Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

REPORT ON THE QUALITY REVIEW OF THE TRINITY RESEARCH INSTITUTE

CRANN

MAY 2018

Contents

1. Executive Summary

CRANN was created in 2003 as a Science Foundation Ireland (SFI) Centre for Science Engineering and Technology (CSET). At the time it involved 5 principal investigators (PIs) distributed between the School of Physics and Chemistry, two founding Industry partners (INTEL and Hewlett Packard) and a total annual budget in the region of 2M Euro. In 2008 CRANN moved to the dedicated Naughton Institute, a 6,000m2 research facility on the main TCD campus, and started a significant investment in state of the art centralized research infrastructure.

A second CSET round of funding (€15M Euro) was approved by SFI late in 2008 a time when the number of PIs grew to about 20. At this time CRANN enjoyed further physical expansion and the CRANN Advanced Microscopy Laboratory (AML), a 1,000m2 research facility, opened in 2010. This houses Ireland's most advanced ion and electron microscopes, and a state of the art polymers lab.

Finally, CRANN moved to a third phase of funding. This was delivered through the creation of the SFI-funded AMBER (Advanced Materials and Bio-Engineering Research) Centre, in which CRANN partners together with the Trinity Centre for Bio-engineering, University College Cork and the Royal College of Surgeons of Ireland. Since 2013 CRANN investigators have gone through 5 review processes where everything from the Science, research impact, infrastructure, governance structures, HR and finance have been reviewed.

Trinity College Dublin is subject to the Quality & Qualifications (Education and Training) Act 2012 that requires quality review procedures to be established for the purposes of establishing, ascertaining, maintaining and improving the quality of education, training, research and related activities (§28 (1)).

The College Policy on Trinity Research Institutes (TRI's) was approved in 2013. It calls for a quality review of a TRI five years post establishment. A procedure to facilitate a quality review of a TRI was approved in 2015 and this was followed by the approval of a generic Terms of Reference for Quality Review of TRIs in 2016. Of note is that a quality review places the TRI as the unit of assessment and assesses its effectiveness in providing a research environment that enables internationally competitive research. It is not intended to assess the quality/impact of the research conducted by individual PI's as in a Research Excellence Framework (REF) review.

The Quality Office retains a schedule of quality reviews, to date two TRIs have been subject to an external quality review (i) TCIN (2016) and (ii) the Long Room Hub (2017). CRANN was scheduled for a quality reviews in 2017/18 and the process was initiated by the Quality

Office. A Selection Committee meeting was convened on 11 January 2018 to consider potential nominees to act as external reviewers for the review.

At that meeting, the Director of CRANN made a case for an alternate approach to the quality review of CRANN using the outcome of the cycle of reviews (ref Table 1 below) on the basis that CRANN is unique as a TRI:

i) in that it is host to the College Research Theme on Nanoscience and the SFI funded centre AMBER and therefore has been subject to a disproportionate level of review;
ii) CRANN is a single-discipline institute under which AMBER is the key programme, >85% of CRANN membership are also members of AMBER therefore all reviews of Amber are by default a review of CRANN.
iii) Nanoscience was reviewed as part of the College Themes and Superpanel Review in 2015.

The Director of CRANN agreed to submit a factual document (A.17), outlining the number and type of reviews that have occurred in recent past detailing the major findings/ recommendations and actions taken to address any concerns raised.

The Quality Officer undertook to conduct a desk-top review of the submission to affirm if requirements of the key framework documents (outlined below) were met by the documentation or if materials gaps were identified that warranted a quality review.

(a) ToR for TRI Reviews;
(b) Quality Procedure for TRIs; and
(c) College Policy on TRIs.

Such an approach reflects the QQI Statutory Quality Assurance Guidelines for Designated Awarding Bodies (July 2016) §4 Research (pg.3) that states:

> *The designated awarding body is responsible for organising an integrated system of quality assurance in relation to its research activities. They should build upon the peer review mechanisms widely employed in research funding and publication and incorporate relevant metrics.*

Table 1 below outlines a precis of the reviews conducted of CRANN and AMBER to date and references the documents provided by CRANN.

Table 1: Precis of Reviews

Year	Review Details
2013	The CRANN CSET (Centres for Science Engineering and Technology) was reviewed at the end of the funding cycle in September 2013. Strategic impact and research, Leadership, Organizational structures and partner involvement, Commercialization were all positively reviewed by an international panel of experts. (Appendix A.01)
2013	CRANN PIs submitted a proposal to SFI for the next phase of funding through the SFI Research Centres programme. The Advanced Materials and BioEngineering Research (AMBER) centre proposal was reviewed by an international panel and was funded to a level of €55M Euro. (Appendix A.02)
2015	In February 2015 the CRANN and AMBER Scientific Advisory Board (SAB) met to review the activity of both the institute and the centre. The board provided feedback [A.03, A.04] on scientific excellence, leadership, infrastructure and sustainability amongst other things. The slide-deck presented at the SAB is included [A.04a].
2015	In September 2015 the CRANN institute went through a review of the Nanoscience Theme in Trinity College Dublin. A 280 page report [A.05] of the activity was prepared for an expert panel of 3 leading researchers (the slide deck presented at the meeting is included [A0.5a]). In November panel then spent a day on site. The panel then provided a report on the theme to the University [A0.6].
2015	In December 2015 the theme was reviewed again at a super-panel, who considered all the College research Themes together. The original slide deck of this further review is included [6a]. CRANN Nanoscience was ranked in top Category A. The report from the super-panel is attached [A0.6b]
2015	In November 2015 the AMBER centre was reviewed by Science Foundation Ireland and an international panel of experts in the fields of materials science and bioengineering. The review was held over 2 days in in Trinity where the following was reviewed: _ Quality of centre leadership, organizational and governance structures _ Budget, sustainability and key performance indicators _ Scientific programme _ Strategic impact _ Education and Public engagement SFI provided their response [A0.7] and the report by the panel [A0.8].
2017	The AMBER centre was again reviewed in November 2017 by Science Foundation Ireland and an international panel of experts in the fields of materials science and bioengineering. SFI coupled this review of past work with a review of a proposal for the next phase of the research centre. Again the panel visited the University for a two day site visit. In advance of this site visit the centre submitted a progress report [A0.9] describing activity over the last 4 years of the centre and a proposal [A10] for the next six years of the centre.

Other documents provided and reviewed as part of the Quality Review

2014-2017	The CRANN institute reports to the finance committee at least once a year. A report is drafted for each meeting that we are asked to attend. Reports from the last 4 years are referenced here [A11-A16]. The minutes of the relevant finance committee meeting were also reviewed.
2014-2018	Risk Registers for Q1 2014 and Q3 2018 were reviewed to assess how CRANN /AMBER respond to risks and recommendations outlined in external review reports. (A18 and A19 refers)
2018	CRANN AMBER Impact Assessment Report (A.20 refers)

2. Assessment against key framework documents

The objective of the assessment approach was to confirm if the documentation provided by CRANN met the requirements of the framework documents outlined below and whether any material gap existed that warranted a quality review.

2.1. Terms of Reference (TOR) for Reviews of TRIs

The generic TOR for TRIs was developed in consultation with the former Dean of Research- Prof John Boland and Vice-Provost- Prof Linda Hogan. They were presented to Quality Committee in March 2016 and resubmitted with amendments to Quality Committee in April 2016, and approved by Council in May 2016. They are:

a. an overall assessment of the Institute and to assign a rating as set out below to the achievement of the TRI in the terms of enabling research excellence:

   1. international reference point in terms of providing the facilities, supports and research environment that enables research excellence: clearly a world leader;
   2. internationally competitive in the provision of enabling facilities, supports and research environment that enables research excellence: a significant player internationally in the field;
   3. internationally competitive but with identifiable gaps that need to be addressed: a potential player at an international level;
   4. nationally competitive but not an international player;
   5. the TRI provides no obvious added value.

   Outcome:– **Met (College Theme Review (A. 06, 06b) – A Rating).**

b. an assessment of the degree of success/constraints on the TRI in leveraging research in the corresponding field over and above that achieved through Schools alone, as demonstrated by a mature approach to *governance, planning, human, financial and infrastructure resource management.*

   Outcome: -**Met** (in terms of scope of review elements refer Table 2 below; recurring themes/recommendations arising from external reviews are address in Tables 3-6 below. Refer also CRANN AMBER Impact Assessment Report (A20))

c. recommendations to the University on whether or not the TRI should continue to be recognised as a Trinity Research Institute for a further five years.

   Outcome: **Met (**CRANN CSET Report November 2013 (A.01) and CRANN SAB Report 2015 (A.03), SFI Review Progress Report 2016 (A.08))

2.2. Procedure for the Quality Review of a TRI

The Procedure for Quality Review of a TRI was developed to reflect the requirements of the College Policy on TRIs. It received input by the former Dean of Research –Professor Vinny Cahill and the Director of TR&I-Dr Diarmuid O' Brian.

Relevant to this process and not covered elsewhere are the following purpose of the quality review procedure:

i) to facilitate a critical self-assessment of the Institute Director, its Principal investigators, the Heads of Participating Schools and the relevant Faculty Dean
ii) to assess the added value of the existence of the TRI in supporting research in the corresponding field over and above doing so through Schools.

The documentation provided demonstrates that CRANN and AMBER through the cycle of grant application, reporting and renewal participate in critical-self assessment processes (CSET 2013; SAB CRANN and AMBER 2015; Themes Nanoscience Review and Superpanel Review 2015; SFI Reviews, Progress Reports and Proposals 2012, 2017). It is also noted that the AMBER Executive Committee Structure seeks to improve integration with Trinity's constituent Schools; and that the two Deputy Director positions are filled by representatives from partner Universities –UCC and RCSI. The Executive Director reported that the Industry Advisory Committee meets on a quarterly basis and are active participants in decision-making.

The CRANN AMBER Impact Assessment Report assesses the added value delivered by CRANN and AMBER in the first ten years of establishment in terms of (i) economic impact; (ii) research impact; (iii) engagement with business and communities; (iv) education and public engagement programmes; (v) supporting alumni and young researchers; and (vi) international engagement.

In term of content areas, a high degree of complementarity exists between the quality review procedure and other external review processes in particular the SFI Review Process (refer Table 2 below).

Areas not addressed because they reflect Trinity's institutional interest include:

1. Alignment with College Research Themes (Mission & Strategy).
2. Relationships with Schools.
3. Reference to College Policies/Procedures, e.g. Policy on TRIs; Policy on Good Research Practice; Ethics Policy, Records Management Policy, and Accreditation Procedure.
4. Reference to College systems: RSS, TARA.

As each TRI falls under the remit of a Faculty Dean and academics acting as Principal Investigators or as part of a research team are also members of a Trinity School, these elements can be addressed through the School Review Procedure.

2.3. College Policy on TRI's (Version 2.3 - 11th March 2013)

CRANN meet the requirements of the College Policy on TRI's in that the documents submitted demonstrate that CRANN 'represents an area of acknowledged research excellence and have at its core a critical mass of scholars/principal investigators of acknowledged high international standing in that area, (e.g., who are competitive for major individual research awards such as European Research Council (ERC) grants or Science Foundation Ireland (SFI) and Wellcome Trust Investigator Awards)' (Policy pg. 3).

In respect of Section 5 of the College Policy on the financial management of TRI's, there have been changes since publication of the TRI Policy to the 'Overhead Policy' and the resource allocation model for TRI's (Finance Committee Meeting May 2017-FN/16-17/107 and 108). CRANN complies with Section 5.4 Financial Guidelines/Oversight for the Management of TRIs in that it operates within an agreed budget, and provided the required bi-annual reports to the College Finance Committee (as evidenced by appendices 11-16). Minutes of the Finance Committee that correspond to the submitted reports detail the actions required by the Committee to (i) the Dean of Research and (ii) CRANN to address financial risk management issues including: sustainability, deficit management and infrastructure costs. Reviews by SFI also addressed financial governance and compliance, e.g. (CSET 2013 (A1). The AMBER Review 2016 included a separate financial audit by SFI.

In terms of access to research infrastructure, CRANN's investment in infrastructure and the quality of the Advanced Microscopy Laboratory infrastructure is commended throughout the documentation submitted (CSET 2013, Themes Review 2015, SFI AMBER 2016). The challenges presented in leveraging the infrastructure nationally and internationally to meet escalating costs, diversify income streams and negotiate overheads costs internally and access costs externally is detailed in the documentation and Finance Committee Reports and minutes (October 2017).

The College Policy on TRIs notes that 'while are established for the primary purpose of engaging in research, the TRIs must also contribute to the teaching activities of the College including providing access to their research infrastructure'. CRANN success both in PhD education including exchange and placement in industry partners (CSET Report 2013) and its programme of education and outreach (Themes Review 2015) are acknowledged in the documentation received. Challenges associated with funding of basic versus applied research on recruitment of PhD students and the alignment of timeframes for industry projects versus PhD's was also acknowledged.

In respect of Section 8 of the Policy TRI Governance and Administration – CRANN complies with the recommended management structure to provide for accountability, with clear separation of the governance/oversight, executive/operational management, and advisory functions between the Director and TRI Board, an Executive Management Committee (EMC), an External Advisory Panel (EAP) and the Dean of FEMS who has oversight responsibility for the TRI. However the following are noted for consideration and action by the Dean of Research and Director of CRANN

1 The CRANN and AMBER Scientific Advisory Board (SAB) reports received (Appendix 2 and 4) are from 2015. If the SAB is the External Advisory Board for CRANN, then it does not comply with the College Policy on TRIs requirement to meet on an annual basis (refer email by the Director CRANN (05/04/2018)).

2 The College Policy Section 10 calls for a review of the policy every three years, which has not occurred. The opportunity presents itself to review the policy to take account of recent and proposed changes to College policy relevant to TRIs.

Table 2: **Mapping of elements of external review processes against key framework documents**

Element/Theme	Policy on TRIs	Quality Procedure	ToR	SFI CSET 2013	CRANN SAB 2015	AMBER SAB 2015	Themes NANO	Themes Superpanel 2015	SFI AMBER
Governance/Leadership	√	√	√	√	√	√		√	√
Strategy/Planning		√	√	√					√
Structure	√	√		√	√				√
Relationship w Schools	√	√			√			√	
Membership of TRIs	√								
Partnerships/Collaborations	√	√		√			√	√	√
Research impact	√	√	√	√	√		√		√
Finance/Sustainability	√	√	√	√	√	√	√		√
Infrastructure /Facilities		√	√	√	√		√	√	√
HR/Staffing	√	√	√	√	√				√
Education		√		√			√		√
Outreach		√		√)		√	√		√
Research Ethics/Integrity		√							

2.4. Recurring themes arising from external reviews

A number of recurring themes and recommendations were identified during the assessment process and these are outlined and discussed separately below:

2.4.1. Governance

The key theme identified under Governance relate to differentiate the governance and management structure and appointments for both CRANN and AMBER. This would assist reduce the 'complexity' of governance; the divergent interests of governance stakeholders, e.g. College, SFI, Industry/Partners; the issue of bandwidth of position holders across CRANN and AMBER including Directors, Executive Directors, PI's and address issues of duplication and redundancy.

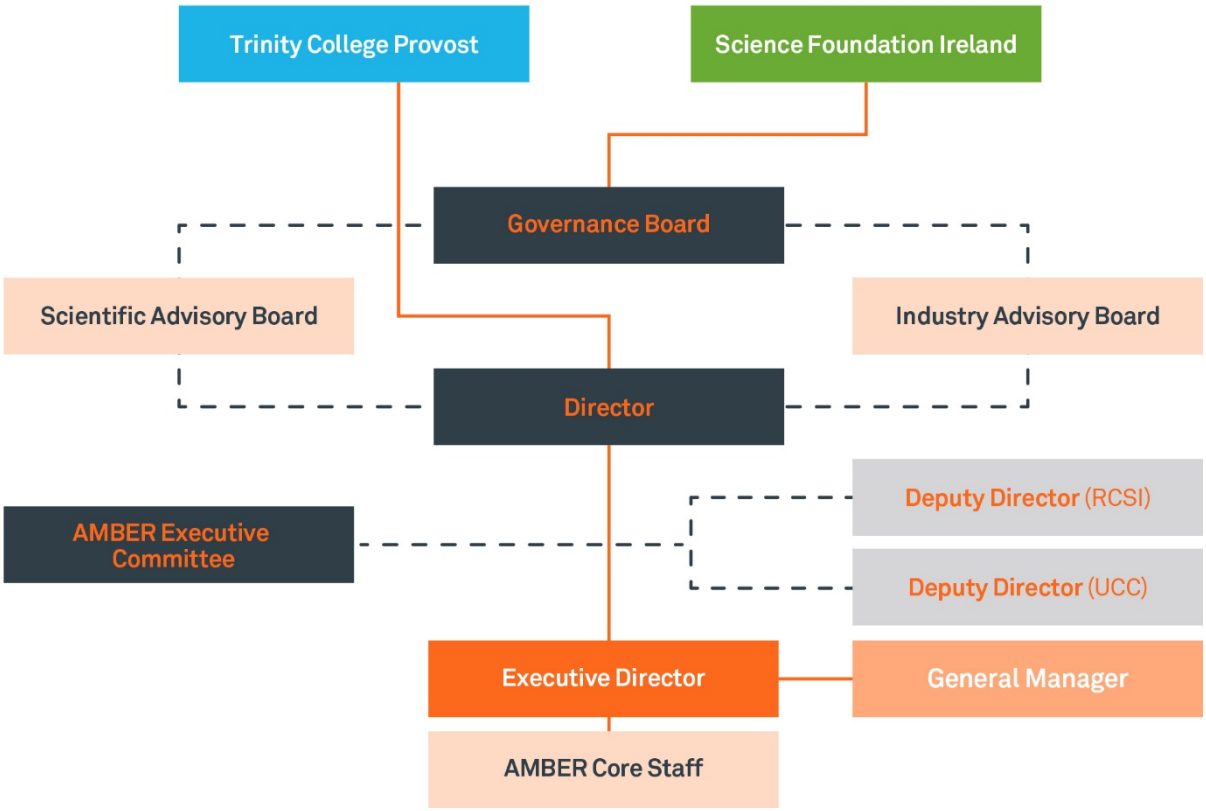
Table 3: Governance Recommendations

YEAR	REVIEW	RECOMMENDATIONS
2015	CRANN SAB Report	The governance remains complex and somehow overcomplicates the operation mostly because of the presence of many stakeholders with rather different goals.
2015	CRANN SAB Report	Since the same management team manage CRANN and AMBER there is at present a bandwidth issue.
2015	CRANN SAB Report	The SAB felt that clarity has to be made in the relation between CRANN and AMBER. The fact that the Director is the same does not facilitate the process. TCD has to properly resource CRANN to enable the transition.
2015	Themes Nano Report	Given the wide range of stakeholders participating in and providing funding to CRANN and AMBER, a clear governance structure and decision-making structure is crucial to ensure further growth.
2016	SFI AMBER Progress Report and Letter	The panel felt that at this point in time all the activities of the AMBER Centre are still tightly entwined and sometimes indistinguishable from, those of CRANN. In particular there was little evidence of publications stemming directly from this effort. In ref to the submission papers to SFI -the different functions and relationships between AMBER and CRANN were not spelled out which gave the impression of duplication and redundancy. The panel recommends that in future the role of AMBER should be clearly spelled out and differentiated from CRANN

Governance structures for both CRANN and AMBER have evolved over time. The recommendations from the CRANN SAB Report that CRANN and AMBER have separate Directors has been addressed.

CRANN and AMBER share a Scientific Advisory Board and the position of Executive Director. CRANN has an Institute Board and a management team comprising a Director, a Deputy-Director and the shared Executive Director position. AMBER's governance structure is outlined in Fig .1 below. AMBER also has an Industry Advisory Board.

Fig 1: AMBER Governance Structure



Finding: The Scientific Advisory Board does not comply with the College Policy on TRIs requirement to meet on an annual basis. A rationale was provided by the Director CRANN and accepted by the Dean of Research in terms of the cost of bringing such a high-profile group together and also that the speed of change does not warrant an annual meeting. The Dean has undertaken to revise this requirement in accepting the recommendation to review the College Policy on TRI's.

The AMBER Risk Register Q3 2018 includes reference to the need to review the AMBER organisational structure in advance of AMBER II. This is planned for Q1 2019 with progress reviewed on a monthly basis.

The key outstanding recommendation is the final recommendation in Table 3 above (SFI Review and Progress Report, 2016). It is therefore recommended as a result of this review that:

1. The Director CRANN and Executive Director AMBER to provide a concise document to the Dean of Research outlining the relationship between CRANN and AMBER and to address:
    a. what the differences and interdependencies are between CRANN and AMBER;
    b. what the potential risk would be to either CRANN's and AMBER's research programmes, to College, to industry etc. if either CRANN or AMBER were defunded.

2.4.2. Planning

The key theme identified under Planning was in respect of stakeholder management and communication in particular with industry partners and collaborators.

Table 4: Planning Recommendations

YEAR	REVIEW	RECOMMENDATIONS
2013	CSET	It is advisable to review the composition of the total basket of industrial partners with respect to size, i.e. start-ups, SME's and larger companies and to identify and meet the different needs they have.
2013	CSET	It would have been valuable to understand how the management of CRANN CSET organises the communication between companies and responds to their quite different needs
2013	CSET	Future panels will need to achieve a deeper understanding of their interactions with CRANN and to understand how they contribute to CRANN's decision-making process.
2015	CRANN SAB Report	The SAB recommend a more careful management of the relations with Schools.
2015	Themes Review Report	It is recommended to develop a strategy on how to involve SMEs to a larger degree and how to achieve funding for this activity.
2016	SFI AMB ER Progress	There is a need to streamline the timings of the contracts with industry, namely the IP and licencing conditions in order to make the Centre operate more efficiently.
2016	SFI AMBER Progress	A relatively minor issue raised by some researcher is that the existing collaborative research agreement does not allow the Centre to collaborate simultaneously with two different companies on the same project, which was necessary for some of the projects. A model for multiple industry partnerships should be developed to enable such collaborations.
2016	SFI AMBER 2yr Progress report	The Panel recommends the Centre Governance avoids overloading the key researchers with an overwhelming amount of targeted projects and requests of increasing the number of grant applications. The fundraising effort can be expanded by involving junior staff, supported by training and advice.
2016	SFI AMBER 2yr Progress report	The reviewers recommend that as part of the EPE future plans, AMBER gets feedback from the PI's and co-PI's about the EPE Programme and hold a discussion to identify key messages to be delivered to the public through the EPE programme. Their direct involvement in the EPE programme is critical to its ultimate success.

Finding: The two Risks Registers (Q1 2014 and Q3 2018) evidence management of all aspects of stakeholder and industry management that addresses the above recommendations. In addition Finance Committee minutes address the issue of overhead allocation between TRI's and Schools and industry cost-share in addressing sustainability issues. AMBER has established an Industry Advisory Body (Fig 1 above) that meets quarterly.

The minor issue referred above in the SFI AMBER Progress Report 2016 was addressed in the AMBER 4 Year Progress Report (2017) through the establishment of Collaborative

Research Agreements (CRA) that address engagement with AMBER. The CRAs are supported by specific project agreement on specific projects.

AMBERs core staff has increased over time to include staff whose specific remit is to engage with business/ industry, in education in the public domain and in funding and commercialisation thus allowing AMBER to function more efficiently and addressing the bandwidth issue for PIs.

The responses to the specific EPE recommendation has been to start a group ambassadors programme with a representative from each PI group to promote EPE and to record EPE metrics for that group. An EPC Advisory Committee has been established and is chaired by a Deputy-Director.

There are no recommendations arising from Planning.

2.4.3. Human Resource Management

There is a degree of duplication with Governance recommendations directed at the employment of a new AMBER Director and Executive Director, which has been addressed under 2.4.1.

Table 5: HR Recommendations

2013	CSET	Industry collaboration would benefit from specially trained project leaders, to lead collaborative projects with industry
2015	SAB	The SAB recommend acceleration in the process of hiring a new AMBER Director and Executive Director
2016	SFI Amber Progress Report and Letter	There is an urgent need to hire an Executive Director
2016	SFI Amber Progress Report and Letter	The recommendation of the panel is to strengthen the modelling activity by adding a PI with molecular dynamics modelling expertise
2016	SFI Amber Progress Report and Letter	The Panel recommend AMBER PIs to inform TCD Leadership that it will be critical for the long term success of the centre to get TCD funded technical staff who would support multiple projects facilitated by AMBER
2016	SFI Amber Progress Report and Letter	There is a gender issue with a lack of women PIs in the program. The Research centre should look for ways to try to address this imbalance whenever possible.

Finding: CRANN Reports to Finance Committee (A11-A16) detail risks addressing the strategic appointment of research positions necessary to the core research programmes; in addition to risks associated with funding and retention of core and technical staff. These matters are also reflected in the Risk Registers (Q1 2014 and Q3 2018). The AMBER 4 year Progress Report (2017) §3.5 addresses the final recommendation above by referencing Trinity's Equality Policy, Athena Swan, WiSER and Juno as strategies to address matters of

gender equality of female PIs in the Program. Trinity has developed a Trinity Gender Action Plan and this includes required actions by TRI's. Progress reports on these actions is provided to College Board on a six –monthly basis.

There are no recommendations arising from Human Resource Management.

2.4.4. Financial

The key recommendations relating to financial management have been addressed elsewhere in this report. CRANN's compliance with the requirement to provide six-monthly reports to Finance Committee and oversight internally by CRANN, the Dean of Research and the Finance Committee is demonstrated through appendices A11-A16 and associated Finance Committee minutes.

There are no recommendations arising from Financial Resource Management

2.4.5. Infrastructure Resource

The recurring recommendations arising from reviews were directed primarily to the Advanced Microscopy Laboratory (AML), as the 3D Printing facility was not open at the time of the most recent, i.e. SFI 2016 onsite review.

Table 6: Recurring recommendations related to Infrastructure

2013	CSET	AML: There will be continual challenges to provide for equipment maintenance, upgrade, training, and operation.
2013	CSET	AML: Leveraging this facility to create a national and even international microscopy facility… Such a scheme of creating a major facility requires significantly more equipment, training, operations, and maintenance investment which translates to higher recurring financial support from both TCD and external stakeholders such as SFI
2013	CSET	AML: Relying on transient staffing based on postdoctoral researchers and students will preclude reaching the full potential of what could be established with the world-leading facilities such as the AML
2013	CSET	AML The mission of AML is per se to support basic research, supporting industrial research access, supporting national and transnational access. To this end, the panel strongly recommends an adequate staffing, especially with regard of becoming a user facility on the national and international level.
2015	SAB Report	AML-A management plan should be developed that includes mechanisms for access, and outreach to national industry, who will benefit from this new user facility.
2016	SFI AMBER 2yr Progress Report	The Panel was impressed by the Microscopy facilitates used by AMBER. Our recommendation for TCD is to maintain and when possible, expand these unique characterisation and fabrication facilities, as a singular spike of excellence on Ireland's research landscape
2017	Finance Committee Oct	Critical Risk: AML downtime while TTEC build is ongoing. Risk that the AMBER program will go on hold. High Risk: Cost of running and maintaining infrastructure to maintain research activity. Risk CRANN will not be able to support state-of-the-art infrastructure and will lose its competitive edge.

Finding: CRANN Reports to Finance Committee and in particular the Finance Committee Minutes ((FC 17-18/16 addresses the key financial risk and sustainability of key research infrastructure. Two related actions arising from this meeting include that CRANN with the support of Finance Service Division identify the 'full-economic cost of research –specific equipment including the Pay and Non-Pay operational and maintenance costs…to support CRANN activity and future negotiations with funding agencies' and to provide the indirect cost recovery rate to the Committee.

The final risk above detailed in the Finance Committee report and minute and also in the Risk Register (Q3 2018) relates to the risk to CRANN and AMBER research facilities at the TTEC site which is planned for redevelopment within the lifecycle of AMBER II program. The criticality of this risk for CRANN and AMBER, Trinity Schools and industry in terms of access to these facilities is the basis for the second recommendation arising from this review:

2 The Dean of Research to consult with the Chief Enterprise and Innovation Officer on the management of critical risks to the Advanced Microscopy Laboratory (AML) and to a lesser extent the 3D Printing facility associated with the proposed redevelopment of Trinity Technology and Enterprise Campus (TTEC).

2. Conclusion

The process of the assessment has concluded that there is a high degree of complementarity across the College's internal quality assurance process and external funding body review processes, such that no material gap was found that warrants a quality review.

An outcome of this review is that a recommendation that this process be accepted in lieu of an external quality review of CRANN be put to the relevant committees:

1 College Research Committee – May 2018;
2 Quality Committee – May/June 2018;
3 University Council tbc.

If approved this report will be published on the Quality Office website, as required by QQI.

Within six weeks of the report being approved, an implementation plan is to be developed to address recommendations from this review, namely:

Recommendations:

1 The College Policy on Trinity Research Institutes (Version 2.3- 11th March 2013 §10. P23) calls for a review of the policy every three years, this has not occurred. It is therefore recommended that the Dean of Research lead a process to review the policy in light of recent and proposed changes in College policy relevant to TRIs.
2 The Director CRANN and Executive Director AMBER to provide a concise document to the Dean of Research outlining the relationship between CRANN and AMBER and to address:
    a. what the differences and interdependencies are between CRANN and AMBER;
    b. what the potential risk would be to either CRANN's and AMBER's research programmes, to College, to industry etc. if either CRANN or AMBER were defunded.
3 The Dean of Research to consult with the Chief Enterprise and Innovation Officer on the management of critical risks to the Advanced Microscopy Laboratory (AML) and to a lesser extent the 3D Printing facility associated with the proposed redevelopment of Trinity Technology and Enterprise Campus (TTEC).