

Fall 2012



Report of the Auditor General of Canada to the House of Commons

CHAPTER 5

Real Property—National Defence



Office of the Auditor General of Canada

OAG

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Ce document est également publié en français.

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Cat. No. FA1-2012/2-5E-PDF

ISBN 978-1-100-21245-6

ISSN 0821-8110

CHAPTER 5

Real Property—National Defence

Performance audit reports

This report presents the results of a performance audit conducted by the Office of the Auditor General of Canada under the authority of the *Auditor General Act*.

A performance audit is an independent, objective, and systematic assessment of how well government is managing its activities, responsibilities, and resources. Audit topics are selected based on their significance. While the Office may comment on policy implementation in a performance audit, it does not comment on the merits of a policy.

Performance audits are planned, performed, and reported in accordance with professional auditing standards and Office policies. They are conducted by qualified auditors who

- establish audit objectives and criteria for the assessment of performance;
- gather the evidence necessary to assess performance against the criteria;
- report both positive and negative findings;
- conclude against the established audit objectives; and
- make recommendations for improvement when there are significant differences between criteria and assessed performance.

Performance audits contribute to a public service that is ethical and effective and a government that is accountable to Parliament and Canadians.

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Real Property—National Defence

Main Points

What we examined

The Department of National Defence's real property includes lands, some 20,000 buildings, and over 13,000 works in installations and bases across Canada. Buildings can include armouries and barracks, storage and maintenance facilities, and hangars. Works are divided between service works such as roads, sewers, and fuel tanks, and operational works such as airfields, docks, and firing ranges. This infrastructure provides critical support to operations. It is used to sustain military personnel, provide training facilities, store and protect essential material, and deploy forces.

We examined whether National Defence has exercised sound stewardship in managing its real property. Audit work focused on the systems and practices used to deliver infrastructure at 21 main bases at which forces are organized, trained, and equipped and from which they are rapidly deployed. Residential housing was excluded from the scope of the audit.

Audit work for this chapter was completed on 17 July 2012. More details on the conduct of the audit are provided in **About the Audit** at the end of the chapter.

Why it's important

Real property infrastructure is essential to the Canadian Forces' ability to undertake core missions in Canada and abroad. It is one of four pillars of the Government's 2008 *Canada First* Defence Strategy to build an effective military. The strategy commits to spending \$40 billion over 20 years, or 8 percent of all defence spending, on maintaining and renewing the Department's real property.

National Defence reported in 2010 a steady decline of the condition of its real property infrastructure since the 1990s. According to the Department, 43 percent of its non-residential buildings and 61 percent of works were over 50 years old. Older infrastructure is typically less suited to serve current needs and, when not maintained in good condition, it carries increased risks of operational failure or risks to health and safety. Given the size, complexity, and extent of National Defence's portfolio and its critical impact on the Canadian Forces' operational capabilities, it is important that it be managed accordingly.

What we found

- National Defence has not yet put in place a real property management framework or national strategy for managing real property. Both have been drafted but neither has been approved and issued. The draft strategy lays out a roadmap to achieve stewardship, including a new portfolio management approach, stewardship reporting, integrated real property management, a new performance management and reporting framework, updated information systems, and risk-based investment planning. The framework requires master real property development plans at the bases and a national master real property development plan. Some of these elements are in place but until the strategy, framework, and a national master real property development plan are complete, the Department cannot know if it has the required real property assets at the right place, at the right time, to meet the operational requirements of the Canadian Forces.
- There are gaps in National Defence's management practices for acquiring, maintaining, and repairing capital assets. Headquarters have not provided bases with performance objectives and targets for important performance indicators such as indices of condition or suitability of real property. The overall performance management framework for real property is incomplete and headquarters do not have the information they need to assess the condition of real property assets. The Department's approval process for construction projects is cumbersome and lengthy. Planning and delivery of important projects takes about six years. Preventive maintenance practices are insufficient. The focus is often on maintenance after breakdown, resulting in a premature failure of real property assets. Many locations were found to not be compliant with the National Fire Code of Canada. For example, required inspections of fire alarms were often not being conducted. There were instances of non-compliance with other health and safety requirements. This means that the health and safety of workers in the affected facilities could be at risk.
- National Defence has been unable to meet its expenditure targets for maintenance and repair and recapitalization. Bases often do not receive funds for maintenance and repair and recapitalization early enough in the fiscal year to match plans and projects with the construction cycle. The Department reports that its inability to meet targets is due in part to a lack of personnel but it cannot expect significantly more human resources. National Defence will have to transform the way it manages real property to fulfill all the requirements of sound stewardship.

The Department has responded. National Defence agrees with all of the recommendations. Its detailed responses follow the recommendations throughout the chapter.

Introduction

5.1 Real property infrastructure is essential to the Canadian Forces' ability to undertake its core missions in Canada and abroad. This infrastructure supports operations and training, accommodates personnel and stores, protects essential material, and enables forces to deploy. Failure to match infrastructure investment with operational needs risks lowering the Canadian Forces' ability to organize, train, equip, and rapidly deploy forces.

5.2 Real property infrastructure is made up of works, buildings, and lands, including ranges and training areas. National Defence land holdings include approximately 2.3 million hectares, of which over 900,000 hectares is leased from the provinces. Holdings incorporate over 20,000 buildings and 13,000 works concentrated among 23 **bases** across Canada as well as smaller sites in every province and territory. Typical buildings include administration buildings, ammunition bunkers, armouries, barracks, health service centres, hangars, and storage and maintenance facilities. Works are divided between service works, such as roads and sewers, and operational works, such as fuelling stations, airfields, docks, weapons firing ranges, and training areas.

5.3 In 2010, National Defence reported that budget cuts in the 1990s resulted in much of its infrastructure aging and being in need of refurbishment or repair. The Department also reported that 43 percent of its non-residential buildings and 61 percent of its works were over 50 years old. The Department determined that between 2001 and 2008, the condition of its non-residential buildings deteriorated by 6 percent while the condition of its works declined by 15 percent. Old infrastructure is generally less suitable for current needs, and when it is not maintained in good condition, it increases the risks of failure or risks to health and safety.

5.4 The government approved the 2008 *Canada First Defence Strategy* to build an effective military. The strategy identifies real property as one of the four main pillars needed to succeed. From the 2008–09 fiscal year to the 2027–28 fiscal year, the strategy commits spending of \$40 billion on real property, including expenditures on new construction, **recapitalization**, and maintenance and repair. This amounts to 8 percent of the estimated total of \$490 billion that will be spent on defence in that 20-year period.

Base—A military installation that operates under a single command and is composed of land, buildings, and works at one or more locations. The Royal Canadian Air Force calls its bases “wings.”

Recapitalization—The investment to replace existing real property in order to meet regulatory requirements or expenditures for improvements such as increased service capacity or extension of its useful life.

Departmental real property management responsibilities

5.5 National Defence's Deputy Minister is accountable to the Minister of National Defence and to the Treasury Board for the sound stewardship of the Department's real property. Since 1995, National Defence has divided real property management responsibilities between functional authority and custodial authority. The functional authority is the Assistant Deputy Minister (Infrastructure and Environment), who is accountable to the Deputy Minister. The Assistant Deputy Minister (Infrastructure and Environment) works outside the military chain of command, and is responsible for

- providing functional direction, guidance, and oversight of the real property activities, on behalf of the Deputy Minister;
- leading and coordinating real property activities to ensure the stewardship of the Department's portfolio;
- establishing national strategies, plans, and guidance for the entire real property portfolio;
- developing the infrastructure component of the Department's annual plan for investing in assets (the Capital Investment Plan); and
- managing projects estimated to cost over \$1 million.

5.6 The major custodial authorities are the Chief Military Personnel, and the commanders of the Royal Canadian Navy, the Canadian Army, and the Royal Canadian Air Force. They operate within the military chain of command, are directly accountable to the Chief of the Defence Staff, and are responsible for

- following functional guidance provided by the Department;
- identifying and assessing operational requirements;
- planning portfolio development to identify how and where development should take place;
- establishing investment priorities and assigning resources;
- conducting life-cycle planning for maintenance, repair, or recapitalization;
- delivering facilities maintenance and repair services;
- managing capital projects under \$1 million and those authorized by the Assistant Deputy Minister (Infrastructure and Environment) under \$5 million; and
- complying with health and safety requirements.

5.7 The Chief Military Personnel and the commanders of the Navy, the Army, and the Air Force normally delegate their custodial responsibility and allocate funds to base commanders. In most cases, the base commander is supported by a base construction engineering organization. Base commanders are responsible for

- conducting life-cycle and development planning activities at the base,
- recommending investment priorities to the major custodians,
- managing projects under \$1 million delegated by the major custodians,
- overseeing day-to-day real property management practices at the base, and
- establishing monitoring and compliance programs for health and safety at the base.

5.8 While leasing and purchasing is typically contracted through Public Works and Government Services Canada, Defence Construction Canada is the contracting authority for all infrastructure projects costing more than \$60,000. Defence Construction Canada is a Crown corporation accountable to Parliament through the Minister of Public Works and Government Services Canada. Created in 1951, its sole client is National Defence.

5.9 National Defence employs approximately 5,000 people to manage, operate, and maintain real property. Its military and civilian workforce consists of engineers, architects, tradespeople, general labourers, geographic information system technicians, urban planners, economists, and analysts, among others.

Focus of the audit

5.10 Our audit objective was to determine whether National Defence has exercised sound stewardship in managing its real property. We examined whether the Department has a real property management framework as well as master real property development plans for the Department and bases. We examined how the Department manages its real property infrastructure. We did this by determining whether National Defence has clearly defined, budgeted, and communicated future and present real property needs to bases, and whether the Department has provided new infrastructure and carried out recapitalization to bases according to Treasury Board requirements.

Finally, we examined how the Department spends its real property funding and allocates human resources in support of real property. We did not examine residential housing. More details about the audit objectives, scope, approach, and criteria are in **About the Audit** at the end of this chapter.

Observations and Recommendations

Planning for real property needs

5.11 The Treasury Board requires departments that manage real property for the government to develop a real property management framework. This framework integrates real property with other departmental resources to meet operational needs. Such a framework should set out a comprehensive, cohesive, and coherent approach to managing a department's real property in support of its programs. Departments must manage their investments in real property as a portfolio rather than as individual assets.

5.12 We examined whether National Defence has a framework for managing real property as well as master plans for developing real property for the Department and bases. The framework and development plans should define the Department's real property needed to support military activities. We analyzed the planning activities at headquarters and the plans at the 21 main bases responsible for organizing, training, equipping, and rapidly deploying forces.

National Defence has not yet completed its real property planning framework

5.13 We found that National Defence does not yet have a real property management framework in place. In response to the Treasury Board requirement for a real property management framework, the Department has drafted but not yet put in place a document entitled Real Property Management Framework, dated November 2010. The framework was drafted to meet the Treasury Board requirement and to help implement the Department's own real property strategy (see paragraph 5.16). Among other priorities, the draft framework stated a need to make definitive progress on master real property development plans.

5.14 In 2010, the Assistant Deputy Minister (Infrastructure and Environment) advised custodians to have base-level master real property development plans prepared. These plans are to provide a 20-year forecast of the development of buildings, works, lands, ranges, and training areas. They are intended to guide development

decisions so that bases grow in a safe, secure, suitable, and sustainable manner to meet future operational priorities. These plans will provide input into planning for capital projects, including projects in the Department's Capital Investment Plan (Infrastructure). The plans will also contribute to the drafting of a national master real property development plan.

5.15 We found that 18 of the 21 bases now have current master real property development plans. Twelve of the 18 completed plans met the Department's guidelines. The other 6 completed plans were missing various required elements, such as background information, the evaluation of the present condition of real property, or the evaluation of challenges and opportunities. National Defence has not yet incorporated base master real property development plans into a national master real property development plan.

5.16 In addition, National Defence has drafted, but has not implemented, an overarching document intended to deal with all matters relating to its real property portfolio. The document, dated November 2010, is entitled Defence Real Property Strategy. The strategy sets out a roadmap to provide the right assets, in the right place at the right time. Essential elements include

- a new approach to real property portfolio management,
- production of a real property stewardship report,
- integrated real property management,
- risk-based investment planning,
- a new real property performance management and reporting framework, and
- new technology to transform the provision of infrastructure as well as related services.

5.17 Most of the requirements set out in the Real Property Strategy are not in place. However, National Defence has put in place risk-based investment planning. This is done through the Department's national annual Capital Investment Plan (Infrastructure). The Capital Investment Plan (Infrastructure) is required by Treasury Board and includes infrastructure investments greater than \$1 million over the next 10 years. Its main purpose is to identify funding and requirements for individual assets that have been identified at various levels in the chain of command to support Canadian Forces activities.

5.18 Until National Defence completes development and fully implements its Real Property Strategy, Real Property Management Framework, and national master real property development plan, it cannot know if it has the right assets, in the right place at the right time, to meet the operational requirements of the Canadian Forces.

5.19 Recommendation. National Defence should complete development of and implement its Real Property Strategy, Real Property Management Framework, and national master real property development plan.

The Department's response. Agreed. National Defence, through the Infrastructure and Environment Transformation Initiative, is taking all necessary actions to complete the development and implementation of its Real Property Strategy and Real Property Management Framework. The development of the National Real Property Development Plan is under way and will be coordinated with the Department's investment planning cycle.

Real property management practices

5.20 We examined National Defence's real property management practices to determine whether the Department

- acquired new infrastructure and carried out recapitalization projects according to planned timelines and costs,
- implemented effective risk management and controls to manage its infrastructure projects delivered by Defence Construction Canada,
- managed performance and monitored requirements for maintaining real property for operations,
- implemented preventive maintenance practices, and
- ensured infrastructure does not present hazards or risks to the health or safety of personnel.

Project approval processes are cumbersome and lengthy

5.21 National Defence splits its capital program into minor projects that cost less than \$5 million and major projects that cost more than \$5 million. Depending on the Department's risk assessment, real property capital projects estimated to cost more than \$5 million must either be sent to the Minister or to the Treasury Board for approval. The Assistant Deputy Minister (Infrastructure and Environment) approves projects between \$1 million and \$5 million. In practice, base commanders approve real property capital projects of \$1 million or less and these are not included in National Defence's capital investment

planning process. A 2011 evaluation by National Defence of its real property acquisition, maintenance, and disposal program noted that with increased costs for building materials and labour, the approval level of \$1 million by base commanders has become restrictive.

5.22 Once a project is approved, Defence Construction Canada is the contract authority for managing the construction phase for all projects estimated to cost \$60,000 or more. Projects estimated to cost less than \$60,000 may be procured through an existing Government of Canada standing offer or be put out to tender by either Public Works and Government Services Canada or the base.

5.23 Construction projects should be completed on time and on budget. We examined whether new capital and recapitalization projects at bases were completed within planned timelines and costs. We interviewed senior employees and examined documents concerning timely approval of planned projects.

5.24 We examined 49 projects that were completed between April 2010 and September 2011. This consisted of all 8 projects that cost over \$5 million, a sample of 4 projects that cost between \$1 million and \$5 million, and a sample of 37 projects that cost less than \$1 million.

5.25 We tested the 12 projects costing over \$1 million for time and cost overruns and how the cost and time overruns may have related to each other. As our points of reference for time, we used the earliest documented estimated completion date. We noted that timelines were often re-established before the final approval and as the project advanced to completion. For cost, we compared cost estimates at initial project identification, at project approval, and at final delivery.

5.26 We found that 7 of these 12 projects over \$1 million lacked initial project documentation. However, we were able to compare initial cost estimates, estimates put forward for final project approval, and final delivered costs for 5 projects. Based on initial cost estimates, the Department delivered 2 projects below the estimate and 3 over the estimate. For these 5 projects, we found no consistent relationship between time to complete a project and any project cost overrun.

5.27 We found that all the projects costing more than \$1 million were delivered at least 10 months later than planned, with 1 more than 5 years later (Exhibit 5.1). We also found that the average time to complete the 8 projects costing more than \$5 million was about 6 years.

Exhibit 5.1 All projects over \$1 million exceeded target completion date by at least 10 months

Projects examined	Project's initial delivery target (in months)	Project's actual delivery time (in months)	Number of months late (past target)
1	19	29	10
2	8	20	12
3	12	25	13
4	12	25	13
5	59	73	14
6	12	29	17
7	29	55	26
8	53	85	32
9	49	97	48
10	49	100	51
11	29	86	57
12	50	113	63

Source: National Defence data

5.28 Capital projects estimated to cost less than \$1 million are usually planned and delivered by the base. We found that 33 of the 37 sampled projects that cost less than \$1 million were under base control. These follow less detailed planning and approval procedures. In order to determine time overruns for these projects, we examined the earliest project documentation available, such as work orders that were issued by the base. We found that 27 of the 33 projects did not document a planned completion date or failed to meet the timelines they had established. Four other projects under \$1 million were managed centrally. All 4 were delivered later than planned. We could not obtain sufficient documentation on cost estimates to determine if projects that cost less than \$1 million were delivered within original cost estimates or if there was a relationship between any project cost overrun and the length of time it took to complete a project.

5.29 Departmental officials told us that owing to low expenditure approval thresholds and time delays, the processes escalate costs and sometimes result in projects not being delivered. This is particularly so for projects over \$1 million, since at any time in the project review process, the project may be held up with requests for information or new analysis.

5.30 In May 2009, National Defence tried to address this situation by streamlining the approval process for real property projects that were low risk. However, the Department reports that this effort did not ensure that projects consistently begin with minimal delay. A 2011 Army study of the approval process for real property projects costing over \$5 million counted numerous steps in the approval process before the project was ready to tender. The study calculated over six years to obtain approval. Thereafter, tendering and construction would be necessary before final delivery. A separate departmental study in 2011 also noted a long and bureaucratic approvals process that required over six years on average to obtain approvals and to complete a construction project. It also observed that in comparison, the private sector completes an equivalent project in an average of about three years.

5.31 Lengthy approval processes can delay the completion of a project and make it difficult to ensure that real property is in place at the right time. Department officials advised us that they have begun a complete review of the project delivery process in order to shorten project delivery times and that the Assistant Deputy Minister (Infrastructure and Environment) has begun to redesign delivery of the Department's construction program.

5.32 Recommendation. National Defence should simplify its approval processes for real property projects over \$1 million according to level of risk.

The Department's response. Agreed. In April 2012, National Defence initiated a comprehensive departmental review with the objective of reducing the project approval process time. As part of the National Defence Infrastructure and Environment Transformation Initiative and the Infrastructure and Environment Business Modernization program, all project approval, costing, and implementation procedures will be reviewed, redesigned, and documented.

5.33 Recommendation. National Defence should set and document firm timelines for the completion of real property projects under \$1 million and document cost estimates.

The Department's response. Agreed. As part of the National Defence Infrastructure and Environment Transformation Initiative and the Infrastructure and Environment Business Modernization program, all project implementation procedures and timelines will be reviewed, redesigned, and documented by April 2014.

National Defence has not fully implemented its financial controls over Defence Construction Canada

5.34 In 2008, National Defence and Defence Construction Canada signed a memorandum of understanding (MOU) that defines their relationship. We examined the financial and management control framework exercised by National Defence to ensure Defence Construction Canada carries out its obligations under the MOU and that projects are being executed by Defence Construction Canada according to the project plan and budget.

5.35 Under the MOU, National Defence has delegated to Defence Construction Canada the financial authority to authorize payment of third-party contracts. National Defence specified in the MOU that it will conduct cyclical reviews of relevant Defence Construction Canada financial management processes and perform semi-annual reviews of the Corporation's processes to verify requisitions and payments to contractors. These reviews should verify that delegated authorities are being exercised correctly and that Defence Construction Canada is ensuring requisitions and payments to contractors are properly made. We examined these key review controls to verify whether they were in place and operating at National Defence.

5.36 We found that the Department's key controls of cyclical and semi-annual reviews are not being fully implemented. Cyclical reviews have not been carried out since the signing of the 2008 MOU. National Defence has made some effort to conduct the semi-annual reviews, but these were limited to the national headquarters area and we found the methodology was flawed. Consequently, National Defence has not obtained assurance that delegated authorities are being exercised correctly by Defence Construction Canada to ensure requisitions and payments to contractors are properly made. National Defence has recognized that these controls are not operating effectively and, to the end of the audit, had not yet implemented corrective actions.

5.37 Project managers within National Defence also exercise a number of management controls to ensure Defence Construction Canada is properly managing construction, recapitalization, and maintenance and repair contracts. These controls may include activities such as ongoing budget monitoring and regular team meetings. They vary considerably depending on whether the project is valued at over \$1 million and managed centrally or valued at less than \$1 million and managed at the base level. We examined 11 projects valued at more than \$1 million and 4 projects valued at less than \$1 million in order to determine if

the control framework available to National Defence project managers was well designed and applied.

5.38 We found that for the projects valued at more than \$1 million, the management controls available to departmental project managers were adequate to monitor whether contracts managed by Defence Construction Canada were being executed according to the project plan and budget. In addition, we found that the project managers had properly applied the controls. For those projects valued at less than \$1 million, the management control framework available to departmental project managers is simplified but also adequate, and the controls were being properly applied.

5.39 Recommendation. National Defence should ensure that the cyclical and semi-annual review controls over Defence Construction Canada are implemented.

The Department's response. Agreed. National Defence will engage an independent third party to conduct semi-annual reviews of Defence Construction Canada's (DCC) processes for compliance with sections 33 and 34 of the *Financial Administration Act*. These reviews will commence in the 2012–13 fiscal year. Further, starting in the 2013–14 fiscal year, National Defence will incorporate consideration of cyclical reviews of the controls over DCC into its risk-based management processes.

The performance management framework for real property is incomplete

5.40 An effective performance management framework is based on an information system that collects relevant asset, financial, and program information and allows management to report on usage, maintenance, and overall performance of the Department's real property. Such a framework also provides the basis for managing risks. We examined whether there is a performance management framework and whether real property objectives and targets had been communicated to bases in a timely manner. In addition, we examined whether National Defence had monitored achievement of those objectives and targets.

5.41 We found that the performance measurement framework is incomplete and headquarters are unable to fully assess the state of the Department's real property assets. There is no central information system for performance management. However, some performance information is regularly collected at the national level, including measures of capital project completion and investment in maintenance and repair. The Assistant Deputy Minister (Infrastructure and

Environment) has also conducted two general surveys of selected aspects of infrastructure suitability and condition. Health and safety compliance is monitored through a variety of base and national processes. Nonetheless, bases have not received performance objectives and targets for important performance indicators, such as the condition or suitability of their real property.

5.42 National Defence has characterized performance measurement for real property at bases as developmental and inconsistent. We found some bases developed their own information management tools for monitoring performance (Exhibit 5.2).

Exhibit 5.2 Some bases have developed information management tools

The Navy bases at Esquimalt and Halifax have purchased commercial software to help manage their real property portfolios. The software is widely used in the private sector and systematically records information about individual buildings and works, and their internal systems, to provide a comprehensive assessment of each asset's condition. Managers use this information to cost and schedule infrastructure maintenance and repair investments several years in advance.

The Navy has found that the software enables it to make business decisions that are better informed than decisions made based on general assessments provided in the surveys conducted by the Assistant Deputy Minister (Infrastructure and Environment). The Department's research and development agency has reviewed the use of the commercial software and recommended full integration of the system into base engineering and construction organizations across the Department.

5.43 In 2009, the Assistant Deputy Minister (Infrastructure and Environment) started an Infrastructure and Environment Business Modernization program to develop Department-wide information management and accounting systems. The program will provide new information capabilities for base-level inspection and maintenance management, timely performance management, and portfolio management. By the end of the audit period, the business modernization program had begun to coordinate planning with the Navy information management initiative. The planned date of implementation, including data collection, has been changed from March 2014 to April 2015.

5.44 Recommendation. National Defence should implement a performance management framework that sets performance targets such as for condition, suitability, and safety of its real property.

The Department's response. Agreed. National Defence will enhance its performance management framework to support real property decision making at all levels. Performance management will be

supported through a national enterprise resource planning information system that will facilitate all real property performance management by March 2014.

5.45 Recommendation. National Defence should ensure that initiatives and lessons learned at the bases are incorporated into the development of its new management information system under the Infrastructure and Environment Business Modernization program.

The Department's response. Agreed. As part of the Infrastructure and Environment Business Modernization Program, 35 workshops have been conducted to draw on base-level expertise. Input and participation will continue to be sought from representatives across the Royal Canadian Navy, Canadian Army, and the Royal Canadian Air Force to ensure that lessons learned are incorporated.

Preventive maintenance practices are insufficient

5.46 Preventive maintenance is an essential maintenance and repair practice for appropriate life-cycle management and risk management. Preventive maintenance is needed to optimize the useful life of real property and appropriately mitigate health and safety risks. We examined whether the Department implemented preventive maintenance practices.

5.47 In our survey of 21 main bases across Canada, several bases reported that their preventive maintenance programs stopped during the mid-1990s because of personnel and financial cutbacks. The Assistant Deputy Minister (Infrastructure and Environment) has reported that stopping the preventive maintenance programs over the last decade has directly contributed to premature building and internal systems failures. The Department reports that bases have been using available maintenance and repair funding to perform immediately required corrective actions instead of spending funds on preventive measures to reduce the need for future immediate corrective maintenance. The result is that a base's real property portfolio continuously deteriorates.

5.48 Through our survey, we asked bases whether preventive maintenance was being conducted. Eleven of 21 bases reported some level of preventive maintenance. Two of these 11 reported that full preventive maintenance has been contracted out and is being done. Ten bases reported not having a preventive maintenance program. Four bases stated they focus on maintenance after breakdowns rather than focusing on preventive maintenance.

5.49 Starting in the 2011–12 fiscal year, the Assistant Deputy Minister (Infrastructure and Environment) directed custodians to establish a program of preventive maintenance tasks that meet legislative requirements and that, if not performed, may lead to immediate loss of facility functions or to safety hazards. Custodians were told to incrementally expand this first step until they establish an ongoing full preventive maintenance program by the 2014–15 fiscal year. During the audit, the Assistant Deputy Minister (Infrastructure and Environment) also began to establish a national program to identify minimum maintenance tasks that must be performed and recommend strategies for completing those tasks.

National Defence has reported some non-compliance with health and safety policies

5.50 The condition of real property can impact health and safety. We examined whether the Department ensures that its infrastructure does not pose a risk to health and safety. Real property managers must track conditions very closely and be sure that funds are planned and invested to maintain condition, make improvements, and deal with risks as they arise (see Exhibit 5.3).

Exhibit 5.3 The planned late delivery of a project has created health and safety risks

Lord Strathcona's Horse (Royal Canadians) is an armoured regiment that has tanks and is located at Canadian Forces Base Edmonton. In March 2012, the regiment received delivery of the first of 44 new main battle tanks and armoured recovery tanks. The vehicles were acquired as part of a program that began in 2007 in response to an urgent operational requirement for new tanks to support troops in Afghanistan. There was not enough money to upgrade all necessary infrastructure at that time. Planning for the construction of needed buildings at Canadian Forces Base Edmonton and another base did not begin until 2009. National Defence has stated that no new infrastructure to house the new tanks will be provided at the base before 2016.

While awaiting the design, approval, and construction of a new facility, the regiment must maintain its tanks in a building that was originally designed as a garage for vehicle storage. Until the existing exhaust and ventilation system is properly fixed or replaced, personnel must operate with bay doors open to ventilate, which is only practical during temperate months. According to a Canadian Forces medical assessment, noise levels may be causing permanent hearing damage to the workers. Personnel also lack barrier protection between themselves and the engines while the engines are being tested. Should there be a catastrophic failure of engine components, projectiles and hot engine fluids could pose a serious hazard to nearby workers.

As a risk-management solution, personnel are required to use recommended ear defenders over ear plugs while working in the immediate area and an alarm was installed to warn personnel to wear the prescribed hearing protection. During the audit, the base installed an exhaust fan to improve air quality in the meantime.

5.51 Under the *Canada Labour Code*, Part II, National Defence has a duty to ensure the health and safety of all of its civilian workers. The Canadian Forces is not part of the public service, and its military members are not covered by the *Canada Labour Code*. However, National Defence policy commits it to ensuring that a similar level of safety precautions for its military personnel is incorporated into all aspects of its operations, training, and support activities. Although accomplishing missions is the top priority, commanding officers are to consider safety in every aspect of military operations to ensure that their people are not put at needless risk and material resources are not needlessly depleted by accidents.

5.52 Responsibility for health and safety is shared among the Assistant Deputy Minister (Infrastructure and Environment), the Vice Chief of the Defence Staff, and custodians. The Assistant Deputy Minister (Infrastructure and Environment) and Vice Chief of the Defence Staff provide centralized development of policies for health and safety in order to ensure consistency across all bases and to monitor compliance. Funding and accountability for compliance with health and safety policies rests with custodians; they in turn rely on base commanders to use local systems to identify risks to health and safety and to track compliance.

5.53 In our survey of all the 21 main bases, we asked how they deal with health and safety issues related to infrastructure. We also met with managers at headquarters and examined reports of compliance monitoring programs for fire safety, nuclear safety, radon testing, and architecture and engineering components, such as electrical, mechanical, water, and fuel storage systems.

5.54 We found that all bases we surveyed reported that they have active programs to identify and report on health and safety issues. Three of these bases reported that a lack of human or financial resources reduced their ability to fully address all identified issues.

5.55 Fire safety. The Canadian Forces Fire Marshal establishes policies and standards for fire protection and emergency fire operations, and reports to the Assistant Deputy Minister (Infrastructure and Environment) on bases' compliance with the National Fire Code of Canada and departmental policies. The Fire Marshal also reports instances of non-compliance with the *Canada Labour Code*, Part II; the Treasury Board Fire Protection Standard; and National Defence policy to custodians and base commanders through a national cyclical compliance review. Custodians and base commanders are responsible for correcting reported shortcomings.

5.56 The Fire Marshal tracked 278 fires to non-residential real property in the three-year period between 1 January 2008 and 31 December 2010. During this period, fire destroyed most of the Grande-Allée Armoury in Quebec City, one of Canada's most historic armouries. Of the \$31 million of damages and losses to non-residential property that were caused by the 278 fires, the Armoury loss was estimated at \$25 million. A key finding in the Fire Marshal's investigation of the fire was that the fire alarm system had been partially disabled, which caused a delay in detecting the fire and contributed to the loss. Furthermore, it was determined that the system had not been maintained, inspected, and tested as required by the National Fire Code of Canada. In addition, the Fire Marshal's ongoing compliance review identified a widespread lack of departmental compliance with the National Fire Code of Canada with respect to the inspection, testing, and maintenance of fire protection systems. Based on the armoury fire investigation and the ongoing compliance review, the Deputy Minister and Chief of the Defence Staff issued a joint letter in January 2009 ordering custodians to address the deficiencies raised by the Canadian Forces Fire Marshal and to make monthly reports to the Assistant Deputy Minister (Infrastructure and Environment).

Location—A set of buildings, works, and land that are supported by a base and that may include all infrastructure necessary to support a large military formation or a particular capability, such as ammunition storage or research and development.

5.57 The Canadian Forces Fire Marshal fire protection program review verifies that fire inspection and protection programs are in compliance with fire codes and regulations at selected **locations** across Canada. For the period from January 2008 to June 2011, the Canadian Forces Fire Marshal conducted a review of compliance with various aspects of the Department's fire protection program at 45 locations. Twenty-eight of 45 reviewed locations received a less than satisfactory rating for overall compliance. The compliance review of fire alarms inspection, testing, and maintenance recorded that 31 percent of reviewed locations were not conducting monthly inspections of fire alarms in accordance with the National Fire Code of Canada, while 18 percent were deficient in performing required annual inspections.

5.58 Twenty of these 28 locations did not produce corrective action plans within 90 days of the Fire Marshal's report as required. We were unable to determine if another 3 of the 28 locations that received less than a satisfactory rating for overall compliance had produced the required plans in a timely manner. Five of the 28 locations that received less than a satisfactory rating for overall compliance still had not produced an action plan by the end of our audit period.

5.59 We noted that the Canadian Forces Fire Marshal oversees compliance with the Department's fire protection program by base commanders and reports findings to the custodians but does not have

the authority to compel base commanders to act on his findings. Owing to the serious nature of our findings in this area, we sent a letter to the Deputy Minister and Chief of the Defence Staff outlining our concerns about the reported instances of non-compliance with the National Fire Code of Canada. The Department has acknowledged that compliance with the National Fire Code of Canada is essential and is taking action to implement a program to bring all bases into full compliance.

5.60 Other health and safety compliance programs. Evaluations by the Assistant Deputy Minister (Infrastructure and Environment) found low compliance with requirements related to intrusion alarm and detection systems. Evaluations also found that five locations were not satisfactorily compliant with procedures to monitor indoor air quality.

5.61 There are also monitoring programs for nuclear safety and radon testing. National Defence uses x-ray devices for security screening and non-destructive testing of its equipment. The nuclear safety compliance program monitors operation, storage, and disposal of these and other nuclear devices. We found bases had produced action plans when the monitoring program for nuclear safety observed deficiencies. The radon program does not require action plans to be produced.

5.62 In summary. National Defence is not meeting important legislative, regulatory, and policy requirements related to health and safety within its real property portfolio. This could put the health and safety of workers in the affected facilities at risk.

5.63 Recommendation. National Defence senior management should take quick action to fully remedy all situations of non-compliance with applicable health and safety legislation, regulations, and policies.

The Department's response. Agreed. National Defence has taken and will continue to take action to remedy situations of non-compliance, including:

- implementing a national solution to provide bases with additional capacity to execute inspection, testing, and maintenance of fire protection systems; and
- implementing an architecture and engineering assistance and compliance program to ensure that buildings and systems comply with national codes, standards, laws, and, where applicable, provincial ones.

Resource management

5.64 We examined National Defence's achievement against the *Canada First* Defence Strategy targets and departmental targets for infrastructure spending, which is how the Department measures and reports on its real property performance. We also examined whether National Defence, under its current management processes, has the workforce it requires to support its real property needs.

National Defence has not yet reached its expenditure targets for maintenance and repair and recapitalization

5.65 National Defence's expenditure targets for maintenance and repair and recapitalization are based on the cost to replace its aging infrastructure, known as the realty replacement cost. We analyzed the accuracy of the Department's realty replacement cost through our sample of 49 projects completed during the audit period. We obtained detailed spending data on maintenance and repair and on capital spending from the 21 main bases that we surveyed, and compared the information with departmental targets. We also confirmed base data with each of the Army, Air Force, Navy, and Chief Military Personnel commands and the departmental accounting system. We completed our analysis with information from the Assistant Deputy Minister (Infrastructure and Environment) in order to obtain the departmental perspective.

5.66 Canada First Defence Strategy commitment. The *Canada First* Defence Strategy targets 8 percent (\$40 billion of \$490 billion) of the total departmental budget over 20 years up to the 2027–28 fiscal year to be spent on real property. We found that for the 2010–11 fiscal year, National Defence spent about 3 percent of its \$22.8 billion budget on real property. This means that the Department will have to spend at a greater rate in coming years if it is going to meet the overall real property commitment in the *Canada First* Defence Strategy.

5.67 Realty replacement cost. At the beginning of the 2010–11 fiscal year, the Department calculated its total realty replacement cost at \$21.7 billion. Industry standards and Treasury Board guidelines recommend a minimum annual investment of 4 percent of realty replacement cost to maintain, repair, and recapitalize real property. The *Canada First* Defence Strategy target for recapitalization and maintenance and repair of National Defence real property is just under 4 percent of realty replacement cost per year. The Department has set its own targets to be 2.5 percent for recapitalization and 2 percent for maintenance and repair. The 2 percent of realty replacement cost target for maintenance and repair has been further broken down to 1.4 percent for direct expenditures and 0.6 percent for salaries and wages.

5.68 Correct calculation of realty replacement cost depends on accurate data and valuation of realty assets. A 2009 review conducted by the Department of the methodology it uses to calculate its realty replacement cost found the calculation could under- or overestimate realty replacement costs by up to 20 percent. Our examination of 49 new construction projects found that for the buildings and works completed in the audit period, the Department's realty asset information system had understated the total realty replacement cost of the projects by at least 45 percent compared with the recorded acquisition costs (known as historical costs) from its financial system. For example, one recently constructed truck shelter, recorded in the financial system at \$893,000 historical cost, had a recorded realty replacement cost of \$395,000. In another case, a new control tower constructed at Canadian Forces Base Trenton with a historical cost of \$14.6 million had a recorded realty replacement cost of \$5.2 million.

5.69 Despite the risk that realty replacement cost may be understated, National Defence sets its expenditure targets and allocates its budgets for infrastructure maintenance and repair and recapitalization based on its calculation of realty replacement cost. This means that investments based on realty replacement cost may not be enough to maintain and repair or recapitalize the Department's real property.

5.70 Spending on maintenance and repair. The Department reports that it spent about \$189 million on maintenance and repair, not including salaries and wages, during the 2010–11 fiscal year. This amounts to about 0.9 percent of realty replacement cost, substantially less than its own target of 1.4 percent. National Defence revised the target to 1.2 percent and 1.4 percent for the 2012–13 and 2013–14 fiscal years, respectively. Officials informed us that departmental expenditures for maintenance and repair increased to 1.0 percent of realty replacement cost in the 2011–12 fiscal year.

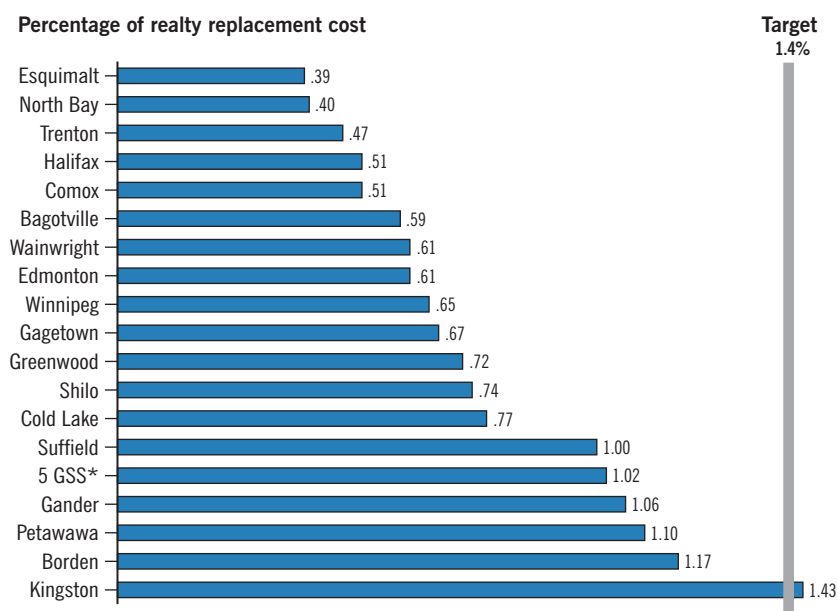
5.71 We obtained maintenance and repair expenditures for the 2010–11 fiscal year for 19 of the 21 main bases across Canada that we surveyed. We note that this was the first year that maintenance and repairs had been accounted for as a separate expenditure item, allowing these 19 bases to know their performance against the target. The maintenance and repair at 2 of the 21 main bases is funded through contract agreements that do not enable annual costs of maintenance and repair to be identified.

5.72 We found that 10 of the 19 main bases across Canada that identified maintenance and repair expenditures spent less than 0.7 percent of realty replacement cost on maintenance and repair,

or half of the departmental target. Only 1 base spent enough to achieve the 1.4 percent target for maintenance and repair in the 2010–11 fiscal year (Exhibit 5.4).

5.73 National Defence has not yet met its targets for spending on maintenance and repair. Infrastructure is likely to continue deteriorating until the Department consistently meets the minimum standard level of spending according to *Canada First Defence Strategy* targets and Treasury Board guidelines.

Exhibit 5.4 Only one main base met the Department's spending target for maintenance and repair in the 2010–11 fiscal year



*5 GSS: Refers to 5 Area Support Group that combines the bases at Montréal, Valcartier, and St-Jean.

Source: National Defence financial system

5.74 Recapitalization. Consistent with the *Canada First Defence Strategy* and Treasury Board targets, the Department has committed to a yearly recapitalization rate of 2.5 percent of realty replacement cost. The strategy clearly differentiates investments in recapitalization from investments for new infrastructure. Currently, the Department's accounting systems do not distinguish between recapitalization and capital expenditures for new real property. National Defence includes in its reporting against the recapitalization target of 2.5 percent all spending for recapitalization as well as for new real property. This means its reporting overstates the percentage spent on recapitalization.

5.75 The 2010–11 Departmental Performance Report stated that National Defence had achieved its annual recapitalization expenditure target of 2.5 percent of realty replacement cost. However, the \$509 million amount for recapitalization reported as spent of a planned \$710 million included unspecified amounts for new buildings and works, as well as some costs for items such as furniture that are not real property and associated immovable assets. As these expenditures should not have been included in the reported amount, the Department did not meet the target for spending on recapitalization.

5.76 In summary. Unless the Department is able to increase expenditures to meet its targets for maintenance and repair and recapitalization of real property, it will not meet the *Canada First* Defence Strategy or Treasury Board policy guidelines for life-cycle management investment and will continue to fall behind in renewal of its real property.

5.77 Recommendation. National Defence should ensure its calculation of realty replacement cost is accurate.

The Department's response. Agreed. National Defence follows common industry methodology for calculation of realty replacement cost as a proxy measure of portfolio value for purposes of maintenance and repair allocation. National Defence will improve the accuracy of the calculation of the realty replacement cost for the National Defence portfolio as part of the Infrastructure and Environment Business Modernization program by the end of the 2013–14 fiscal year.

5.78 Recommendation. National Defence should change its accounting systems so that it can clearly separate expenditures on recapitalization and construction of new buildings and works.

The Department's response. Agreed. National Defence will change its accounting system in order to better define real property expenditures and clearly separate expenditures for new construction versus recapitalization. The Department Resource Management Information System (DRMIS) will be modified to differentiate expenditures for real property recapitalization and for the construction of new buildings effective 1 April 2013. This will be incorporated into capital construction program management and the process for the Capital Investment Plan (Infrastructure) (2013–2023).

5.79 Recommendation. National Defence should develop a strategy that will enable it to reach its *Canada First* Defence Strategy targets for maintenance and repair and recapitalization.

The Department's response. Agreed. The National Defence Real Property Strategy will provide the vision and direction to support the *Canada First* Defence Strategy intention with respect to infrastructure.

Bases do not receive timely funding to meet their real property requirements

5.80 We examined whether bases received sufficient funding in a timely manner in order to reach real property investment goals. We found that bases often did not begin to receive funding for maintenance and repair projects and for capital projects of less than \$1 million until well into the first quarter of the fiscal year. In four instances, this funding was not received until the second quarter and in another four cases, not until the third quarter.

5.81 Custodians allocated additional amounts throughout the year, so while bases knew their notional allocation ahead of time, they did not know with certainty their actual available funds for the year or when they would receive those funds. Through the 2010–11 fiscal year, the 19 main bases for which we obtained maintenance and repair expenditures received a total additional 66 percent over their initial allocation in funding for capital spending. Forty-one percent of these additional capital funds were received in the third and fourth quarters of the fiscal year. In the same fiscal year, for maintenance and repair, the 19 main bases were allocated 59 percent in additional funding over their initial allocation. Two thirds of this additional funding for maintenance and repair was received in the third and fourth quarters of the 2010–11 fiscal year.

5.82 Officials at bases told us that the late arrival of funds creates a challenge as the receipt of funds and the ability to commit funds do not match construction cycles. In the construction business, calls for tender are usually issued over the winter, contracts are awarded in the spring, and work begins in spring or early summer. Without clear advance approval of real property budgets, bases are at risk of not being able to align project planning and execution with the construction cycle.

5.83 The Department stated that it will centralize management of its annual funds for construction into a single account starting in the 2012–13 fiscal year. Approximately half of the funds would be invested in construction projects costing more than \$5 million and be managed by the Assistant Deputy Minister (Infrastructure and

Environment) so any necessary adjustments can be addressed nationally. The other half of the funds would be available for projects that cost less than \$5 million and have low risk. Custodians are to manage these projects in a way that is consistent with corporate priorities but responsive to local priorities.

5.84 The Assistant Deputy Minister (Infrastructure and Environment) has advised custodians that when planning construction projects over \$1 million, they may over plan by approximately 60 percent to compensate for delays and non-performance of construction projects. Overplanning is when custodians have committed, spent, and planned to execute additional activities for which funding was not initially available but funding is anticipated due to expected project delays and stoppages.

5.85 Recommendation. National Defence should approve and allocate funding to bases in time to plan and execute projects consistent with the construction cycle.

The Department's response. Agreed. National Defence will set target distribution dates and monitor release of funds on an annual basis commencing in April 2013. Custodians will be directed to provide annual and three-year forecast resource allocations to bases and wings for the 2013–14 fiscal year.

With respect to capital projects, the 2012–13 fiscal year is the first year of a consolidated capital program, which resulted in timely distribution of funds to approved and planned projects.

Fundamental change is required in the way National Defence manages its resources to support real property

5.86 The *Canada First* Defence Strategy requires a balance of investments in personnel with financial investments in infrastructure. The Department must find ways to meet the strategy commitments for renewing its infrastructure while at the same time implementing government cutbacks.

5.87 The Department reports that shortages of skilled and qualified real property personnel are being felt at all levels, from the base construction engineering organization to headquarters support organizations. National Defence reports that since budget cuts in the 1990s, its real property workforce has been insufficient. Since 2010, the government has ordered a number of government-wide cost-cutting initiatives that have had a direct impact on numbers of employees allowed for the Department.

5.88 We examined whether the Department has ensured bases have the human resources they need to deliver the real property program under its current methods of operation. Our survey asked for information on human resource needs and we examined the organization charts for real property functions provided to us by base commanders. We also inquired at headquarters about the departmental implementation of government-wide reductions in personnel announced in recent federal budgets.

5.89 Nineteen of the 21 main bases reported they had positions not filled. We found that 9 of 21 bases surveyed reported a rate of 15 percent or greater of civilian positions that were not filled. And 7 of 21 bases surveyed reported a rate of 15 percent or greater of military positions that were not filled. Each year, base commanders estimate requirements for civilian staff and submit these through the chain of command to custodians, where they are prioritized against available resources that have been allocated through the Department's business planning process. Bases are provided with a salary and wage budget envelope and are required to manage within that envelope.

5.90 Bases and the Department as a whole report that human resource shortages prevent comprehensive life-cycle management and limit their ability to carry out real property projects. This results in real property work often not being done in a timely and coordinated manner, with associated risks to the quality of work. National Defence has stated that military and civilian real property staffs are stretched thin, with risks of undue stress and burnout, and that junior staff have been taking on responsibilities beyond their capacities.

5.91 Under the current way of doing business, base requirements for civilian employees significantly exceed available human resources. In 2011, custodians estimated additional necessary staffing requirements of 579 real property positions. The Department approved funds for 16.5 of these positions.

5.92 National Defence cannot expect a significant increase in its real property workforce. In the 2012 Budget, the government announced plans to reduce defence expenditures. Reductions will be achieved in part through civilian workforce downsizing while the number of Canadian Forces members will be maintained. Human resource gaps could also be filled by contractors, but the Department also plans to reduce its reliance on professional services contractors.

5.93 Consequently, in our opinion, the Department will not be able to continue to manage its real property using the processes currently in place. It does not have, and will not have, the human resources to do so.

5.94 During the audit period, the Assistant Deputy Minister (Infrastructure and Environment) began planning an initiative to transform delivery of real property services. The planned initiative will analyze the current state of the Department's real property portfolio; the overall status of human resources; and the existing buildings, lands, works and equipment available to base construction and engineering organizations. An analysis will include study of best practices in other government, private sector and foreign military organizations. However, the Assistant Deputy Minister (Infrastructure and Environment) has noted that, due to current human resource limitations, focus on this initiative may postpone completion and publication of the Real Property Management Framework, writing and publication of a performance management strategy, and implementation of a national preventive maintenance program.

5.95 Recommendation. National Defence senior management should complete the transformation of its real property business model that should include an integrated real property financial and human resource strategy.

The Department's response. Agreed. Budget 2012 announced that National Defence will centralize real property management. National Defence has launched an Infrastructure and Environment Transformation Initiative to achieve this objective.

Conclusion

5.96 National Defence acknowledges that it needs to transform the way in which it manages its real property. It has started to put in place some of the components required to do so and is planning to do more. While we found that National Defence has exercised some requirements of sound stewardship, we determined that the Department has not yet exercised all the elements of sound stewardship required to manage its real property. It has important areas for improvement in planning; management practices for acquiring, recapitalizing, maintaining, and repairing capital assets; performance management; compliance with health and safety policies; and management of financial and human resources.

5.97 National Defence is falling behind in meeting the targets set out in the *Canada First Defence Strategy* for real property infrastructure investment. As such, the weaknesses noted in National Defence's management of real property can jeopardize the Canadian Forces' ability to carry out the missions stated in the strategy.

About the Audit

All of the audit work in this chapter was conducted in accordance with the standards for assurance engagements set by The Canadian Institute of Chartered Accountants. While the Office adopts these standards as the minimum requirement for our audits, we also draw upon the standards and practices of other disciplines.

Objectives

The audit objective was to determine whether National Defence has exercised sound stewardship in managing its real property.

The audit was divided into three sub-objectives:

- To determine whether National Defence has exercised sound stewardship in clearly defining, budgeting for, and communicating to bases present and future real property needed to generate (organize, train, equip) and project (rapidly deploy) forces.
- To determine whether National Defence has exercised sound stewardship in providing new infrastructure and recapitalization to bases in response to operational requirements for force generation and projection.
- To determine whether National Defence has identified and provided the human resources it needs to acquire and sustain infrastructure at bases.

Scope and approach

The audit focused on operations and expenditures during the 2010–11 fiscal year and the first two quarters (1 April to 30 September) of the 2011–12 fiscal year. We also examined National Defence’s oversight of contract work performed by Defence Construction Canada.

We interviewed National Defence officials, Canadian Forces members, and civilian employees of National Defence located in National Defence’s headquarters in Ottawa and at Canadian Forces bases across Canada. We visited Army bases in Edmonton, Wainwright, Suffield, and Montréal; Air Force wings in Winnipeg, Cold Lake, Greenwood, and Shearwater; and Navy bases in Esquimalt and Halifax, including the ammunition depot in Bedford.

The audit administered a survey to the base commanders of 21 bases that were identified by the Army, Air Force, Navy, and Chief Military Personnel as the main bases responsible for force generation and force projection. The survey was directed to base commanders and asked questions about construction engineering, operations, project management, personnel management, and health and safety over the period of the audit. The base commanders replied to this survey and provided necessary documentation to support their replies. We then followed up as necessary with higher levels of command and headquarters. Survey responses were examined and verified through review of related documents and data from central information systems.

We chose a sample of infrastructure capital projects from National Defence's realty asset accrual accounting system that were completed during the time period of the audit. The sample was taken from a total data population of 172 projects and consisted of 41 capital projects that were completed during the audit period and were valued at less than \$5 million each. We also examined all 8 capital projects valued in excess of \$5 million that were completed during the audit period, for a total of 49 projects examined.

Criteria

Criteria	Sources
To determine whether National Defence has exercised sound stewardship in clearly defining, budgeting for, and communicating to bases present and future real property needed to generate and project forces, we used the following criteria:	
National Defence has clearly defined present and future real property needs to generate and project forces. (Sources: 2, 3, 4)	1. <i>Canada Labour Code</i>
National Defence communicates its real property plans to wings and bases in a timely manner. (Sources: 2, 8)	2. Policy on Management of Real Property, Treasury Board
National Defence is monitoring requirements to maintain real property for operations. (Sources: 2, 8)	3. Policy on Financial Management Governance, Treasury Board
Bases have the financial resources that National Defence has identified are needed to sustain base real property for operations. (Sources: 5, 9)	4. Policy Framework for the Management of Assets and Acquired Services, Treasury Board
National Defence ensures infrastructure does not present hazards or risks to the health or safety of personnel. (Sources: 1, 6, 7, 10, 11)	5. Policy on Financial Resource Management, Information and Reporting, Treasury Board
	6. Occupational Safety and Health, Treasury Board, 1994
	7. Fire Protection Standard, Treasury Board of Canada Secretariat
	8. Defence Administrative Order and Directive 4001-0, Management of Realty Assets, National Defence, 2002
	9. Defence Administrative Order and Directive 4001-1, Realty Asset Life Cycle Management, National Defence, 2002
	10. Defence Administrative Order and Directive 2007-0, Safety, 2004
	11. Defence Administrative Order and Directive 2007-1, General Safety Program, 2002
To determine whether National Defence has exercised sound stewardship in providing new infrastructure and recapitalization to bases in response to operational requirements for force generation and projection, we used the following criteria:	
Delivery of major new real property infrastructure and recapitalization at bases is aligned with planned timelines and full costs. (Sources: 12, 13, 17)	12. Policy on Management of Real Property, Treasury Board
National Defence ensures that major new infrastructure and recapitalization constructed at bases satisfy identified requirements. (Sources: 13, 14, 15)	13. Policy Framework for the Management of Assets and Acquired Services, Treasury Board
	14. Contracting Policy, Treasury Board
	15. Policy on the Management of Projects, Treasury Board, 2009
	16. Framework for the Management of Risk, Treasury Board of Canada Secretariat

Criteria	Sources
To determine whether National Defence has exercised sound stewardship in providing new infrastructure and recapitalization to bases in response to operational requirements for force generation and projection, we used the following criteria: (continued)	
National Defence has implemented the financial management and management control systems to measure the effective delivery of its infrastructure projects. (Sources: 13, 15, 18)	17. Project Approval Guide, National Defence, 2009 18. Memorandum of Understanding between National Defence and Defence Construction Canada (1951) Limited, 2008
National Defence has implemented an effective risk management process to manage its infrastructure projects delivered by Defence Construction Canada. (Sources: 15, 16)	
To determine whether National Defence has identified and provided the human resources it needs to acquire and sustain infrastructure at bases, we used the following criteria:	
National Defence ensures bases have the human resources they need to maintain real property and provide major new infrastructure and recapitalization. (Sources: 19, 20)	19. Policy Framework for People Management, Treasury Board 20. Recommended General Criteria and Sub-Criteria for Human Resource Management, Office of the Auditor General of Canada, 2010

Management reviewed and accepted the suitability of the criteria used in the audit.

Period covered by the audit

The audit covered the period 1 April 2010 to 31 December 2011. Audit work for this chapter was completed on 17 July 2012.

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Appendix List of recommendations

The following is a list of recommendations found in Chapter 5. The number in front of the recommendation indicates the paragraph where it appears in the chapter. The numbers in parentheses indicate the paragraphs where the topic is discussed.

Recommendation	Response
Planning for real property needs	
5.19 National Defence should complete development of and implement its Real Property Strategy, Real Property Management Framework, and national master real property development plan. (5.13–5.18)	Agreed. National Defence, through the Infrastructure and Environment Transformation Initiative, is taking all necessary actions to complete the development and implementation of its Real Property Strategy and Real Property Management Framework. The development of the National Real Property Development Plan is under way and will be coordinated with the Department's investment planning cycle.
Real property management practices	
5.32 National Defence should simplify its approval processes for real property projects over \$1 million according to level of risk. (5.21–5.31)	Agreed. In April 2012, National Defence initiated a comprehensive departmental review with the objective of reducing the project approval process time. As part of the National Defence Infrastructure and Environment Transformation Initiative and the Infrastructure and Environment Business Modernization program, all project approval, costing, and implementation procedures will be reviewed, redesigned, and documented.
5.33 National Defence should set and document firm timelines for the completion of real property projects under \$1 million and document cost estimates. (5.21–5.31)	Agreed. As part of the National Defence Infrastructure and Environment Transformation Initiative and the Infrastructure and Environment Business Modernization program, all project implementation procedures and timelines will be reviewed, redesigned, and documented by April 2014.
5.39 National Defence should ensure that the cyclical and semi-annual review controls over Defence Construction Canada are implemented. (5.34–5.38)	Agreed. National Defence will engage an independent third party to conduct semi-annual reviews of Defence Construction Canada's (DCC) processes for compliance with sections 33 and 34 of the <i>Financial Administration Act</i> . These reviews will commence in the 2012–13 fiscal year. Further, starting in the 2013–14 fiscal year, National Defence will incorporate consideration of cyclical reviews of the controls over DCC into its risk-based management processes.

Recommendation	Response
<p>5.44 National Defence should implement a performance management framework that sets performance targets such as for condition, suitability, and safety of its real property. (5.40–5.43)</p>	<p>Agreed. National Defence will enhance its performance management framework to support real property decision making at all levels. Performance management will be supported through a national enterprise resource planning information system that will facilitate all real property performance management by March 2014.</p>
<p>5.45 National Defence should ensure that initiatives and lessons learned at the bases are incorporated into the development of its new management information system under the Infrastructure and Environment Business Modernization program. (5.40–5.43)</p>	<p>Agreed. As part of the Infrastructure and Environment Business Modernization Program, 35 workshops have been conducted to draw on base-level expertise. Input and participation will continue to be sought from representatives across the Royal Canadian Navy, Canadian Army, and the Royal Canadian Air Force to ensure that lessons learned are incorporated.</p>
<p>5.63 National Defence senior management should take quick action to fully remedy all situations of non-compliance with applicable health and safety legislation, regulations, and policies. (5.50–5.62)</p>	<p>Agreed. National Defence has taken and will continue to take action to remedy situations of non-compliance, including:</p> <ul style="list-style-type: none"> • implementing a national solution to provide bases with additional capacity to execute inspection, testing, and maintenance of fire protection systems; and • implementing an architecture and engineering assistance and compliance program to ensure that buildings and systems comply with national codes, standards, laws, and, where applicable, provincial ones.
<p>Resource management</p> <p>5.77 National Defence should ensure its calculation of realty replacement cost is accurate. (5.65–5.76)</p>	
	<p>Agreed. National Defence follows common industry methodology for calculation of realty replacement cost as a proxy measure of portfolio value for purposes of maintenance and repair allocation. National Defence will improve the accuracy of the calculation of the realty replacement cost for the National Defence portfolio as part of the Infrastructure and Environment Business Modernization program by the end of the 2013–14 fiscal year.</p>

Recommendation	Response
<p>5.78 National Defence should change its accounting systems so that it can clearly separate expenditures on recapitalization and construction of new buildings and works. (5.65–5.76)</p>	<p>Agreed. National Defence will change its accounting system in order to better define real property expenditures and clearly separate expenditures for new construction versus recapitalization. The Department Resource Management Information System (DRMIS) will be modified to differentiate expenditures for real property recapitalization and for the construction of new buildings effective 1 April 2013. This will be incorporated into capital construction program management and the process for the Capital Investment Plan (Infrastructure) (2013–2023).</p>
<p>5.79 National Defence should develop a strategy that will enable it to reach its <i>Canada First</i> Defence Strategy targets for maintenance and repair and recapitalization. (5.65–5.76)</p>	<p>Agreed. The National Defence Real Property Strategy will provide the vision and direction to support the <i>Canada First</i> Defence Strategy intention with respect to infrastructure.</p>
<p>5.85 National Defence should approve and allocate funding to bases in time to plan and execute projects consistent with the construction cycle. (5.80–5.84)</p>	<p>Agreed. National Defence will set target distribution dates and monitor release of funds on an annual basis commencing in April 2013. Custodians will be directed to provide annual and three-year forecast resource allocations to bases and wings for the 2013–14 fiscal year.</p> <p>With respect to capital projects, the 2012–13 fiscal year is the first year of a consolidated capital program, which resulted in timely distribution of funds to approved and planned projects.</p>
<p>5.95 National Defence senior management should complete transformation of its real property business model that should include an integrated real property financial and human resource strategy. (5.86–5.94)</p>	<p>Agreed. Budget 2012 announced that National Defence will centralize real property management. National Defence has launched an Infrastructure and Environment Transformation Initiative to achieve this objective.</p>

