3 ( <i>Invest in and empower our people through a culture of excellence and impact</i> ). Particular attention should be paid to gender balance.
3.	Work with UL senior management on strengthening the workload allocation model, by considering the introduction of both teaching-intensive and research-intensive options with appropriate career pathways.	The possibility of having a research-intensive workload option would support the realisation of the ambitious research-intensive aspirations of the Bernal Institute and UL.
4.	Work with UL senior management on developing a support package for early-career researchers at the start of their appointment, to include pump-priming funds, a reduced teaching load, a PhD studentship, a clearly identified mentor and a peer support network.	<p>Developing such a support package for new staff would facilitate their rapid transition to an active research career.</p> <p>For example, a reduced teaching load could be achievable with rationalisation of teaching provision, better alignment with research (research-led teaching), more effective involvement of PhD students and PDRAs, and greater involvement of established academics in teaching.</p>
5.	Work with UL senior management on mechanisms for the appointment of	Having 'roving' technical staff to perform standard technical maintenance would cover jobs currently

	technical staff who can perform standard technical maintenance and help ensure the same service for laboratories inside and outside the Bernal building.	performed by postdoctoral research assistants (PDRAs) and help integrate Bernal laboratories in departments/schools and the Bernal building.
6.	Work with UL senior management on strengthening research administrative support particularly at the post-award stage.	Having post-award research administrative support to help facilitate and run large grant applications and projects would enable researchers to dedicate time to attracting further funding.  Increased research administrative support could be achieved, for example, through strengthening provision in the Research Office or within the Bernal Institute.
7.	Devise mechanisms to communicate the Bernal vision and strategy more effectively within the institute with a view to strengthening the sense of identity and relationship building across key groups internally.	This would help strengthen the internalisation of strategy and the alignment of members with the strategy across the institute and UL research centres. It would allow the development of a more cohesive strategic collaborative approach to research activity, the effective use of infrastructure and the advancing of research up the translational research (TRL) chain.
8.	Consider carefully and review regularly the number and prioritisation of the KPIs to concentrate on key research enablers – high-quality outputs and larger grants.	This would maximise staff effort on important deliverables to improve research outcomes.
9.	Strengthen the involvement of early-career scientists and research support staff in the operation and research activities of the institute.	Despite the active YESBernal community, only a single early-career researcher is directly involved in the leadership activities. This should be remedied. In addition, it would be beneficial to engage the instrument scientists more effectively in research activities/outputs and overall institute activities.
10.	Develop a mechanism to review the nature and purpose of the research clusters on a regular basis and evolve new clusters via community involvement, including the involvement of early-career researchers.	This would enable the evolution of identity and research opportunities with majority buy-in from stakeholders.
11.	Strengthen the research culture and institute spirit by more effective use of research seminars and visiting researchers.	This could be achieved, for example, by exploring means of fostering greater engagement at all career stages. For PhDs, this could mean a requirement to present at the Bernal research event as part of progression criteria and/or the awarding of credits for attending seminars. For all other Bernal members, it



		<p>could mean a requirement to present at regular intervals at the Bernal seminar series as part of membership criteria.</p> <p>In addition, the use of technology can facilitate the virtual engagement of key international scientists in the seminar series.</p>
12.	Strengthen the development of strategic alliances with companies and introduce more formal procedures for annual evaluation of these relationships.	This would help to maximise mutual benefits of academic/industrial interactions at a more strategic level and address the issue of the retention of researchers in university roles post qualification.
13.	Develop a clear equipment maintenance/replacement funding strategy, including a regular formal review of the infrastructure usage to ensure that core instruments are available and that space is used effectively.	This will ensure that the mission to be a research-intensive university can be realised. A clear analysis of the use of equipment by various stakeholders and external parties will enable rational decision making about the maintenance, replacement and decommissioning of equipment.
14.	Strengthen the communications strategy and mechanisms both internally and externally.	<p>Bernal scientific achievements should be proactively sought by UL Marketing &amp; Communications and communicated through a variety of channels to different audiences. In relation to this, for example, the current website could be improved in cooperation with UL.</p> <p>Support from PIs and leadership would encourage PhDs and early-career researchers to become more involved in dissemination of research to outside audiences.</p> <p>The effectiveness of internal communication across the institute could also be improved.</p>
15.	Strengthen the advisory role of the SVB both through its membership and terms of reference.	This could be achieved by the inclusion of more external members, such as from policy forming bodies or other research institutions.

## Level 2 recommendations

No.	Recommendation	Commentary
1.	Consider the involvement of PhDs and PDRAs in teaching as a career development tool and a way of relieving pressure on early-career PIs.	For PhDs, research credits towards their scientific training would alleviate financial costs associated with teaching. For PDRAs on full contract, it would mean building in an opportunity to volunteer for teaching as

	This must be supported by appropriate reward structures.	part of career development with the agreement of the PI.
2.	Consider regular annual stakeholder meetings to discuss emerging funding landscape opportunities and Bernal plans.	Annual meetings would provide opportunities for more active engagement of stakeholders, including industry partners, in more varied funding opportunities.
3.	Evaluate the more effective use of students in social media for engagement with an outside audience.	The creation of several 'core' accounts on social media that students use widely, such as Instagram and TikTok, would be useful. Students in each core group could access these and use them to share their day-to-day or weekly research and laboratory work, giving them a feeling of ownership over the dissemination of their experiences and an opportunity to share them with a wider audience. These would be single accounts on a department, school or cluster basis rather than personal individual accounts.
4.	Develop an induction process and documentation for incoming PhD students and staff to support them in their transition into the institute.	This would relieve pressure on students to find information and access to unfamiliar processes (including finances) and building and equipment access.  Equally, new staff would benefit from induction to facilities and an introduction to Bernal staff and help them settle them into active research life.
5.	Develop a 10-year+ strategic direction together with the SVB and strategic stakeholders including companies.	This would drive long-term relationships between Bernal and its partners that could eventually lead to incubator formation and spinouts.

## Appendices

### A Membership of the QRG

Prof Jarka Glassey	Professor of Chemical Engineering Education, Newcastle University, UK
Ms Katie Wyer	PhD candidate at UCD, Ireland
Prof Pedro Camanho	Professor at the Department of Mechanical Engineering, Faculdade de Engenharia da Universidade do Porto, Portugal
Mr Michael Keane	New Products Director, Boston Scientific, Ireland
Prof Raquel Aires Barros	Professor, Instituto Superior Técnico, Universidade de Lisboa, , Portugal
Prof Rik Drummond-Brydson	Chair in Nanostructural Materials Characterisation, School of Chemical and Process Engineering, University of Leeds, University of Leeds, UK
Ms. Ailish O'Farrell (Recording secretary)	Technical Writer, Ireland

### B Membership of Bernal Institute Quality Team

Name	Role
Prof. dr. ir. Luuk van der Wielen	Director, Bernal Institute
Mr. Jon O'Halloran	General Manager, Bernal Institute
Ms. Rebecca Corbett	Projects Officer
Mr. Ray O'Brien	Consultancy Manager
Mrs. Irma Hourigan	Projects Officer