Quality Assurance / Quality Improvement Programme for Academic Units 2007-2008

Peer Review Group Report for NCSR

Peer Review Group members

Chair:
Professor Roger Whatmore,
CEO, Tyndall National Institute

Professor Joseph Wang
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Rapporteur:
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23rd to 25th April 2008

Introduction

This Quality review has been conducted in accordance with a framework model developed and agreed through the Irish Universities Association Quality Committee (formerly CHIU – IUQSC) and complies with the provisions of Section 35 of the Universities Act (1997). The model consists of a number of basic steps.

1. An internal team in the Unit being reviewed completes a detailed self-assessment report (SAR). It should be noted that this document is confidential to the Unit and to the Review Panel and to senior officers of the University.
2. This report is sent to a team of peer assessors, the Peer Review Group (PRG) – composed of members from outside DCU and from other areas of DCU – who then visit the Unit and conduct discussions with a range of staff, students and other stakeholders.
3. The PRG then writes its own report. The Unit is given the chance to correct possible factual errors before the Peer Group Report (PGR) is finalised.
4. The Unit produces a draft Quality Improvement Plan (QuIP) in response to the various issues and findings of the SAR and PGR Reports.
5. The PGR and the Unit draft QuIP are considered by the Quality Promotion Committee.
6. The draft QuIP is discussed in a meeting between the Unit, members of the Peer Group, the Director of Quality Promotion and Senior Management. The University's responses are written into the QuIP, and the result is the finalised QuIP.
7. A summary of the PRG Report, the QuIP and the Executive Response is sent to the Governing Authority of the University, who will approve publication in a manner that they see fit.

   This document is the report referred to in Step 3 above

1. The Unit

Location of the Unit

The NCSR director's office is located in the School of Computing building ("L" building). The NCSR main administration is located primarily in the Research & Engineering building ("S" building) which faces onto the Collins' Avenue entrance of the university. A number of laboratories are also located in this building. The majority of the NCSR academic members have offices in the associated schools (Physical Sciences, Chemical Sciences and Biotechnology) within the Faculty of Science and Health in the Physics and Electronics building ("N") or Science building ("X"), and many laboratories are also located in these buildings. The Biomedical Diagnostics Institute (BDI) large scale research initiative (LSRI) is located in the S building, N building, X building and Albert college ("A" building) and new space is being added in an extension to this building for the BDI. The Adaptive Information Cluster (AIC) LSRI is located in the S building and also in the engineering section of the N building and the L building. The laboratories of the Centre for Bioanalytical Sciences (CBAS) LSRI are located in the A building, the S building and the X building. Postdoctoral and postgraduate staff are located variously among these locations depending on their area of work. The main bulk of the NCSR is located in reasonable proximity to each other in the S, N and X buildings, with CBAS and some BDI researchers (Education & Outreach team, industry researchers and postdoctoral researchers) ~ 10 minutes walk away on the south-western portion of the campus.

Staff

The NCSR currently has 263 staff members in total (as of 13th February 2008, reported in the self assessment report (SAR), page 8, section 3.1). This includes 23 academic members, 81 postdoctoral fellows, 117 postgraduate students, 1 undergraduate student, 22 other researchers (incl. SFI Walton fellows etc.), 2 research engineers, 1 technician and a core administrative support team of 4. An additional 12 administrative staff specifically support the 3 LSRIs. The SAR does not indicate the fraction of full-time, part-time and contract staff; however it seems that the majority of staff are full-time. It is also probable that most staff (i.e. not including students) other than academic staff are contract staff.

Product / Processes

The National Centre for Sensor Research (NCSR) is a large-scale, multidisciplinary research facility focused on the science and applications of chemical sensors and biosensors situated on the campus of Dublin City University comprising custom-designed laboratories, a range of specialist support units and equipment, and dedicated technical and administrative staff.

As part of this mission the NCSR is involved in the education of postgraduate students and the mentoring of postdoctoral fellows. The NCSR has

collaborations with a number of external academic and industrial partners, and has collaborative links with a number of schools across DCU both within and external to the Faculty of Science and Health.

The NCSR has a track record of applied research and the generation of intellectual property (IP) through invention disclosures and patenting, in addition to generation of a number of spin-off companies. In addition to these activities the NCSR produces scientific output via the normal channels of published journal articles, conference presentations, seminars etc.

The performance overview of the centre since 2000 is listed in the SAR and is summarised below (data read from bar charts in SAR may not be completely accurate):

- Peer-reviewed publications: 668* (*2007 figures not complete at time of count)
- Research Income: 54.1 million €
- Graduates: Ph.D. – 115; M.Sc. – 23
- IP: Invention disclosures – 30; Patent applications – 31
- Invited presentations: 190

2. The Self-Assessment Process

The NCSR Quality Review Committee (QRC)

Prof. Dermot Diamond	Centre Director (Chair)
Dr. Jackie Glynn	Co-ordinator (Centre Manager)
Ms. Mary Comiskey	Administration & Technical Support
Dr. Dermot Walls	NCSR Academic Representative
Dr. Keith O'Neill	Biomedical Diagnostics Institute Representative
Mr. Kieran O'Dwyer	Centre for Bioanalytical Sciences Representative
Dr. Tony Killard	DUCRA -Senior Researchers Representative
Dr. Blánaid White	Postdoc Community Representative
Mr. José Garcia Cordero	Postgrad Community Representative
Ms. Edwina Stack	Postgrad Community Representative

Methodology Adopted

The NCSR QRC held four meetings and the QRC was kept abreast of developments by regular e-mails.

The NCSR QRC representatives carried out the following tasks:

- Reviewed NCSR's Self-Assessment Report (SAR) template;
- Acted as a voice for their representative groups by providing feedback on their views on NCSR's quality review and strategic planning processes. Both process were carried out simultaneously;
- Participated in NCSR QRC meetings and NCSR Quality Review Focus Group Meetings;
- Assisted with the development of the Self-Assessment Report (SAR).

All NCSR Staff (academic staff, senior researchers, postdoctoral researchers, administrative and technical staff, and postgraduate students) were invited to a presentation by Dr. Heinz Lechleiter, Director of Quality Promotion, on the background and overview of the quality review process on 26 October 2007. All NCSR staff were also invited to attend a Quality Review Focus Group meeting to discuss the current status of the NCSR and to suggest areas for development. These meetings were facilitated by Ms. Cora Robinson, Create Express (external facilitator). The schedules of the NCSR Quality Review Focus Group Meetings & Interviews are given in Appendix 1 of the NCSR SAR. In addition, QRC representatives communicated to their constituency groups via email and word of mouth on a regular basis throughout the quality review process, and submitted both oral and written feedback to the QRC.

3. The Peer Review Group Process

The Review Group

Chair:
Professor Roger Whatmore,
CEO, Tyndall National Institute, Cork, Ireland

Professor Joseph Wang,
Director, Centre for Bioelectronics & Biosensors, The Biodesign Institute, Arizona State University, USA

Mr. Eoin Sweeney
Manager, Discovery Programme, Marine Institute Headquarters, Rinville, Oranmore, Co. Galway, Ireland

Professor Michael Cronin
Director, Centre for Translation and Textual Studies, School of Applied Languages and Intercultural Studies, Dublin City University, Ireland

Rapporteur:
Dr. Enda McGlynn
Senior Lecturer, School of Physical Sciences, Dublin City University, Ireland

Site Visit Programme

The initial programme for the site visit was adhered to with only the most minor of deviations (the final drafting of the peer review group (PRG) report was completed slightly early and the visit ended at 4pm on 25th April rather than 4.30pm as original scheduled). The schedule is shown below.

DAY 1: Wednesday, 23 April 2008

Time	Details	Location
14.00-15.00	Arrival of Peer Review Group and briefing by Dr. Heinz Lechleiter, Director of Quality Promotion	DG11
15.00-15.30	Peer Review Group agrees work schedule	DG11
15.30-17.00	Tea & Coffee Peer Review Group meeting with NCSR Quality Review Committee to discuss NCSR Self-Assessment Report. Presentation by NCSR Director, Prof. Dermot Diamond (15 min.)	S206
19.30	Dinner in Morrison Hotel, Ormond Quay, Dublin 1 (Tel: 887 2400) Peer Review Group, Dr. Heinz Lechleiter, Director of Quality Promotion and NCSR Quality Review Committee representatives	

DAY 2: Thursday, 24 April 2008

Time	Details	Location
9.00-9.30	Peer Review Group Meeting with Prof. Dermot Diamond, NCSR Director	S206
9.30-10.30	Tea & Coffee Peer Review Group Meeting with NCSR Management Committee	S206
10.30-11.00 11.00-12.00	Peer Review Group meetings with NCSR Funding Agencies: Ms. Ruth Freeman, Scientific Programme Officer, Science Foundation Ireland Mr. Feargal Ó Móráin, Director of Innovation, Commercialisation & Investment & Mr. Jim Lawler, Director, Industrial Technologies, Commercialisation, Enterprise Ireland	S206
12.00-12.30	Peer Review Group meeting with Prof. Malcolm Smyth, Dean, Faculty of Science & Health	S206
12.30-13.15	Tour of NCSR facility including brief introductions to staff & researchers Prof. Dermot Diamond & Dr. Jackie Glynn	R & E Building
13.15-14.00	Working Lunch for Peer Review Group Lunch; short discussion with Director of Quality Promotion, as appropriate	S206
14.00-14.30	Peer Review Group meeting with NCSR Academic Members	S206
14.30-15.00	Peer Review Group meeting with NCSR Administrative Teams	S206
15.00-15.30	Peer Review Group meeting with NCSR Senior Researchers & Postdoctoral Fellows	S206
15.30-16.00	Peer Review Group meeting with NCSR Postgraduate Students	S206
16.00-16.30	Tea & Coffee Peer Review Group meeting with Mr. Richard Stokes, INVENT	S206
19.30	Peer Review Group Dinner in Morrison Hotel	

DAY 3: Friday, 25 April 2008

Time	Details	Location
9.00-10.00	Peer Review Group Meeting: Analysis of previous day's findings and preparations for meeting with DCU Senior Management	S206
10.00-11.00	Peer Review Group Meeting with DCU Senior Management	A204
11.00-11.30	Tea & Coffee Peer Review Group meeting with Prof. Eugene Kennedy, Vice-President for Research	S206
11.30-12.00 12.00-12.30 12.30-13.00	Peer Review Group meetings with Heads of Schools: - Prof. Ian Marison, Head of Biotechnology - Prof. Brett Paull, Head of School of Chemical Sciences - Prof. John Costello, Head of School of Physical Sciences	S206
13.00-13.30	Working lunch for Peer Review Group and short meeting with Director of Quality Promotion (as appropriate)	S206
13.30-15.00	Peer Review Group drafts report	S206
15.00-15.45	Tea & Coffee Peer Review Group continue drafting report	S206
15.45-16.05	Peer Review Group presentation to NCSR Members on the Group's principal findings	S206
16.05	Conclusion of Peer Review Group visit	S206

Methodology

The review process consisted of three discrete activities:

1. Familiarisation with the self-assessment report provided by the NCSR in advance of the site visit.

2. The comprehensive site visit by the Peer Review Group (PRG) conducted over a period of two and a half days, to review and validate the details of the self-assessment report, finishing with a presentation of the preliminary findings and recommendations by the PRG

3. The preparation and delivery of this review report documenting the findings and making recommendations for future development.

Schedule of Activity

On the first day of the review visit, the PRG met initially for a briefing with the Director of Quality Promotion Unit, Dr. Heinz Lechleiter, who briefed them on the nature of the visit and the duties, expectations etc.

The PRG met initially to consider the Self-Assessment Report with the NCSR QRC which included an overview presentation from director Prof. Dermot Diamond. During this period the PRG had an opportunity to ask preliminary questions. A number of issues which are important to the NCSR and its members became clear, and these were explored further in subsequent days. Following this meeting the PRG met privately to discuss task allocation for subsequent days and also to discuss the members' initial views of the SAR. There was no decision to allocate specific lines of questioning among the members in advance of the meetings. This flexible approach worked well, and the PRG members were able to elicit a comprehensive overview from the responses and interaction in the group and individual meetings. The group (excluding Prof. Cronin who had a prior engagement) then had dinner with members of the Peer Review Group, Unit QRC and the Director of Quality Promotion.

The second day of the review opened with a meeting of the PRG with the NCSR director, followed by a meeting with the NCSR Management Committee, which both allowed the PRG to understand the management structure of the NCSR and to discuss the opportunities the NCSR perceives in the current research environment and the challenges faced. There followed a meeting with representatives of major funding agencies which support NCSR research, namely SFI and EI. This was an important and valuable meeting which allowed the PRG to understand the view and expectation of these agencies (which have rather different core aims and expectations) with respect to NCSR's past, present and future direction and performance. The view from SFI was that the NCSR was very highly thought-of, as it had provided an environment to nurture a number of PI programmes and two CSETs. The view from EI was that they had funded a number of programmes within NCSR, but were disappointed with the level of output from these, as

measured by the number of licenses. This was followed by a meeting with the Dean of the Faculty of Science & Health (FSH), Prof. Malcolm Smyth to discuss the position of the NCSR within the Faculty of Science & Health and the views of the faculty management on NCSR position and development in the future. Following a tour of a selection of the NCSR locations and facilities by the director and centre manager, Dr. Jackie Glynn, the group had a working lunch and a brief discussion with the director of quality promotion, Dr. Heinz Lechleiter.

The first 4 sessions in the afternoon were with representatives of NCSR academic members, administrative team members, senior researchers/postdoctoral fellow and postgraduate students, in that order. These meetings were extremely valuable and allowed the PRG to probe each group, in some detail, on their perception of the NCSR, its mission and their involvement in the delivery of the NCSR vision, It also allowed for discussion about their view of themselves, which was occasionally described as what they saw as their DCU "nationality". These meetings were open, frank and constructive, in all cases, and really allowed the team to get a "feel" for the views of these constituent groups of the NCSR.

The final meeting of the day was with Mr. Richard Stokes of INVENT which, naturally, concentrated on issues of commercialisation and IP and the associated interaction of NCSR and INVENT. This again was a most useful meeting as Richard provided a very thorough background of the DCU landscape in these areas and the state of play vis-à-vis the NCSR. In particular he was able to provide an interesting additional view to that of the EI funding agency representatives whom the PRG had met in the morning, which enabled us to view the NCSR commercialisation and IP involvement from another angle. The PRG used the time after this meeting to discuss and summarise the important findings of the first two days' meetings (see below) and to prepare for the meeting with DCU senior management group (SMG) the following day. The final event of the day was a private dinner for PRG members at the Morrison hotel.

PRG discussion on Findings:
The issues which came to the fore during the opening two days of the review visit were centred firstly on general management issues. The discussions started around the capacity of the NCSR to fulfil its vision as a genuinely world-class supportive environment for research, providing administrative and technical support (including equipment maintenance) for researchers and allowing new research themes and leaders to develop within the centre. The core budget of the NCSR from the university is almost entirely used to support the current administrative team and there is little discretionary budget available to the director to realise the NCSR vision. In some sense there is little for the director to actually manage in an active way. The director was positive about the support he has had from the university and did not indicate that he saw additional DCU funds as a realistic possibility nor did he feel that the scale of funds DCU could provide would be adequate to realise the NCSR vision. A discussion followed about ways in which sustainable financing might

be realised for NCSR to generate a budget to support its vision. These included:

- *suitable coordination of administration teams of NCSR and the LSRIs*
- *"taxing" facility / equipment users to generate funds to enable administrative and technical support and equipment support, maintenance and upgrades*
- *the possibility that the university could "prime the pump" of such a process for a limited period of time*

The place of the NCSR in the DCU structure and in particular in the FSH came up a number of times and the director outlined his vision of the NCSR as extending beyond the faculty and the synergies he believes can be leveraged by such broader engagement (based on his experience with the AIC). Following on from these discussions the PRG became aware of differing views among the senior NCSR members (the management committee) and the FSH dean in respect to the organisational location of the NCSR and specifically the director's position in the DCU line management/reporting structure. This is also tied in to the method of funding of the NCSR through the DCU Office of the Vice President for Research (OVPR) which is clearly outside the executive faculty structure.

The issue of the PRG's perception of a missing generation in the NCSR membership between the initial and highly visible and successful senior members (LSRI directors etc.) and the talented younger faculty members at e.g. senior lecturer level was also discussed. The PRG felt that the absence of a mid-career group at the associate professor level meant that the NCSR's ability to respond dynamically to a rapidly changing research environment was limited and that succession planning is urgently needed to secure NCSR's development into the future and limit the potential exposure of DCU to unforeseen changes in the first generation of leaders. The issue of the size and expansion rate of the 3 LSRIs with respect to the NCSR "mother ship" was also discussed. It is clear that the directors of the LSRIs interact in a very positive and collegial manner in the NCSR management committee and at present there is no issue of any of the LSRIs wishing to break off. However, the PRG still felt that the structure appears slightly unbalanced and could be open to destabilisation through external factors if funding agencies drove certain agendas to bring different CSET partners from various institutions together in a common location.

The second area which came to the fore during the site visit was the issue of career structure for research staff. The PRG did emphasise that its role was to advise DCU and the NCSR on what it could do to improve utilising its own resources, and that the issue of career structures is a national one which DCU is unlikely to be able to solve in isolation. Nevertheless the topic was discussed. It is clear that research staff on short-term contracts feel the insecurity of their employment terms acutely and are exercised about a number of additional issues including the absence of the university PMDS system for their roles. While many of the core issues are genuinely national problems which need to be solved at a national level what did come across very strongly to the PRG was the seemingly uncoordinated fashion in which a

number of consecutive short-term contracts have been given to certain of this staff group, which appear to put them into a situation where a contract of indefinite duration (COID) is required. There are a number of reasons why this has happened and it appears that the PIs have in some cases used the flexibility associated with issuing short term (< 12 month) contracts to avoid more formal appointment processes which they perceive will be quite time-consuming and cause delays in research. In addition, the action of funding agencies in delaying decisions on grant renewals has contributed to this problem. The PRG concluded these discussions with a number of queries for the SMG on their view of these issues and their perception of the extent of DCU liability in terms of COID. Other issues which were raised concerned the interaction of the NCSR with central units which they perceive to operate on a timescale which is not suited to the needs of a research centre. However they also agreed that the provision of specific personnel in e.g. the Finance Office for research-related work had led to improvements.

The final day of the review began with an analysis of the previous days' findings and preparation for the meeting with the SMG of the university (including President, Deputy President, Secretary, Vice President for Research, Vice President for Learning Innovation, Director of QPU, Director of Human Resources and Director of Finance). This meeting allowed the PRG to ascertain the position of the NCSR within DCU and to bring forward the issues indicated above for further discussion. This meeting was followed by a meeting with the Vice President for Research, Prof. Eugene Kennedy, where a number of the same issues were pursued further. From these meetings it is clear that the DCU SMG feel that the NCSR is the "jewel in the DCU research crown" and that they are very supportive of it. Their comments concerning this support echo many of those of the NCSR director in the earlier days. They strongly support the NCSR "brand" and wish to maintain the unity of the NCSR and its constituent LSRIs as a key strength in the broad sensors area in the future.

The place of the NCSR and its director within the DCU organisational structure, and the allied issue of the funding line to NCSR, were not greatly clarified by either the meeting with the SMG or the Vice President for Research and the PRG became increasingly convinced that some clarification is required in this area.

In terms of research staff contracts/COID issues the DCU SMG were aware of the problem of the uncoordinated fashion in which a number of consecutive short-term contracts have been given to some research staff and they perceive that PIs in many cases do not "play ball" in terms of approaching Human Resources (HR) in a timely fashion. The HR perception is that PIs often simply assume, based on anecdotal evidence, that interaction with HR will lead to substantial delays. HR feel that their capacity in this area has improved and that they are prepared and able to work outside traditional limits in terms of organisation of interviews on short time-scales etc. and that they are not being given a fair chance to do this. Similarly, they feel that the DCU PMDS system is available for research staff in principle but is hampered in roll-out by the ability of the NCSR management structure to cope with so

many staff reporting to such a limited number of line managers (or even just one, Dermot Diamond).

The next meetings which took place were with the three heads of school within the FSH which contribute the majority of academic PIs (Chemical Sciences – Prof. Brett Paull, Physical Sciences – Prof. John Costello and Biotechnology – Prof. Ian Marison). These meetings were all conducted in a very open and constructive fashion. It is clear that all these heads of school see huge benefits from involvement of their staff with NCSR and hence of the association of their respective schools with NCSR. However, some reservations were expressed, especially by the heads of the Schools of Chemical Sciences and Physical Sciences. These covered a number of specifics but centred on the theme of the schools often subsidising the centres to the detriment of the schools. Ways in which this was perceived include:

(i) the secondment of directors with insufficient recompense to the schools (e.g. senior permanent professorial staff seconded to be replaced by junior contract lecturing staff)

(ii) the association of the research of school academic PIs with the centre and little recognition of the synergistic nature of the interaction, leading to a perception that the centre will draw off the research-active academic PIs and that the school will be seen solely as a teaching entity

(iii) the increasing imperative due to industrially-sponsored research (which is often incompatible with the education of Ph.D. students) of the NCSR LSRIs to employ postdoctoral fellow rather than Ph.D. students. Because postdocs generate no income for schools but remain a cost in terms of space, light, heating, stationary, phones etc.

(iv) the perception of heads of schools of little or no linkage or formal line of communication between them and the centre director and directors of LSRIs, which in turn impedes the schools from interacting optimally with the centres and vice-versa in terms of new research and funding initiatives.

All the heads of school feel that a “win-win” scenario is possible but that it is important that regular and effective communication channels be established so that the schools and centres can clearly voice their respective needs and concerns. This meeting was exceptionally useful and in hindsight might have been better placed before the meeting with SMG and the Vice President for Research, as a number of issues which arose could usefully have been discussed with the SMG/ Vice President for Research.

Finally the PRG met briefly with Dr. Lechleiter over a working lunch and then began the task of drafting the report and preparing the exit presentation. This presentation was delivered and the review visit concluded slightly ahead of schedule at 4pm, and the PRG dispersed.

Generally the timetable was adequate, though necessarily tight. As stated above, given the nature of the school – centre relationship as discussed with

heads of school, it may have been better to schedule the meeting with heads of school before that with the SMG and the Vice President for Research. The PRG would also like to note that we encountered an excellent and enthusiastic response from all levels during meetings with the members of the NCSR.

View of the Self-Assessment Report

The PRG felt that the SAR was well-written and covered the broad activity of the NCSR well, however we note that the SAR did not include the full list of publications for the NCSR and was not fully up to date (not to end 2007). In addition we felt that there was relatively little information about scholarly activity and related metrics (e.g., citations, H-Index), and the scholarly vision for the NCSR research, which is key in maintaining the world-leading position of the NCSR in the mid- to long-term future.

In addition, detailed financial information on the broad range of income streams for the entire NCSR was not available in the SAR and was not provided in full during the visit so the PRG had difficulty in assessing the overall income and the possibilities for generation of discretionary income for the centre director. Specifically there is no mention of responsibility of directors of LSRIs to contribute to NCSR funding for e.g. equipment support.

The PRG felt that there were far too many recommendations in the SAR for the PRG to comment on them all in detail, but the PRG also felt that there was a good overlap between the issues the PRG came across and those mentioned in the SAR. These are largely summarised above. The PRG also thought that most of the recommendations in the SAR were within the power of the members of DCU and the NCSR to put into effect, and therefore required no further input. The PRG would strongly encourage the members of the NCSR to use the recommendations in SAR as the basis for the actions required to implement their strategic development plan.

4. Findings of the Review Group

The PRG choose to present their findings in a single SWOC/T format as follows:

Strengths:

1. Strong commitment of DCU SMG to NCSR vision.
2. High level of interdisciplinarity in research and provision of a genuinely interactive environment for multi-disciplinary research, for students, postdocs, faculty etc.
3. Genuine team work at multiple levels in NCSR (incl. admin, management, etc.).
4. Strong internal buy-in to NCSR brand and identity by all.
5. Strong external recognition of NCSR identity and the high quality of research output.
6. Strong cohort of energetic, talented, charismatic, successful leaders.

7. Consistently high quality team across all activities in centre.
8. The core facility in terms of the building is very good and the equipment base is satisfactory.
9. The area of research work shows very large potential for commercialisation.
10. The library system and support is very good.
11. Strongly positive view by the external funding agencies of NCSR.

Weaknesses:

1. Communications generally appear as a consistent weakness, e.g. school-centre and centre-faculty.
2. The location of NCSR in the DCU structure and reporting lines are unclear and specifically issues around resource allocation and relation to executive faculty structure are unclear.
3. There is no formal mechanism for approval or sign-off of research proposals by NCSR director which limits the director's ability to predict and manage resource usage.
4. There is a lack of an active external advisory board with suitable membership across academic, government, industry and commercialisation areas.
5. There is a perception by research centres of lack of ability of central units to cope with timescales and demands of research centres such as NCSR and a countering perception by central units of lack of engagement of researchers with existing policies and that they do not "play ball".
6. There is a lack of commercialisation to "final" levels such as licenses and spin-outs consistent with the level of IP protection such as invention disclosures and patents.
7. A clarification of roles, function and status of postdocs within the centre is needed (which could enable roll-out of PMDS).
8. There is a lack of uniformity of demonstrating duties for postgrads which can cause tensions.
9. There is a lack of adherence to IUA researcher salary scales for postdocs.
10. There is a lack of consistent training for postgrads and also postdocs e.g. in demonstrating.
11. There is a lack of engagement by directors with a policy of dedicating some portion of funds to central NCSR facilities such as equipment renewal.
12. There is a lack of knowledge of NCSR management of financial value of what centre is delivering.

Opportunities:

1. There is an opportunity to consolidate NCSR position as a world-leading research centre in the broad sensors area.
2. The potential economic benefit of world-leading research in sensor technology is very high and likely to grow esp. in biomedical, environmental monitoring.

3. The potential to enhance interdisciplinary collaborations based on existing experience is very high.
4. There is an opportunity to develop strong and mutually beneficial school-centre relationships for win-win outcomes, including e.g allowing School members to take sabbaticals 'internally' in the NCSR.
5. The sensor area is very attractive for student recruitment at both undergrad and postgrad levels which relates to the point immediately above.
6. There is an opportunity for further development of research collaborations and synergies with other leading research centres in Ireland and abroad (e.g. thru' graduate schools).
7. There is an opportunity to engage with SFI to explore supplementary funding or reallocation of funding for shared resources and faciltiies for benefit of multiple centres.

Challenges/Threats:

1. There is a lack of intermediate mid-career faculty being groomed for succession to the senior people and associated lack of ability to respond to new emerging research areas.
2. There is a danger of reduction or even elimination of EI funding streams if commercialisation to final levels (licenses and spinouts) from the EI programmes does not improve. The targeted levels are probably too low.
3. There is a threat to growth and scientific leadership status of NCSR if core equipment is not brought up to date and properly maintained and run.
4. Rapid growth of LSRIs means that the NCSR structure may not be fully stable and, specifically, external demands may place pressure on LSRIs to break-up or spin-out to other locations.
5. There is a lack of training and career structure for post-doctoral staff which causes intense concern in this group.
6. Allied to the point above, the discretion given to PIs by the university on hiring short-term staff is permitting the build-up of a significant future liability for COIDs.
7. There are underlying tensions between the Schools and NCSR generated by several factors, including:
   - A growing perception that all the high profile research is being carried out in the Centre, leaving only teaching being done in the Schools
   - A growing trend of NCSR staff to hire post-docs, a strategy which gives no financial return to School, rather than post-grads which bring a resource allocation
   - An inadequate reimbursement/return to Schools in return for their payment of Director's salary
8. There is an ongoing challenge to maintain high level of scholarly activity and output while meeting the demands of milestone-driven research, which will secure NCSR's leadership position in the medium- to long-term.

5. Recommendations for Improvement

1
Topic: Provision of succession planning to fill the generation gap in mid-management of NCSR.

Recommendation: DCU creates 2 associate professor posts within NCSR and fills them with world-class candidates.
P1 – U

2
Topic: Provision of sustainable and suitable discretionary budget for NCSR director.

Recommendation: DCU and NCSR management committee engage in a process to develop a dispersable discretionary recurrent budget for equipment maintainence and operation – the LSRIs and other centre users should contribute to this and the university should contribute seed money to start the process.
P1 – U + RC (+ LSRIs)

3
Topic: Communications of NCSR internally and to other DCU units/structures.

Recommendation: All those involved with NCSR, in management of its academic PIs or in its reporting or funding lines, need to improve their communications by setting up appropriate mechanisms e.g. between school heads and centre and LSRI directors, between FSH, OVPR and centre and LSRI directors etc. These mechanisms should be formalised within the calenders of the various units.
P1 – RC+U+F/S+OVPR

4
Topic: Clarification of reporting lines of staff in centre.

Recommendation: The reporting lines of all staff in the centre, including the director, need to be clarified and formalised. In addition, the current review of research centres should consider the fact that the current separation of the reporting line (through the dean) and funding line (through the OVPR) is potentially confusing and problematic for large research centres and also potentially detrimental to their communication with the faculties and schools.
P1 – U (OVPR)+RC +F/S

5
Topic: Establishment of active advisory board

Recommendation: NCSR should establish an active external advisory board with suitable membership across academic, government, industry and commercialisation areas
P1 – RC

6
Topic: Resource usage planning.

Recommendation: NCSR director should sign off on all research proposals or similar initiatives which use NCSR facilities, brand or logo.
P1 – RC+F/S

7
Topic: Strengthening of commercialisation activities and outputs

Recommendation: NCSR should implement and strengthen its commercialisation committee and also activities around IP marketing with INVENT, in order to drive commercialisation to final stages of licensing and spin-outs as a matter of urgency.
P2 – RC+U (INVENT)