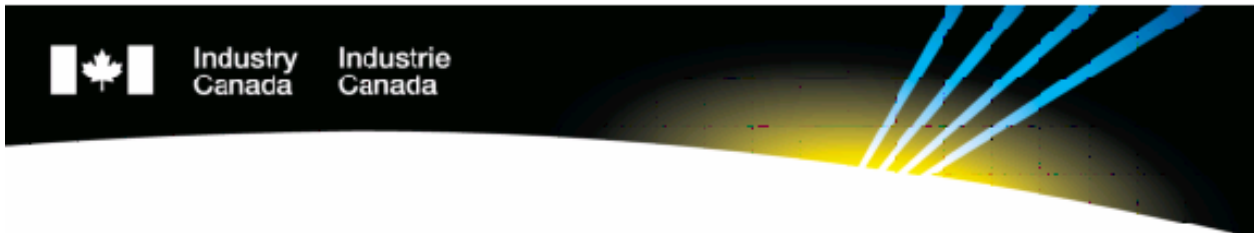




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**AUDIT OF
THE MANAGEMENT OF BUILDING SYSTEMS
COMMUNICATIONS RESEARCH CENTRE CANADA**

FINAL REPORT

April 2006

**Tabled and approved by DAEC
On September 21, 2006**

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1.0 Executive Summary

The Communications Research Centre (CRC) is an agency of Industry Canada (IC). The CRC is one of the country's leading laboratories for research and development in advanced telecommunications, broadcasting, and information technologies. It is located in Ottawa's west end, at the Shirleys Bay Research Centre Campus - a set of facilities and test ranges, including 157 permanent and temporary buildings, that covers 600 hectares of land connected by 13 kilometres of road. The President of CRC is the designated custodian of the Shirleys Bay Campus. Within the CRC, responsibility for the management and operations of real property falls to the Campus Operations Branch.

The objective of this audit was to determine whether existing management and operational processes related to real property at the CRC effectively support organizational objectives, as well as the health and safety of employees, in compliance with existing authorities. In conducting this audit the adequacy of the real property *Management Accountability Framework* (MAF) established for CRC was assessed, versus assessing risks to the agency's real property assets (e.g., by conducting inspections of buildings at Shirleys Bay facilities).

The MAF for the Treasury Board of Canada Secretariat (TBS) was used as a benchmark for this audit.

Key Findings

The management and staff of the Campus Operations Branch are highly regarded for their abilities, expertise and work ethic. Employees execute responsibilities in an atmosphere that supports core public service values and ethical behaviour. Nonetheless, employees often face difficult issues in dealing with longstanding challenges in managing CRC's real property assets at Shirleys Bay.

For example, systematic recapitalization of the asset base has not been carried out, and the operations and maintenance (O&M) budget has been increasingly consumed by unavoidable expenditures such as water and energy, and maintenance and repair of occupational health and life-safety systems. This has resulted in the need to defer other maintenance requirements. The backlog of deferred recapitalization requirements continues to grow. The Campus Operations Branch estimated that there is now an annual real property funding shortfall of between \$1.5 and \$3.8 million, and a recapitalization backlog of about \$26 million.

At the same time the CRC incurs unnecessary costs in operating and maintaining real property assets. Breakdowns (e.g., in heating and electrical systems) are occurring with increasing frequency, and the costs of heating and cooling aging buildings, that were not designed to be energy-efficient, continue to rise. Auditors concluded that expenditures for real property at the CRC are unsustainably low, and that, at present, real property requirements are not being met at the lowest cost possible.

Conclusions

CRC managers are of the view that the current situation is the direct result of prolonged funding pressures. Auditors agreed that with more funds, more could have been and could be done with respect to the upgrading of CRC assets. However, auditors concluded that the absence of an overarching management framework for real property has also contributed to current deficiencies and needs to be addressed.

Specifically, auditors noted the need for improvement with respect to several elements of the CRC's MAF for real property, including *Governance and Strategic Directions* and *Risk Management*. For example, the *Governance and Strategic Directions* section of the TBS MAF refers to the need for alignment between organizational objectives, outcomes and the way the organization is actually managed. At the CRC, the strategic allocation/reallocation of resources between science functions and the real property function is not based on performance, but rather is based on maintaining historical funding levels for science branches and programs. Real property is viewed as costly overhead rather than as an essential requirement for fulfilling the CRC's research mandate.

In 2004, during an audit of comptrollership CRC managers noted that principles and fundamentals of risk management are applied. A *CRC Preliminary Risk Profile and Action Plan* as well as the real property sections of the draft *Long Term Capital Plan* identifies risk management practices. In practice, however, with respect to managing risks related to real property CRC generally waits until problems arise before taking action.

It is the auditors opinion that an overall management framework for real property should be established in order to ensure that resources and data needed to manage real property in a more efficient, effective manner are readily available for management decision-making purposes.

2.0 Background

The Communications Research Centre (CRC) is an agency of Industry Canada (IC). The CRC is one of Canada's leading laboratories for research and development in advanced telecommunications, broadcasting, and information technologies. Key components of the mission of the CRC include achieving excellence, providing independent advice to shape public policy, engaging in partnership approaches to closing innovation gaps in the telecommunications sector, building technical intelligence, and supporting small and medium sized high-technology enterprises.

The CRC is located in Ottawa's west end, at the Shirleys Bay Research Centre Campus - a set of facilities and test ranges that covers 600 hectares of land connected by 13 kilometres of road. The CRC shares this site with National Defence (DND), the Canadian Space Agency (CSA) and the National Capital Institute of Telecommunications (NCIT). The campus houses 157 permanent and temporary buildings, ranging in age from 2 to 53 years. Buildings serve as laboratories, computer centres, offices and libraries. As well large open areas serve as antenna ranges used for research and testing purposes.

The President of the CRC is the designated custodian of the Shirleys Bay Campus. Within the CRC, responsibility for management and operations of building systems¹ (hereinafter referred to as real property) at the campus falls to the Campus Operations Branch. This Branch has a mandate to plan, manage and deliver a full range of property and facilities management services and campus operations to the CRC, as well as to other government departments and agencies accommodated at Shirleys Bay. Within the Branch, responsibility is divided between Real Estate and Property (RE&P) and Operations and Maintenance.

The RE&P group focuses on managing, maintaining, repairing and improving the infrastructure of the campus by carrying out five major activities: capital project management, environmental stewardship, occupational health and safety, facilities planning and managing the CRC Innovation Centre. These activities, with the exception of the Innovation Centre, encompass the entire campus and its stakeholders. The human resource base for the RE&P consists of 11 full-time-equivalents (FTE's).

The Operations and Maintenance group is responsible for ensuring the adequacy of physical facilities and the site in order that research and development operations can be carried out as planned by CRC as well as other campus tenants (DND, CSA and NCIT). This is accomplished by providing the following services: operation of the central heating plant, environmental protection,

¹ The *Real Property Lexicon Working Group* defines a "building system" as an arrangement of the building elements that form a connected whole specific to a particular building. A building system normally includes all items within the building envelope and service connections to the building. Examples are heating, ventilation, air-conditioning, sewage, electrical power and drinking water.

minor construction, corrective and preventive maintenance, utilities, etc., in accordance with industry standards, health and safety codes and statutes, and funding allocations. The resource base for the Operations and Maintenance group consists of 42 FTE's.

Except for the CSA, which relies on contractors for some maintenance requirements, the RE&P and Operations and Maintenance groups deliver services to both the CRC and tenants through a mix of internal resources (e.g., for project management, environmental, security, scheduled maintenance, and routine repairs in response to trouble calls), and contractors (e.g., for motor rewinding, cafeteria operations, elevator maintenance, landscape maintenance, snow removal). Memoranda of Understanding (MOU) are in place with each of the tenants on the campus. Each MOU is approved annually and outlines specific services that will be provided, along with the fees that will be charged. The cost of any activity that encompasses the entire campus (e.g., snow removal) is shared by all occupants in accordance with an agreed-upon formula to determine shares of the cost.

The CRC receives funding from a number of government and non-government sources. The resource allocation to the CRC from Industry Canada was \$37.9 million for the 2004-2005 fiscal year. Other government funding is provided by the CSA and DND to carry out research and development and to cover costs related to accommodation on the Shirleys Bay Campus. As well, revenue from the private sector is generated through the licensing of intellectual property and research and development initiatives covered under contract.

For 2004-2005, the total budget for the improvement, management, operations and maintenance of the real property at the CRC was \$8.5 million², distributed as follows.

	Salary	O&M	Total
CRC	\$3.4 million	\$2.3 million	\$5.7 million
Tenants	\$0.1 million	\$2.7 million	\$2.8 million
Total	\$3.5 million	\$5.0 million	\$8.5³ million

Post audit note: CRC has indicated that an additional \$0.429M O&M has been requested from CRC at mid-year. This amount was not verified during the audit.

As may be seen, a significant portion of the O&M budget is received from tenants. This reflects the fact that the 53 FTEs in the Campus Operations Branch are responsible for providing services to all individuals working at the campus (about 1000 staff), not just those working for the CRC. In

² Of a total planned agency expenditure (including expenses reported under other government departments) of \$52.7 million.

³ Figures provided by CRC subsequent to audit and not verified. At the time of audit, budget figure was \$10.3M

addition, of the \$5.0 million O&M total, \$3.7 million is to fund non-discretionary items such as utilities, commissionaires and preventive/corrective maintenance.

Current CRC plans call for \$57 million to be spent on long-term major capital projects for a new Canadian Forces building, a new photonics laboratory for the CRC, a National Archives building, and a radiation facility. Of these, only the photonics laboratory represents an approved capital project. Construction of this laboratory was expected to begin in the fall of 2004⁴ followed by construction of the other buildings with CRC providing project management services.

⁴ The photonics laboratory is scheduled to be commissioned in 2006.

3.0 Objectives, Scope and Approach

The objective of this audit was to determine whether existing management and operational processes related to real property at the CRC effectively support organizational objectives, as well as the health and safety of employees, in compliance with existing authorities.

In conducting this audit the adequacy of the real property *Management Accountability Framework* (MAF) established for CRC was assessed, versus assessing risks to the agency's real property assets (e.g., by conducting inspections of buildings at Shirleys Bay facilities).

Audit fieldwork was conducted from May to October, 2004.

3.1 Approach and Methodology

The audit criteria used as the assessment guide for this audit were based on the requirements of the Treasury Board of Canada Secretariat's (TBS) *Guide to the Monitoring of Real Property Management* (see *Appendix A* for details).

Specific audit activities included:

- Review of documents (policies, plans, reports, business cases, TB submissions, etc.) related to real property at CRC;
- Interviews with management and staff directly responsible for real property at CRC, members of the CRC's Management and Campus Development Committees, representatives of the Comptrollership and Administration Sector of IC, and representatives from central agencies and common service organizations;
- Audit observations within the RE&P and O&M groups;
- Comparative analysis of CRC with exemplary practices in other custodial organizations;
- Validation of the audit findings with the management of the Campus Operations Branch; and,
- Mapping of audit observations to the TBS MAF.

All audit work was conducted in accordance with audit standards documented in the TBS *Guide to the Planning, Conduct and Reporting of Internal Audit Assurance Engagements in the Federal Government of Canada*.

4.0 Conclusions

The management and staff of the Campus Operations Branch are highly regarded for their abilities, expertise and work ethic. Employees execute responsibilities in an atmosphere that supports core public service values and ethical behaviour. Nonetheless, employees often face difficult issues in dealing with longstanding challenges in managing CRC's real property assets at Shirleys Bay.

CRC managers are of the view that the current situation is the direct result of prolonged funding pressures. Auditors agree that with more funds, more could have been and could be done with respect to the upgrading of CRC assets. However, the absence of an overarching management framework for real property has also contributed to current deficiencies and needs to be addressed. Once in place such a framework would ensure that resources and data that are needed to manage real property in a more efficient, effective manner are readily available for management decision-making purposes

Specifically, auditors noted the need for improvement with respect to several elements of the CRC's MAF for real property. These elements are as follows:

- Governance and Strategic Directions;
- Stewardship;
- Risk Management;
- Accountability; and,
- Results and Performance.

5.0 Observations and Recommendations

5.1 Governance and Strategic Directions

The *Governance and Strategic Directions* section of the TBS MAF refers to the need for alignment between organizational objectives, outcomes and the way the organization is actually managed. Misalignments are found in cases where management processes and practices fail to support outcomes and the attainment of policy objectives, thereby reflecting weaknesses in governance and strategic directions. Such misalignments need to be addressed to ensure that departments and agencies are working in concert to deliver against expectations created by *Results for Canadians*.

As a means of assessing alignment, the MAF provides a number of indicators, two of which were assessed during the course of this audit:

- Strategic allocation/reallocation of resources based on performance; and,
- Horizontal collaboration.

5.1.1 Strategic Allocation/Reallocation of Resources

In order to support government policy objectives it is vital to ensure that the strategic allocation/reallocation of the CRC resources is based on performance. In the case of real property, this means that the CRC must only acquire, manage and retain real property in order to support its programs, and must do so in a manner that:

- Preserves the maximum long-term economic advantage to the Crown; and,
- Provides safe and adequate facilities.

At the CRC, the strategic allocation/reallocation of resources between science functions and the real property function is not based on performance. Rather, on an annual basis, budget allocations are established by the President's Office. In support of the primary objectives of the CRC the focus in doing so is on maintaining historical funding levels for science branches and programs, rather than treating real property as a key funding priority for funding. As a result, auditors are of the opinion, that real property at Shirleys Bay is not managed as efficiently and effectively as it could be with respect to both preserving the Crown's long-term economic interests and ensuring the safety and adequacy of facilities.

The reasons for this are highlighted below.

As was noted in the *Audit of Comptrollership at the CRC* completed in 2004, CRC does not yet have an established performance management framework in place. However data on resources and budgets is available, and CRC management committed to respecting deadlines established in the *IC Modern Comptrollership Action Plan* approved in April 2003.

Operational Plans for 2004-05 were to contain performance indicators however the 2004-05 plan for the Campus Operations Branch does not contain performance indicators for real property. As well, performance agreements for the Director of Campus Operations and the Manager of Real Estate and Property need to be updated to reflect indicators.

Auditors examined real property information systems at CRC in order to determine whether these systems identify capital, historic and current operating and maintenance costs and cost trends of facilities at Shirleys Bay. Rather than an integrated real property information system the CRC makes use of several commercial applications, including a potentially powerful and feature-rich computerized maintenance management system known as The Maintenance Authority (TMA). In addition CRC relies on several standard office automation tools and the departmental financial system. In principle, these application systems could provide CRC with information about capital, historic and current operating and maintenance costs and cost trends⁵. To date, the Campus Operations Branch has not used the tools available to maximum advantage in this regard.

Tenants at Shirleys Bay require detailed reports that serve to reconcile actual real property expenditures to forecasts on a quarterly basis. The Campus Operations Branch prepares such reports to the satisfaction of the tenants. Members of the CRC Management Committee along with Campus Operations Branch personnel informed auditors similar reports are not provided for the CRC because there has been little interest in such reports. The prevailing view is that limited resources are better deployed to operate and maintain campus facilities.

However, without reporting on facility costs and cost trends, CRC is not able to effectively manage and balance short and long term performance of real property assets. The effects of decisions to defer maintenance and/or recapitalization of assets, are not reported on in a formal manner. Such effects are becoming apparent today in that many CRC assets at Shirleys Bay are considered to be sub-standard, with about one third of the buildings rated as being in poor condition. The services infrastructure has also degraded over time, resulting in some failures to this infrastructure as well as building systems and components. As these occur, costly and disruptive emergency repairs are required.

The need to undertake emergency repairs means that the Campus Operations Branch has limited resources to undertake preventive maintenance activities, thereby increasing the rate at which the systems and components degrade. A self-reinforcing cycle has been established whereby resources available are sufficient only to address pressing health and safety concerns. Meanwhile, systems and components that are not critical safety issues, or that are not in imminent danger of failing, do not receive the life-cycle maintenance that would serve to protect the CRC's capital investment,

⁵ Manual interventions would be required to consolidate data from TMA with data concerning energy consumption, Payments in Lieu of Taxes, and minor capital refurbishment/improvement projects.

and ensure adequacy of facilities. This increases risks of system or component failures as well as code violations. When a failure or violation occurs, costs to be borne would include those related to emergency repairs, as well as costs related to the interruption of research projects (e.g., potential loss of data, experiments, and difficult-to-replace scientific equipment). Delivery of the CRC's core science programs could be jeopardized.

Auditors are of the opinion that the CRC would benefit from establishing a management reporting regime for real property. CRC Management Committee members would then receive regular reports on total costs and costs trends, and of real property expenditures made by each CRC science program and branch. With this information, the Committee would have a more comprehensive understanding of the total cost to the CRC of undertaking different research programs. In turn, it would have more complete performance information on which to base strategic resource allocation/reallocation decisions.

Recommendation 1

- *It is recommended that the President, CRC ensure that a management reporting regime for real property is established, and that it provides members of the CRC Management Committee with regular reports on total costs and cost trends of facilities, and of real property expenditures made by each CRC science program and branch.*

5.1.2 Horizontal Collaboration

Effective horizontal collaboration ensures that opportunities to create synergy are seized, and that duplication of activities is reduced or eliminated in order to enhance organizational efficiency. The real property function at CRC exists to provide a platform from which the agency's science programs are delivered. Auditors hoped to find the agency's science branches working closely with the Campus Operations Branch to establish real property requirements and implications of decisions about real property on program plans and decisions. However auditors discovered that each branch prepares an annual operations plan based on budget allocations issued by the President's Office, and that these plans do not account for real property requirements or implications of program plans and decisions.

Auditors were informed about situations where Campus Operations Branch staff was informed about new scientific equipment arriving on campus only when the Branch received requests to make structural modifications (e.g., Interior walls moved and electrical circuits upgraded before equipment could be used).

Auditors are of the view that improved planning and budgeting processes within the CRC (that highlight the impacts of science program plans on real property requirements) would provide better assurance that the CRC has the real property platform required to support research activities. This

would be analogous to the requirement for federal departments to include budgetary allocations for PWGSC when requesting additional funding for new program initiatives.

As an integral part of ongoing management practices CRC should ensure that consideration is given to the impacts on real property of science program and project operational decisions. For example, decisions to procure or redeploy scientific equipment, or to hire/redeploy new/existing staff, should include consideration of whether there will be any impacts to real property.

Recommendation 2

- *It is recommended that the President, CRC revise strategic and operational planning and budgeting processes to better ensure that real property requirements, as well as implications of science program plans on real property, are reflected in real property plans and budgets.*

5.2 Stewardship

TBS expectations for stewardship include a control regime that is integrated and effective, with underlying principles that are clear to all staff. Indicators that the CRC is exercising appropriate stewardship with respect to its real property would include:

- Management systems are in place that provide relevant information and early warnings; and
- Functional specialists are treated as partners of program managers.

Auditors found that the CRC is not exercising appropriate stewardship with respect to the real property function.

5.2.1 Management Systems

As noted above, the CRC does not systematically report real property costs and cost trends. Nonetheless, other types of information have been available to alert CRC to the fact that real property assets are becoming increasingly compromised. Several studies and reports, dating back to 1992, have noted significant concerns about the degradation of campus facilities and infrastructure. Over time such messages have become increasingly urgent.

In response, the Campus Operations Branch launched several efforts to secure funding necessary to make capital improvements required. With one exception (health and safety issues associated with asbestos insulation in one building) efforts have not been successful. Thus, the Campus Operations Branch began to reduce O&M expenditures, in the expectation that savings realized could be reinvested in real property. One particularly noteworthy initiative was an energy conservation project under the Federal Buildings Initiative (FBI).

Under the FBI, the CRC was given the option of overcoming the lack of capital funding by transferring the up-front expense and risk of a \$3.5 million project to improve energy efficiency to

a pre-qualified energy management firm. Following a comprehensive energy efficiency retrofit, the CRC reduced energy bills by more than \$500,000 a year. Savings were used to fund the energy performance contract. After final contract payout, all future savings were to be retained by the CRC.

This project was so successful that the CRC became a promotional case study for the FBI. Savings realized were significantly in excess of expectations. By combining savings with lapsing funds and by taking advantage of a provision in the contract, the CRC was able to retire its obligation to the energy management firm earlier than expected. However, in the end, instead of investing savings in recapitalization of other real property assets (which would have meant lower long term operating costs for buildings and infrastructure) funds were used to support CRC research programs.

In fact this situation has occurred frequently at the CRC. In the opinion of the auditors, much of the problem stems from a view that has become ingrained at the CRC. Real property is viewed as costly overhead that reduces funding available for research, rather than as a core platform for fulfilling the CRC research mandate.

Currently the CRC transfers about \$1.48 million a year from the O&M allocation to cover a shortfall in the salary allocation. This shortfall stems from a recruiting drive mounted in response to concerns that scientists would leave the CRC to join local industry during the recent dot-com boom. As the boom turned to bust, expected departures did not materialize, leaving the CRC with more scientific staff than the salary allocation could support. Rather than take action to bring staff levels and salary allocation into balance, the CRC began to transfer funds from the O&M allocation. This practice is forecast to continue through 2007. Meanwhile, the draft Long Term Capital Plan estimates an annual real property funding shortfall of between \$1.5 and \$3.0 million.

In sum, auditors noted several instances where CRC has shifted funding from O&M to direct research. This would suggest that, in order to ensure that the Shirley's Bay campus is properly maintained, the best move may be to move responsibility for the real property function elsewhere in the department.

Recommendation 3

- *It is recommended that the President, CRC, along with the Assistant Deputy Minister (ADM) Comptrollership and Administration, jointly develop recommendations for presentation to the Departmental Executive Committee on options for the organizational placement of the real property function at CRC in order to better ensure that funding targeted for real property is used for that purpose.*

5.2.2 Functional Specialists

The policy environment in government is complex, with many areas requiring the skills of functional specialists (including real property specialists). Exercising sound stewardship means that program managers must work closely with functional specialists to ensure that decision-making respects relevant policy requirements and regulations.

However, until 2002, the Campus Operations Branch did not have a real property management specialist. Prior to 1998, staffing of the Branch was oriented to operations and no one position was identified as having overall responsibility for long-term management of real property. Starting in 1998, attempts were made to convince the CRC that a focus on real property management was required. A position, Manager, RE&P, was created in 2001 and was staffed in 2002.

Thus, at present, with a Manager, RE&P in place there is a focal point for long-term management of real property assets, as well as for environmental health and safety⁶. Nonetheless, planning and budgeting processes have not fostered the development of collaborative partnership relationships between research program managers and real property management specialists. As well, the lack of reporting about real property makes it difficult for research program managers to understand constraints faced by the Campus Operations Branch (i.e., that over 70% of its budget is for non-discretionary expenditures), or impacts of decisions to cut the real property budget.

If the CRC revises strategic and operational planning and budgeting processes to reflect real property requirements, or the implications of science program plans in the plans and budgets of the Campus Operations Branch, (*see previous Audit Recommendation*), auditors are of the view that real property functional specialists would then be more likely to be treated as partners of program managers.

⁶ The associated position remained unfilled throughout the conduct phase of the audit.

5.3 Risk Management

In the complex environment of modern government formal risk management practices are needed to ensure that all risks are considered and that managers are able to effectively balance competing priorities.

Formal risk management is a relatively new practice at the CRC. A draft *Preliminary Risk Profile and Action Plan* was completed early in 2004. This document notes that scarce resources are inhibiting the ability of CRC to mitigate risks associated with an aging infrastructure to an acceptable level. Further the Action Plan notes that limited financial resources put a strain on proper maintenance, resulting in requirements for careful allocation of resources among projects, capital and administrative expenditures.

The main mitigation measures identified in the Action Plan include exercising diligence on the part of Campus Operations Branch staff, and allocating funds to campus re-capitalization. At the time of the audit, a budgetary allocation of \$350,000 had been established for urgent health and safety related projects. This allocation is earmarked for an upgrade to the medium voltage power distribution infrastructure, which, because the total cost is estimated at \$785,450, is taking place over a period of three years.

As noted, since 1992 degradation of campus facilities and infrastructure has been well documented. Several efforts have been made since the late 1990s to secure funding to recapitalize facilities and infrastructure. Campus Operations Branch directed efforts to the CRC, the CRC has requested additional funds from IC, and, in 2003, the Campus Operations Branch contacted TBS directly about this matter.

At the same time as these efforts were underway the CRC successfully pursued funding to establish a photonics laboratory. As a condition of granting CRC spending authority for this new laboratory, TBS required that IC prepare a Long Term Capital Plan⁷ (LTCP) as the custodial department.

Managers in CRC justified the need for this laboratory as follows:

- It was linked to well-established CRC research program in photonics and to the expansion of that program in response to market and technological change (broad band internet and fibre optics); and
- There was lack of space on campus to accommodate expansion of the program.

⁷ The LTCP was approved in FY 2005-2006

New construction was compared to several options (e.g., redeployment of existing space, leasing existing space, purchasing existing space, etc.) that were either not considered feasible or involved higher costs.

Documents supporting the request for funding do note that the laboratory would increase the real property annual O&M costs by about \$275,000, which would be funded from existing allocations. It was anticipated that this would put further strain on the ability of the Campus Operations Branch to maintain sub-standard facilities and infrastructure. If strains are not relieved, the risks of a program- delivery-interrupting failure will continue to increase.

Strains and risks could be relieved if the recently completed draft IC Long-Term Capital Plan, provides funding for recapitalization. Thus far, however the draft plan raises several questions about risk reduction:

- Part I of the LTCP states that there are six fully-funded or partially-funded real property projects valued at \$250,000 or more. Part III identifies twelve such projects, but notes that only one of has funding and is likely to go ahead.
- Criteria used to classify a project as “funded” in Part I are based on the assumption that the expected tenant contributions for shared cost projects at Shirleys Bay (e.g., road and parking upgrading), which total about \$4.73 million, are firm. In fact, such assurance from tenants has not been given.
- With the exception of the new photonics laboratory, most of the projects identified in the plan will require upgrades to campus infrastructure; thus, the capital program is not expected to have significant operational funding implications. However, since most of the program is aimed at infrastructure, continued deterioration of facilities and systems can be expected, as can a continual increase in operating costs.

Nevertheless, the plan states that significant measures are being taken to understand and manage risks to the real property in an appropriate manner, and that logical and cost-effective solutions will be proposed.

In a Management Response to the 2004 Audit of Comptrollership, CRC management stated that “CRC has always applied the principles and fundamentals of risk management”. In the case of real property assets however, the strategy for managing risks has been to wait until they become problems before addressing them. Despite a Preliminary Risk Profile and Action Plan, and a draft IC Long Term Capital Plan, it appears that this strategy has not changed.

Recommendation 4

It is recommended that, as necessary, the CRC review its real property capital planning requirements for inclusion in IC's Long Term Capital Plan as a means to mitigate risks to the department's real property assets at Shirleys Bay. In particular, the review should reassess:

- a. The reasonableness of assumptions underlying the classification of real property capital projects as "funded";*
- b. The implications of the real property capital program for operational funding requirements at CRC;*
- c. Whether there is a need for developing more explicit, proactive risk management strategies and plans with respect to real property assets at Shirleys Bay.*

5.4 Accountability

According to the TBS MAF, accountability for results should be clearly assigned and should be consistent with resources and delegations should be appropriate to capabilities.

Formal delegations of accountability for managing, operating and maintaining real property assets have not been updated in the light of organizational changes within the Campus Operations Branch, and the increasing orientation of the branch towards real property management and environmental health and safety. Performance agreements for both the Director of the Campus Operations Branch and the Manager, RE&P require updating as they do not yet reflect the full scope of responsibilities for these positions. The recently established budgetary allocation to address urgent health and safety issues is controlled by the Director, Finance and Technology Transfer.

Unless executives and managers in the Campus Operations Branch receive appropriate delegations of authority, it is likely that there will continue to be delays in service delivery. Without up-to-date performance agreements that reflect delegated responsibilities and authorities, executives and managers will be unable to formally ascertain the extent to which they achieve objectives. Putting these agreements in place would also facilitate CRC efforts to establish a formal performance measurement framework as part of an effective Results-based management and reporting regime.

Recommendations 5 and 6

- It is recommended that the President, CRC ensure that the performance agreements for all managers in the Campus Operations Branch are up-to-date, and that they reflect current responsibilities.*
- It is recommended that the President, CRC review whether it remains appropriate for control of budgetary allocation to address urgent health and safety issues to rest with the Director, Finance and Technology Transfer.*

5.5 Results and Performance

In a well functioning MAF, relevant information on results should be gathered and used to make decisions. Reporting should be balanced, transparent and easy to understand. As applied to real property, this means that the CRC should:

- On a regular basis, review, evaluate and report on real property in terms of the following: efficiency and effectiveness, adherence to real property policy, environmental risks, revenue-generating ability, appropriateness to program needs, accessibility, heritage designation and other relevant factors; and
- Ensure that real property meets present and anticipated needs at lowest cost.

5.5.1 Regular Review, Evaluation and Reporting

Regular review, evaluation and reporting on real property is not only necessary in order to satisfy requirements of the Treasury Board (TB) *Real Property Management Framework Policy*, it is also an exemplary practice of custodial departments. *Real Property Services Agreements* that PWGSC sets up with custodial departments include provisions for annual building inspections and the production of building condition reports that form the basis for asset management strategies and plans designed to preserve and protect the Crown's long term interest in real property.

Over the past few years the CRC has completed formal inspections of some of buildings and of the electrical services infrastructure, and is conducting an environmental/health and safety audit in parallel with this audit. The CRC has not yet set up programs, systems or processes for regularly reviewing, evaluating or reporting on real property. At present the Campus Operations Branch does not have the range of qualified resources needed to carry out inspections, and therefore contracts this type of work to engineering firms.

Funding constraints stemming from the low priority accorded to real property management, combined with the advanced age and deteriorated condition of buildings on the Shirleys Bay campus, means that available funding must be earmarked for addressing obvious health and safety issues and providing for the operation of the campus (e.g., heat, cooling and power; preventive and corrective maintenance).

Consequently, inspections and reviews are undertaken on an ad hoc basis. In 2002 three reviews were undertaken however there have been none completed since that time. In 2002 it was estimated that the required work on the three buildings inspected totalled \$2,245,100 (this did not include additional work that might be required once recommended more detailed and intrusive additional inspections were done), and that the estimated near-term (2002-2006) costs would be \$1,558,800 (again not including additional work that might be required stemming from more detailed and intrusive inspections).

The Campus Operations Branch maintains a rolling list of real property projects for Shirleys Bay. Projects are added to this list as problems are found during routine maintenance activities or in the event of a breakdown. Formal inspections would provide assurance that the list is complete and that buildings and infrastructure are in compliance with Code requirements, and that they do not present unacceptable risks to the health and safety of the CRC's employees or to the environment.

Finally, thorough inspections would provide assurance that the estimates provided by the CRC in the LTCP will be sufficient to address capital and operating funding shortfalls. Management of the Campus Operations Branch recognizes that the plan rests on an uncertain foundation in terms of specific improvements, upgrades or repairs required for all real property assets. Thus managers developed estimates believed to be appropriate given the age of the campus and the CRC culture. Auditors are of the view that these estimates should be viewed with caution. There is a risk that the figures in the LTCP understate the magnitude of funding required to restore the Shirleys Bay Campus.

Recommendation 7

- *It is recommended that the Director, Campus Operations Branch establish a program for conducting regular review, evaluation and reporting on real property as per the requirements of TB policies for Real Property.*

5.5.2 Ability to Meet Present and Anticipated Needs

Significant costs are involved in operating and maintaining real property assets at CRC. In the auditors' opinion expenditures are unsustainably low as spending levels have not been high enough to maintain the integrity of real property. As a result, needs are not met at the lowest cost possible.

At Shirleys Bay many of the buildings and the majority of the infrastructure are old and degraded. Approximately 32% of the buildings are rated as being in poor condition, and about 60% of the mechanical systems and 55% of the electrical systems are nearing the end of their life expectancy. Such buildings are not only lacking in terms of energy efficiency, but also (as noted in Section 5.1.1 above) it has increasingly become necessary to conduct costly and disruptive emergency repairs. In addition, original designs and associated technologies in many buildings reflect out-dated permanent, closed-office concepts rather than more flexible, modern office environments. Projects aimed at reconfiguration of existing space can become time consuming, and costly.

Lack of flexibility to reconfigure space and systems⁸ in a cost-effective manner hampers the ability to re-focus or expand programs without undertaking major capital projects (e.g., construction of the new photonics laboratory).

Research facilities should be continually upgraded in order to keep abreast of new technologies and the needs of researchers. As well, more stringent standards with respect to the environment and health and safety, as well as regulatory requirements (such as those associated with accessibility and security) increase facility costs. For over a decade, systematic recapitalization of the asset base has not been done, and the O&M budget has been increasingly consumed by unavoidable expenditures such as water and energy, and the maintenance and repair of occupational health and life-safety systems. Other maintenance needs has been deferred, and the backlog of deferred recapitalization requirements is growing each year. The current estimate for this backlog is \$26 million. As noted in Section 5.5.1 this estimate may not accurately reflect the magnitude of investments needed to ensure that CRC has the facilities required to support current and planned scientific research programs.

Recommendation 8

It is recommended that the President, CRC conduct a review of current and anticipated future costs for each science program. Such a review should encompass the total cost of delivery, including costs of upgrading and maintaining real property platforms from which these programs are delivered. Mandatory program responsibilities should be outlined, a determination should be made as to how many of these programs are sustainable in the long term, and action should be taken to balance program configuration with long term financial capabilities.

⁸ Heating, ventilation and air conditioning (HVAC), electrical and plumbing, etc.

Appendix A

Audit Criteria

A. *Management Framework and Accountability*

- The CRC's real property management framework provides the resources and data to ensure that the real property held for program delivery is managed efficiently and effectively
- The CRC can provide information on its real property management framework, including organization, financial authority and information systems, needed to assess its performance in real property management
- The CRC has developed appropriate real property management policies, practices, procedures and information systems and managers are aware of them
- Delegation of authority and accountability, at levels appropriate to efficient service delivery, has been clearly defined.
- Reasonable controls are in place to prevent fraud and abuse.
- CRC's real property management framework facilitates action supporting government policies and does not inhibit action with complex processes
- Copies of relevant Treasury Board and other policies are readily available to staff involved in real property management.
- Staff is qualified and receive training that develops and maintains the skills they need to execute their current and future responsibilities effectively.
- Copies of CRC's real property plans, policies and decisions have been distributed appropriately and instructions have been followed
-

B. *Real Property Information Systems*

- A real property information system is in place that readily provides information concerning restrictions on use, accessibility, contamination, cost, and other attributes of each property that the CRC administers

- The real property information system identifies, where appropriate, the capital, historic and current operating and maintenance costs and cost trends of facilities
- The CRC uses its real property information system to determine when and how to maintain, preserve or replace real property consistent with program needs
- Automated processes and tools are being used effectively, where appropriate, in accordance with government plans for electronic data dissemination and decreased use of paper
- The information system is cost effective, and program needs determine how much information is gathered and how frequently it is updated
- The use of shared information systems and software within the CRC and within government has been examined and such systems and software are used wherever appropriate
- The CRC provides current and accurate information in a timely manner to other departments and to the Directory of Federal Real Property, as required
- The CRC participates in the Area Screening Canada Program
- The CRC provides information to central agencies in a manner that is readily usable
- The annual Information Management Plans of the CRC reflect the needs of the real property function

C. *Long-Term Planning*

- Long-term capital strategies related to real property are prepared, reviewed and updated in accordance with Treasury Board real property management policy objectives

D. *Project Planning*

- Project activity and proposals fall within approved capital plans and lease plans and established investment criteria, and the Long Term Capital Plan reflects project funding schedules

E. Periodic Review of Real Property Holdings

- The CRC regularly reviews and evaluates its real property in terms of the real property's efficiency and effectiveness, adherence to real property policy, environmental risks, revenue-generating ability, appropriateness to program needs, accessibility, heritage designation and other relevant factors
- Each real property asset is linked to program needs
- Properties no longer required for program purposes are identified as soon as possible to minimize carrying costs before disposal
- The length of time between the date of identification of excess property and the initiation of the disposal process is reasonable
- The length of time between the initiation of the disposal process and the date of sale or transfer is reasonable
- The CRC uses each property in accordance with the principle of highest and best use, keeping in mind the program requirements for the property and the option of using other property to deliver the program
- Property meets the present and anticipated needs of the program at the lowest cost
- Property is adaptable to the anticipated needs of the program
- The CRC regularly assesses the physical state of its real property inventory
- Definitions and analysis of real property requirements are linked to the analysis of program needs.
- The amount of unused and underutilised space as a percentage of total space is minimal
- The costs of maintaining and operating the facility are reasonable when compared to alternatives.
- The CRC has assessed alternatives, including consolidating facilities within the CRC or with other departments' facilities
- Vacant or underutilised real property is leased, sold or surrendered.
- The CRC, when deciding whether to retain underutilised property, has calculated and reviewed the property's opportunity cost (operating and maintenance costs, grants-in-lieu, etc.).

Appendix B

April 18, 2006

ACTION PLAN COMMUNICATIONS RESEARCH CENTRE MANAGEMENT OF BUILDING SYSTEMS

RECOMMENDATION	MANAGEMENT RESPONSE AND PROPOSED ACTION	RESPONSIBLE OFFICIAL	ACTION COMPLETION DATE
<p>5.1.1 Strategic Allocation/Reallocation of Resources Recommendation 1. It is recommended that the President, CRC ensure that a real property management reporting regime is established that provides members of the CRC Management Committee regular reports on the total costs and cost trends of its facilities, and of the real property expenditures made by each CRC science program or branch.</p>	<p>CRC will implement a methodology of internal cost allocation by Branch. The audit indicated it will not be an exact allocation but one that would be consistent within the CRC from branch to branch.</p>	DFMM	April 1, 2007
	<p>CRC will also develop a process to capture the additional costs of research program changes or any new research program, recruitment initiatives and new infrastructure. These costs, including facility and operational costs will form a required part of any proposal and will be considered in the prioritization of research program initiatives. This methodology will be put in place beginning in fiscal year 2007/08 and will be modified as required in order to maintain effective resource allocation.</p>	DFMM	April 1, 2007
	<p>Also, Director of Campus Operations will present regular reports of cost impacts to the management team.</p>	DCO	November 14, 2006

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April 18, 2006

ACTION PLAN COMMUNICATIONS RESEARCH CENTRE MANAGEMENT OF BUILDING SYSTEMS

RECOMMENDATION	MANAGEMENT RESPONSE AND PROPOSED ACTION	RESPONSIBLE OFFICIAL	ACTION COMPLETION DATE
<p>5.1.2 Horizontal Collaboration Recommendation 2. It is recommended that the President, CRC revise the CRC's strategic and operational planning and budgeting processes to better ensure that the real property requirements or implications of science program plans are known to and reflected in the plans and budgets of its real property function.</p>	<p>CRC agrees to improve current processes. CRC will establish early consultation mechanisms to ensure that the implications for incremental operations and maintenance expenditures of planned equipment acquisitions and human resource plans are discussed between the research branches and campus operations.</p>	<p>DCO Research VP's</p>	<p>Completed</p>
	<p>Any major acquisitions with implications on real property will be reported and discussed at the Communications Research Centre Management Committee (CRCMC), which meets every two weeks.</p>	<p>Research VP's</p>	<p>Completed</p>
	<p>Vice Presidents will advise the Director of Campus Operations of the infrastructure implications of changes to their scientific program and equipment.</p>	<p>Research VP's Corp Svc Dir's</p>	<p>Completed</p>
	<p>CRC will investigate the possibility of creating an infrastructure reserve fund to pay for unanticipated infrastructure modifications or repairs that cannot be accommodated by previously budgeted funds.</p>	<p>DCO DFMM</p>	<p>January 2, 2007</p>

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April 18, 2006

ACTION PLAN COMMUNICATIONS RESEARCH CENTRE MANAGEMENT OF BUILDING SYSTEMS

RECOMMENDATION	MANAGEMENT RESPONSE AND PROPOSED ACTION	RESPONSIBLE OFFICIAL	ACTION COMPLETION DATE
<p>5.2.1 Management Systems Recommendation 3. It is recommended that the President, CRC and Assistant Deputy Minister (ADM) Comptrollership and Administration jointly develop recommendations for presentation to the Departmental Executive Committee on options for the organizational placement of the CRC real property function that will provide better assurance that funding targeted for real property is not redirected to meet program funding shortfalls.</p>	<p>CRC's real property function includes operation and maintenance and project management not only for CRC but also for other Campus tenants (DRDC, DND and CSA). Any change in organizational placement will need to consider the impact on all tenants and not just on CRC. The objective under this recommendation is to ensure that the funding targeted for real property is not redirected to other programs.</p> <p>Part of this issue is already addressed through IC having a separate budget for capital and using a priority process for its allocation. Further, any change from the planned expenditure of capital budget requires CFO approval.</p> <p>While operational plans include total cost for the activities, implications of any funding shortfall for real property on research programs is not explicitly discussed. Such a discussion will ensure that due priority is given to real property issues. This action should adequately address the key concern raised in the recommendation.</p>	DCO	Completed

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**ACTION PLAN
COMMUNICATIONS RESEARCH CENTRE
MANAGEMENT OF BUILDING SYSTEMS**

RECOMMENDATION	MANAGEMENT RESPONSE AND PROPOSED ACTION	RESPONSIBLE OFFICIAL	ACTION COMPLETION DATE
<p>5.3 Risk Management Recommendation 4. It is recommended that, as necessary, the CRC review its real property capital planning requirements for inclusion in IC's Long Term Capital Plan as a means to mitigate risks to the department's real property assets at Shirleys Bay. In particular, the review should reassess:</p> <ul style="list-style-type: none"> • The reasonableness of assumptions underlying the classification of real property capital projects as "funded"; • The implications of the real property capital program for operational funding requirements at CRC; • Whether there is a need for developing more explicit, proactive risk management strategies and plans with respect to real property assets at Shirleys Bay. 	<p>CRC agrees with the recommendation and will develop an appropriate response consistent with IC priorities and TB policy.</p> <p>CRC review its real property capital planning requirements for inclusion in IC's Long Term Capital Plan.</p> <p>Assumptions underlying the classification of real property capital projects as funded.</p> <p>The implications of the real property capital program for the CRC's operational funding requirements.</p> <p>Whether there is a need for more explicit, proactive risk management strategies and plans with respect to the real property assets at Shirleys Bay.</p>	<p></p> <p>DCO</p> <p>DCO</p> <p>DCO</p> <p>DCO</p>	<p></p> <p>Completed</p> <p>Completed</p> <p>Annually in September</p> <p>April 1, 2007</p>

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**ACTION PLAN
COMMUNICATIONS RESEARCH CENTRE
MANAGEMENT OF BUILDING SYSTEMS**

RECOMMENDATION	MANAGEMENT RESPONSE AND PROPOSED ACTION	RESPONSIBLE OFFICIAL	ACTION COMPLETION DATE
<p>5.4 Accountability</p> <p>Recommendation 5. It is recommended that the President, CRC ensure that the performance agreements for all managers in the Campus Operations Branch are up-to-date, and that they always reflect current responsibilities.</p> <p>Recommendation 6. It is recommended that the President, CRC review whether it remains appropriate for control of the budgetary allocation to address urgent health and safety issues to remain with the Director, Finance and Technology Transfer.</p>	<p>Performance agreements for DCO, RE&P and O&M for 04/05 are now complete and based on the branch operational plan.</p> <p>The job descriptions for RE&P and O&M have been re-written to reflect current the organization and duties.</p> <p>Control of the budgetary allocation for Health and Safety issues has been transferred to the Director, Campus Operations Branch.</p>	<p>DCO</p> <p>DCO</p> <p>PCRC</p>	<p>Completed</p> <p>Completed</p> <p>Completed</p>

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April 18, 2006

**ACTION PLAN
COMMUNICATIONS RESEARCH CENTRE
MANAGEMENT OF BUILDING SYSTEMS**

RECOMMENDATION	MANAGEMENT RESPONSE AND PROPOSED ACTION	RESPONSIBLE OFFICIAL	ACTION COMPLETION DATE
<p>5.5.1 Regular Review, Evaluation and Reporting</p> <p>Recommendation 7. It is recommended that the Director, Campus Operations Branch establish a program for regularly reviewing, evaluating and reporting on its real property as per the requirements of the TB Real Property policies.</p>	<p>CRC agrees in principle with this recommendation, however, implementation would depend upon incremental funding.</p> <p>Treasury Board Real Property Policies are based on the life cycle management concept. Life cycle management requires knowledge of current building conditions, and planned maintenance and repair. CRC would have to develop systems and assign personnel to create and update the required information. Compliance with this recommendation would require salary resources, as well as incremental, ongoing annual expenditures for consulting services to provide Building Condition Reports, as well as the software and hardware required for a system to report on annual maintenance and operating costs.</p> <p>A program for regularly reviewing, evaluating and reporting on its real property as per the requirements of the TB Real Property policies will be carried out consistent with budgetary allocations.</p>	<p>DCO</p>	<p>April 1, 2007</p>

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**ACTION PLAN
COMMUNICATIONS RESEARCH CENTRE
MANAGEMENT OF BUILDING SYSTEMS**

RECOMMENDATION	MANAGEMENT RESPONSE AND PROPOSED ACTION	RESPONSIBLE OFFICIAL	ACTION COMPLETION DATE
<p>5.5.2 Ability to meet Present and Anticipated needs</p> <p>Recommendation 8. It is recommended that the President, CRC conduct a review of the current and anticipated future cost of each of its science programs. This review should encompass the total cost of delivery, including the costs of upgrading and maintaining the real property platforms from which these programs are delivered. It should then determine, taking into account its mandatory program responsibilities, how many of these programs are sustainable in the long term, and take action to balance its program configuration with its long term financial capabilities.</p>	<p>The methodology detailed under Recommendation 1 will provide the data for determining the current and future costs of the science programs. The main issue here is the continual reduction in CRC's funding levels over the last four years while the client's requirements during the same period have not reduced and at the same time, the physical infrastructure has aged significantly. CRC has identified this funding issue to IC's senior management and a number of initiatives involving tenant participation are underway to seek additional funding. Should such funding not become available, R&D activities will have to be reduced. As noted under recommendation #1, a process will be instituted which will connect R&D programs with their associated real property costs to provide a more accurate program delivery/activity cost.</p> <p>Discussions with tenant organizations will be held with the objective of asking them to contribute to the cost of the stewardship component of managing the Shirleys Bay Campus. The new Assets and Acquired Services Policy suite, which came into effect November 1, 2006, should assist in this regard.</p>	<p>PCRC Research VP's</p>	<p>April 1, 2007</p>