EXTERNAL RESEARCH REVIEW – AUGUST 2016

EXECUTIVE SUMMARY

Queen’s University, External Research Review – June 16/17/18, 2016, carried out by:

CHAIR
Dr. Indira Samarasekera, OC, FRSC
President Emerita, University of Alberta

MEMBERS
Dr. Chad Gaffield
Professor of History and University Research Chair in Digital Scholarship, University of Ottawa
Former President and CEO of the Social Sciences and Humanities Research Council of Canada (SSHRC) (2006-2014)

Dr. Thomas J. Marrie, CM
Former Dean, Faculty of Medicine, Dalhousie University (2009-2015)
Former Dean, Faculty of Medicine and Dentistry, University of Alberta (2004-2009)

Mr. Dan Sinai
Senior Executive, Innovation, IBM Canada
Former AVP (Research), Western University (2005-2015)
Executive Summary of the External Research Review Committee:

I) INTRODUCTION

In conducting the assessment, the committee was asked to address four overarching areas:

1. Strategic planning and implementation, including unique areas of strength and opportunity, faculty renewal/recruitment strategies, and alignment across the institutional, portfolio (VPR), and faculty/school levels.

2. Best practices for organization and structure of research administration, and VPR-driven innovation activities, such as industry partnerships, university-industry-government interactions, funding for programs supporting research trainees, and other relevant public-private networks, that address contemporary challenges in the funding landscape.

3. Advancing Queen’s international reputation and impact through research collaborations and partnerships.

4. Resource requirements, including personnel, research infrastructure, and strategic investment opportunities.

The terms of reference for the review are given in Appendix A.

The committee visited Queen’s campus from June 16-18, 2016, after reviewing background documents (Appendix B). The list of those interviewed is given in Appendix C.

The committee thanked all those whom they interviewed, and who gave written submissions. In all cases, individuals were well prepared and answered questions, and were supplied with all the information that we requested.

II) THE REVIEW CONTEXT

As one of Canada’s leading universities, Queen’s has a long tradition of advancing knowledge and understanding about the past and present. With numerous world-recognized scholars and scientists, and a first-in-class student body, Queen’s enjoys domestic and international status in many academic fields across the natural, health, and social sciences, as well as humanities and engineering.
In order to build on this rich tradition, in May 2012, Queen’s Senate identified and approved four ambitions as follows:

1. **Facilitate collaborative and synergistic research** across the University, throughout Canada, and through global partnerships.

2. **Establish an Institute for Advanced Research/Studies**, to develop dynamic and evolving programs, driven by a community of scholars and researchers, responding to important questions and challenges.

3. **Provide opportunities for students** at all levels, and in all academic areas, to participate in research.

4. **Identify and develop strong leadership** in key research areas.

The Strategic Research Plan identified four research themes that reflected core and emerging strengths as follows:

(a) Exploring human dimensions
(b) Creating, discovering, and innovating
(c) Securing safe and successful societies
(d) Understanding, and sustaining, the environment and energy systems

In addition, Queen’s Strategic Framework 2014-2019 was designed “to sustain and enhance our research prominence” by pursuing six university-wide objectives as follows:

(i) Increase research support, through increasing our research-faculty ratio, by identifying sustainable funding sources for research, and increasing faculty external grant applications.

(ii) Improve intra- and inter-faculty and cross-university collaboration, to support university research pillars nationally and internationally.

(iii) Improve faculty support services, to enhance faculty and staff productivity, research and retention.

(iv) Integrate research, to enable active learning and innovation.

(v) Develop new award programs, to recognize faculty for outstanding research.

(vi) Focus on increasing and improving our impact through high peer-reviewed publications, recognized scholarly books and creative activities, and knowledge translation and innovation.
The Strategic Framework established metrics to assess progress on achieving these objectives as follows:

a. Research intensity and national position.

b. Queen’s share of total Tri-council research funding.

c. Number of applications to Tri-council and other external granting agencies, and diversity of external sources from which support is sought.

d. Proportion of appointments to Canada Excellence Research Chairs, Canada Research Chairs, and Queen’s National Scholars that are aligned with one or more of the SRP’s thematic areas.

Taken together, the Strategic Research Plan and the Strategic Framework provided the point of departure for undertaking this review.

Other background material included data on external research funding. While such data only offer a limited view of research contributions, the recent results do define a pattern that appears to reflect an overall trend. Specifically, Queen’s has seen an absolute and-or relative decline in overall external research funding during the past decade. The largest decline has been in CIHR funding that decreased from $19,344,000 in 2012/13 to $16,372,000 in 2014/15. Both SSHRC and NSERC funding have been stagnant in contrast to CFI funding that has increased. The review committee also noted, with concern, applications to research grant agencies have declined significantly during this period, including a drop for CIHR (Open Operating Grant) from 95 to 45, and NSERC (Discovery Grants) from 90 to 67. The application decline SSHRC (Insight Grants) has plummeted from 80 in 2009 for the SRG to 42 in 2015 for the comparable Insight program.

The result of these patterns has been a decline in the standard overall measure of research intensity, from a high of 4 to a low of 11 out of 15 Canadian universities. In overall external research grants, Queen’s is now 12th amongst the U15 universities. The average decline in research revenues amongst the U15 group was 5%, while at Queen’s it was 10%. At Queen’s, research revenue as a percentage of the total revenue has declined from a high of 24.3% in 2009/10 to 16.3% in 2013/14.
III) THE CHANGING POST-SECONDARY LANDSCAPE

In recent decades, the question of university research has become increasingly intertwined with those of academic programs, and societal engagement. Unlike former assumptions about distinct research, teaching and service functions, leading universities are now embracing research-enriched learning in both undergraduate and graduate programs, as well as research-based connections to the private, public and non-profit sectors. In many cases, new digital technologies are enabling and accelerating these new approaches, as well as influencing them in iterative ways.

This changing post-secondary landscape explains the increasing importance of developments, such as undergraduate research opportunities that enhance the student experience, expanded support for external research grant applications, and knowledge mobilization centres for robust societal engagement wherever appropriate. In this context, leading universities are cultivating new relationships across campus by supporting interdisciplinary initiatives, as well as new connections with the public, private and non-profit sectors in both local and distant communities. The overall result is a new recognition of the vital role played by research in the quality of academic programs, the contribution of new knowledge and understanding about the past and present, and the societal impact of universities in the larger economy and culture.

In order to thrive on the changing post-secondary landscape, universities must attract and retain outstanding students, professors and staff, in an increasingly competitive environment. Successful institutions have found that special efforts must be made to ensure faculty renewal as a top priority, since active and engaged professors are key for sustaining and increasing identified through research planning exercises, as those reflecting great achievement and additional potential.

In addition, institutional support for research has increased significantly in leading universities, ranging from extensive administrative structures, to internal research funding programs, to complement the opportunities offered by external granting agencies. Such support must be seen as integral to the overall quality of the university, and must be defined carefully in keeping with the institution’s strategic priorities and ambitions.

IV) RECOMMENDATION FOR QUEEN’S

In his op-ed for the Kingston Whig-Standard, Principal Woolf emphasized that the primary institutional goal is “to advance Queen’s as a university that uniquely combines quality and intensity of research with excellence in undergraduate and graduate education.” Given the context of the review of research, as well as the general features of the changing post-secondary landscape, the committee thinks that this goal is indeed the way forward for Queen’s. The committee have made the following recommendations, in the spirit of allowing Queen’s to achieve this desired future.
RECOMMENDATION 1: Develop a new strategic research plan, with increased focus built on collective input, including that of Deans and heads of interdisciplinary research units.

RECOMMENDATION 2: Make faculty renewal an urgent priority, including consideration of cluster hiring where appropriate.

RECOMMENDATION 3: Provide systematic support for faculty across campus, in preparing research grant applications and handling post-grant management, especially access to research facilitators.

RECOMMENDATION 4: All internal research grant funding should be directed to helping faculty apply for external grants.

RECOMMENDATION 5: Establish research performance targets for all decanal reviews.

RECOMMENDATION 6: Review and revise the office of the VP-R and URS after a review of successful models, engagement with faculty, students and staff, and in conjunction with the new Provost.

RECOMMENDATION 7: The Academic Health Sciences Network Research Institute should be carefully considered, since it has the potential to align and enhance research in the health sciences.

RECOMMENDATION 8: Refocus the new budget model better to support research.

RECOMMENDATION 9: Launch a systematic and directed approach to support undergraduate research, and consider guaranteeing research opportunities to all undergraduates as part of their distinctive Queen’s student experience.

RECOMMENDATION 10: Promote community research connections, within and beyond Kingston, to the larger eastern Ontario region.

RECOMMENDATION 11. Transform the innovation and entrepreneurship ecosystem by integrating the industry partnerships function with the technology licensing and start-up activities, to create a seamless ecosystem. Innovation Park is an important initiative and provides an important anchor. Examine the successful models elsewhere, undertake benchmarking, and continue to adopt best practices to grow successful enterprises in the region.

RECOMMENDATION 12: The VPR and AVP International must develop a clear international research strategy and execute it with well-defined defined accountabilities for each office. The international research plan must be a component of the University’s strategic Research Plan, as well as the Comprehensive International Plan. The University must identify and engage at the
level of the Principal, VPR and AVP International, with a select number of international research partnerships with leading international universities in a small number of countries to maximize impact.

RECOMMENDATION 13: Research-related communications and marketing should reside in the Office of the VP University Relations, with substantive input from VPR. The VP University Relations and the VPR should develop a single marketing and communications strategy that articulates Queen’s competitive advantage in research, and all material developed should be coordinated by the VP University Relations with input from VPR.

The external review team also observed that the university has an opportunity to create an enduring legacy of Dr. Art McDonald’s Nobel Prize in Physics.

END OF SUMMARY

APPENDICES:

A) Terms of reference
B) List of background reading
C) List of interviewees
Terms of reference – Principal’s Review of Research and Innovation at Queen’s

Purpose
At the request of the Vice-Principal (Research), Dr. Steven Liss, Principal Daniel Woolf is undertaking a review of research and innovation at Queen’s University. The purpose of the review is to assist the senior administration of the university in developing a roadmap for research at Queen’s which has not been subject to an external review for over a decade.

Context
Queen’s is uniquely positioned as a ‘balanced academy,’ combining quality and intensity of research with excellence in undergraduate and graduate education.

Research prominence is one of four strategic drivers in the university’s Board-approved Strategic Framework 2014-2019. The Strategic Framework serves as a capstone to a number of years of strategic planning at Queen’s and its purpose is to help the university achieve its vision by identifying the priorities that will guide decision-making to 2019. Each of the strategic drivers – the student learning experience, research prominence, internationalization, and financial sustainability – directly support the success of Queen’s balanced academy vision and mission.

For each of the strategic drivers, the Strategic Framework outlines a multi-year strategy and a set of metrics and milestones through which the university’s progress can be evaluated. A joint trustee-administration exercise has recently identified a set of metrics, additional to those embedded in the Strategic Framework, that recognize other aspects of the research and innovation agenda and associated impact.

The Senate-approved Strategic Research Plan is scheduled to be updated over the next year, providing a further reason to conduct this review now.

Queen’s is a member of the U15 group of universities. Our faculty include many with international recognition in the form of membership in bodies such as the Royal Society of London, and a Nobel Prize winner. Many faculty are Fellows of the Royal Society of Canada. The university also performs well on certain metrics, such as research intensity per faculty member. It has a medical school and three affiliated hospitals.

Innovation Park at Queen’s University fosters interaction among the participants in the local and regional research and innovation system and thus stimulates commercialization and economic development in the South Eastern Ontario region.
Queen’s is half-way through the implementation of an activity-based budget model (also known as responsibility-centred management (RCM)) that brings greater transparency to the budget process and stronger linkages to academic goals and priorities. A recent third-party report has reviewed options and made a recommendation on adjustments to incent further research and innovation success.

**Challenges**
Across the sector, universities face common challenges that include: stiffer competition for funding; reduced or more targeted funding, particularly from government; increased accountability requirements; more focus on partnerships with other institutions, and with industry or sectors; more media focus; stronger ties between institutional reputation and research profile; and a greater emphasis on interdisciplinary research.

At the same time, Queen’s faces several unique, yet equally significant challenges to its research ambitions. As one of the smallest of the U15 institutions in terms of faculty complement and student numbers, Queen’s does not generate the raw numbers in terms of external funding that larger institutions can.

Rankings are high domestically (e.g., Macleans) but well below aspirational status on key international rankings such as the ARWU (Shanghai Jiao-tong), THES, and QS. While recognizing that rankings have unique methodologies and can favour larger institutions with greater STEM-discipline faculty complements and graduate programs, we would like to do better on international rankings.

A further constraint—one that is self-imposed—is Queen’s consistent dedication to the principle that the quality of the teaching and learning experience is as important as research prominence. Commitment of resources to pedagogy and to support of students outside the classroom are a core part of the university’s outstanding reputation in the Canadian educational market, as are our consistently strong enrolment and graduation rates. While we are not willing to deviate from our mission as a ‘balanced academy’, we must always be attentive to whether the ‘balance’ between teaching and research is correct, both institutionally and in the university’s different units, some of which will inevitably be more research-intensive than others.

A reputation survey has recently been conducted that provides fresh data and insights into stakeholder views of Queen’s and reputational drivers. Initial findings suggest that, while Queen’s continues to have an excellent academic reputation, particularly for undergraduate education, its reputation for research output and graduate studies is not equivalent. In addition to flagging an imbalance between our reputation for undergraduate excellence and excellence in research and graduate studies, the recent reputation survey found that there is a broad-based perception that Queen’s is ‘standing still’ with regard to innovation and partnerships.
The shift to the activity-based budget model has disrupted the amount of resources available at the institutional and portfolio (VPR) level to support strategic investments e.g., through matching funds, space, facilities and/or equipment upgrades, strategic hiring.

**Scope of the Review**

Reviewers will be asked to visit campus for three (3) days to conduct meetings with key stakeholders, including members of the senior executive team, faculty members, administrative staff, faculty deans and associate deans (research), student leaders, graduate students, postdoctoral fellows and research associates, and compile an initial report.

In conducting their assessment, the reviewers will be asked to address four overarching areas:

5. Strategic planning and implementation, including unique areas of strength and opportunity, faculty renewal/recruitment strategies, and alignment across the institutional, portfolio (VPR), and faculty/school levels.
6. Appropriate funding levels and model, taking into account the ongoing commitment of the university to activity-based budgeting.
7. Best practices for organization and structure of research administration, and support for innovation and partnerships, that address contemporary challenges in the funding landscape.
8. Advancing Queen’s international reputation and impact through research collaborations and partnerships.

The scope of the review will include the following administrative units within the portfolio of the Vice-Principal (Research): Office of the Vice-Principal (Research); University Research Services (URS); Industry Partnerships and Innovation Park; and PARTEQ (the university’s tech-transfer unit, currently an independently incorporated enterprise).

Additionally, Research Accounting, located within the Vice-Principal (Finance and Administration) portfolio, and the Office of the Associate Vice-Principal (International), reporting to the Provost, have responsibilities for research activity and significant interaction with the Vice-Principal (Research) portfolio.

Two related items lie outside the scope of this review as they are currently under evaluation through other mechanisms. First, the Vice-Principal (Research) has formed an external panel to undertake a review of the future state and structure of PARTEQ Innovations, which is expected to be completed before the end of June 2016. Second, under the Internal Controls project initiated by the Vice-Principal (Finance and Administration), PricewaterhouseCoopers (PWC) has begun work on a review of the research process that will cover the entire life cycle of a research project from project initiation and pre-release of funds to project close-out. This results of the assessment of internal controls on research processes is expected to be available to the internal steering committee in June 2016 and then to the Audit and Risk Committee of the Board of Trustees in September 2016.
Review Team
The review team will be chaired by Dr. Indira Samarasekera, OC, FRSC, President Emerita of the University of Alberta and will, ideally, include three other members including:

a) one retired Vice-President (Research), ideally from a U15 institution;
b) one Director or former Director of a university research services office, ideally from a U15 institution; and
c) one prominent Canadian researcher from a STEM discipline or a Social Sciences or Humanities Discipline.
APPENDIX B to External Research Review Report – August 2016

Queen’s External Research Review Committee, 16-18 June 2016

List of Background Materials

Institutional level planning framework:
1. Comprehensive international plan
2. Queen’s University Strategic Framework
3. Strategic Mandate Agreement (and appendix)
4. New Budget Model Review

Portfolio level planning framework:
1. eAffect Winter 2015
2. Strategic research plan

Unit Level planning framework:

Specific to review:
1. Terms of Reference
2. Guidance Questions
3. Data and Charts to aid the Queen’s Research Review

General research information
1. Faculty research awards
2. Research Leaders Fund: Queen’s research opportunities
3. Canada Research Chair List
4. Vice Principal (Research) Organizational Chart
5. OVPR Research Activities Report
6. Queen’s Research Opportunities: International Fund
7. Queen’s National Scholar Recipients
8. Senate Policy on Integrity in Research
9. Queen’s Research Fund Opportunities Recipients
10. Queen’s Research Opportunities: Art Fund
11. Queen’s Research Opportunities Funds Brochure
12. Queen’s Research Opportunities Post Doctoral
13. 2016 – Full List of RSC Fellows
14. Queen’s Prizes for Excellence in Research Recipients
15. (e)Affect Magazine 2015

Faculty/Departmental Reports
1. Health Sciences, Dean’s report 2014-2015
2. Faculty of Law: 2014 – Research and Scholarship
3. Arts and Sciences, annual update 2015
APPENDIX C to External Research Review Report – August 2016

Queen’s University, Research Review – June 16/17/18, 2016: Schedule of Interviews

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<th>Time</th>
<th>Interview</th>
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<td>9:00</td>
<td>1 J Hugh Horton &amp; Lynda Jessup</td>
<td>Horton: Associate Dean, International (will be vice Dean July 1)</td>
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<td>Jessup: Associate Dean (Graduate Studies and Research), Faculty of Arts and Science</td>
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<td>9:30</td>
<td>2 Yolande Chan</td>
<td>AVP Research (School of Business)</td>
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<td>10:00</td>
<td>3 Cynthia Fekken</td>
<td>AVP Research (Psychology)/Deputy VP R</td>
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<td>4 Charles Sumbler</td>
<td>Executive Director, Office of the Vice-Principal (Research)</td>
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<td>11:00</td>
<td>5 John Fisher</td>
<td>AVP Research (Health Services)</td>
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<td>11:30</td>
<td>6 Brian Surgenor</td>
<td>Vice-Dean (Research and Graduate Studies) Engineering and Applied Science</td>
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<td>PM</td>
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<td>Lunch</td>
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<td>1:00</td>
<td>7 Edward Thomas</td>
<td>Industry Partnerships &amp; Innovation Park</td>
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<td>8 Kathy O’Brien</td>
<td>VP International</td>
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<td>2:00</td>
<td>9 Saba Farbodkia</td>
<td>President, Society of Graduate and Professional Students</td>
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<td>2:30</td>
<td>10 Doug Munoz/Tim Bryant/Ian Moore</td>
<td>Munoz: Centre for Neuroscience, Professor of Physiology and Psychology, Cellular/Molecular Systems, Cognitive/Behavioural/Clinical</td>
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<td>Associate Vice-Principal (Planning and Budgeting)</td>
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<td>2  Roger Deeley</td>
<td><strong>Vice-Dean (Research)</strong></td>
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<td>3  Provost Alan Harrison (CALL)</td>
<td>Provost and Vice-Principal Academic</td>
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<td>4  Don Klinger</td>
<td>Associate Dean Graduate Studies and Research (Education)</td>
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<td>5  Warren Mabee</td>
<td>Faculty/Researcher, Department of Geography and Planning</td>
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<td>6  Dr. Seth Chitayat</td>
<td>Department of Biomedical and Molecular Sciences</td>
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<td>Mary Purcell</td>
<td>Director, Grants and Institutional Programs, University Research Services</td>
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<td>Tyler Lively/Darrean Baga/Leah Brockie</td>
<td>Undergraduate student leaders</td>
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<td>3:00</td>
<td>14</td>
<td>Jennifer Mallon/Heather Woermke/Donna Janiec</td>
<td>Mallon: Associate Director, Research Accounting</td>
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<td>Woermke: Controller, Office of the VP (Finance and Administration)</td>
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<td>Janiec: AVP Finance</td>
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<td>Angus Livingstone (CALL)</td>
<td>PARTEQ Review Chair</td>
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<td>Dr. Tony Noble</td>
<td>SNOLAB (Sudbury Neutrino Observatory)</td>
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<td><strong>HEALTH BREAK</strong></td>
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<td>Dean Reznick</td>
<td>Dean, Health Sciences</td>
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<td>Dr. Gaffield and Principal</td>
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<td><strong>Pre-dinner de-brief with Principal</strong></td>
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<td><strong>Dinner with Principal</strong></td>
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*Committee split between two interview groups