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**AUDIT OF  
CONSTRUCTION IN SUPPORT OF  
CAPITAL EQUIPMENT PROJECTS  
(CISOE)**

September 2005

7050-11-38 (CRS)



Canada 

## SYNOPSIS

*The objectives of this audit were to assess the practices employed by the Department for the planning, approval and management of Construction In Support of Equipment (CISOE), as well as the appropriateness and completeness of information provided for decision-making. CISOE refers to the construction elements required to support equipment acquisition and implementation. For example, it includes hangars for the new helicopter acquisitions, jetties for new ship acquisitions and structures to shelter vehicles.*

*The audit examined four Major Crown projects, comprising 75 per cent of the CISOE budgets across all major capital equipment acquisition projects for a given year. It is important to recognize that the construction budgets examined amounted to only 2 per cent of the total equipment acquisition budgets for these four projects. This must be kept in mind when placing in perspective the audit findings that cite large percentage increases in project construction costs.*

*The audit found insufficient identification, definition and visibility of infrastructure costs attributable to the acquisition of new equipment. Ambiguity has existed regarding the distinction between re-capitalization and those costs that are truly incremental – that is, driven by equipment acquisition. This has further consequences for the up-front determination of how the infrastructure requirements will be funded. These circumstances may add flexibility to the management of equipment project budgets. However, accountability is affected and the ultimate trade-offs are not always apparent to departmental approval authorities. Other elements of the equipment acquisition budget may be reduced or, alternatively, already over-taxed re-capitalization resources may be diverted.*

*The audited projects were managed under the Long-Term Capital Planning regime, which includes separate plans for Equipment and Construction. In recognition of the need for a strategic, holistic approach to capital investment, which includes coordinated planning for equipment, infrastructure and other elements, the Department is currently developing a Strategic Capability Investment Plan (SCIP). The SCIP, once fully implemented, may serve to resolve some of the issues presented in this report. However, CRS believes the report's principal recommendations regarding effective planning and management of CISOE remain relevant.*

*This report encourages early and continuing involvement by ADM (Infrastructure & Environment) expertise, as well as a consistent approach to attributing and reporting infrastructure costs associated with equipment purchases. Infrastructure costs may often represent a relatively small part of an equipment acquisition budget, but unforeseen costs can loom large relative to re-capitalization budgets. The report offers advice on a control model as well as an approach to attributing costs to applicable budgets. It is notable that the Chair of the Program Management Board has recently emphasized the commitment to ensuring that construction costs are appropriately captured in approval submissions for equipment projects. In addition, implementation of the recommendations of the previous CRS “Study of Capital Project Oversight and Accountability: The Functioning of Senior Review Boards” should serve to enhance the risk-mitigating, and oversight capability applied to CISOE.*

*A matrix presenting the key audit recommendations and corresponding management action plans appears at pages V and VI of this report.*



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## RESULTS IN BRIEF

### Introduction

1. The objectives of this audit were to assess the practices employed by the Department for the planning, approval and management of Construction In Support of Equipment (CISOE), as well as the appropriateness and completeness of information provided for decision-making.
2. The scope of this audit included CISOE policies, procedures, guidelines and practices endorsed by the Department and used in the planning and management of infrastructure requirements in capital equipment projects funded through the Long Term Capital Plan (Equipment) (LTCP(E)). Specifically, this audit selected a sample of four Major Crown Projects (MCPs) to review, to draw observations, and to make conclusions regarding the management of infrastructure requirements across all MCPs.
3. All references in this report to capital equipment acquisitions or any related processes, controls or practices refer to MCPs only, as the sample chosen for this audit included only MCPs.

### Background

4. CISOE refers to the construction elements required to support equipment acquisitions and implementations (e.g., hangars for new aircraft acquisitions, jetties for new ship acquisitions, structures to shelter vehicles). Separate from other construction projects, CISOE is managed as a sub-component of equipment acquisition projects and is funded through the Long-Term Capital Plan (Equipment) rather than the Long-Term Capital Plan (Construction) (LTCP(C)).
5. CISOE is significant in comparison to other construction spending in the Department. The total budgeted CISOE spending for 2004 was the equivalent of about 40 per cent of the combined LTCP(C) for the Environments. Planned and actual infrastructure spending for the CISOE projects reviewed in this audit represented between 8 per cent and 37 per cent of their sponsoring Level One (L1) construction plans (reference Table 3).



**Overall Assessment**

6. *There is insufficient identification, definition and visibility of infrastructure costs attributable to the acquisition of new equipment. Ambiguity has existed regarding the distinction between re-capitalization and those costs that are incremental – that is, driven by equipment acquisition. This has further consequences for the up-front determination of how the infrastructure requirements will be funded. These circumstances may add flexibility to the management of, as well as the accountability for, equipment project budgets. However, the ultimate trade-offs are not always apparent to departmental approval authorities. Other elements of the equipment acquisition budget may be reduced or, alternatively, already over-taxed recapitalization resources may be diverted.*

7. *This report encourages early involvement by ADM (Infrastructure & Environment) expertise, as well as a consistent approach to attributing and reporting infrastructure costs associated with equipment purchases. Infrastructure costs may often represent a relatively small part of an equipment acquisition budget, but unforeseen costs can loom large relative to recapitalization budgets. The report offers advice on a control model as well as an approach to attributing costs to applicable budgets. It is also notable that the Chair of the Program Management Board has recently emphasized that our commitment is to ensure that construction costs are appropriately captured in submissions for approval of equipment projects.*

8. This audit focused on MCPs, and the conclusions are based on this focus. Relative to the four MCPs examined:

- Infrastructure requirements were not sufficiently assessed during the project identification stage. Consequently, infrastructure requirements identified after Effective Project Approval (EPA) exceeded original estimates by a range of 227 per cent to 977 per cent (reference Table 1). Our sample represented 75 per cent of the CISOE budgets across all capital equipment projects as of 2002-03 (reference Table 2).
- Infrastructure requirements identified after EPA included: the replacement of an entire hangar to house new helicopters (Canadian Search and Rescue Helicopter (CSH) project); the planned construction of an estimated 74,807 sq. metres of new and renovated shelters and maintenance space for new vehicles (Armoured Personnel Carrier (APC) project); the installation of a battery maintenance facility (Submarine Capability Life Extension (SCLE) project); and, new construction and hangar upgrades to support operations (Maritime Helicopter Project (MHP)).



Table 1 – Summary of Planned Versus Actual CISOE Spending in the Four Projects Reviewed				
Project	Total Project Cost	Planned CISOE at EPA	Actual and/or Estimated CISOE	Actual CISOE as a Percentage of Planned CISOE at EPA (rounded)
APC	\$2.355M	\$14.7M (1995)	\$143.7M (Revised Estimate)	977%
CSH	\$784.3M	\$8.7M (1998)	\$19.8M (Actual)	227%
SCLE	\$897M	\$2.4M (1998)	\$10.6M (Excludes West Coast)	454%
MHP	\$3.100M	\$23.5M (2004)	>\$148.5M (Estimate)	>632%

### Principal Observations/Issues

9. Prior to project implementation, sufficient planning activities are generally not undertaken by equipment acquisition projects to fully identify, assess, cost and budget infrastructure requirements. The four principal factors that contribute to this situation are:

- planning for infrastructure requirements, and budgets, often is perceived as being secondary to planning for equipment requirements and budgets;
- insufficient involvement of key infrastructure staff early in the capital project life cycle;
- insufficient challenge applied to the infrastructure assumptions and plans as part of the equipment project; and
- ambiguous direction regarding who budgets and who pays for infrastructure requirements for capital equipment projects.

10. Projects can be compliant with existing controls (i.e., the departmental Project Approval Guide (PAG)) yet still incur unplanned infrastructure costs. The PAG does not specifically encourage the assessment of infrastructure assumptions throughout the project planning and implementation cycle. The existing management processes and controls do not mandate the appropriate involvement of key environmental and infrastructure staffs in the determination/challenge of infrastructure requirements early in the project planning lifecycle. This contributes to the incomplete identification of infrastructure requirements prior to project implementation.



11. The monitoring and reporting of CISOE expenditures requires much improvement. The intent of Annex D of the LTCP(C) is to provide a project-by-project listing of all planned CISOE expenditures. While we recognize that this annex is for information only (i.e., not part of LTCP(C) funding requirements), we found that the reported planned and actual CISOE expenditures were not reliable. An ADM(IE) study reported at least eight equipment projects totaling \$40M in infrastructure requirements that were not captured in Annex D. Consequently, it is difficult to determine and monitor the full scope of CISOE activity across the Department<sup>1</sup>.

12. Four typical impacts associated with the insufficient identification of infrastructure requirements prior to project implementation were identified:

- Capital equipment projects sometimes fund unplanned infrastructure requirements without the provision of additional funds from the LTCP(E). This results in internal project budget reallocations. For example, during the Implementation Phase of the CSH project, a new requirement for a hangar was identified and funded through project contingency funds and reallocations within the project's budget. The Engineering Change Proposal (ECP) and Integrated Logistics Support (ILS) budgets were reduced by roughly 24 per cent and 4 per cent respectively to meet the new infrastructure requirements.
- Incremental infrastructure requirements are sometimes funded from L1 construction budgets. For example, the SCLE project identified \$16.8M (including \$7.8M for West Coast) in additional Chief of the Maritime Staff (CMS) infrastructure requirements during project implementation. A portion (\$8.6M) of these requirements was funded through the construction budget, representing 15 per cent of the CMS construction budget during the 2-year period that the activity took place. This reduces the L1 budgets dedicated to construction and for the rust-out/replacement of old/obsolete buildings.
- Unplanned infrastructure requirements are sometimes funded from the LTCP(E), thereby adding pressures, in the short term, to the LTCP(E).
- Risks arise regarding the credibility of externally reported financial forecasts for capital projects.

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<sup>1</sup> The reader will note that the project costs documented within report tables vary. This is because, for audit purposes, the information was drawn from a variety of sources – e.g., project approval documents, Annex D of the LTCP(C). Data within these source documents is often inconsistent.



## Principal Recommendations and Management Action Plans

Serial	CRS Recommendation	OPI	Management Action Plan
1.	<b>Control Framework:</b> Develop a control framework for the effective planning and management of CISOE. A suggested framework is provided in Annex B.	<b>OPI:</b> (for CISOE) ADM(IE)  <b>OCIs:</b> VCDS, ADM(Mat), ECSs	The Framework at Annex B to the Report is fully supported. It is essential that an effective process be put in place to ensure that CISOE projects are properly identified, analyzed and costed from the preliminary planning stages through to close-out. The Strategic Capability Investment Plan, currently under development, will help to ensure a holistic approach to capital investment projects >\$5M. This plan will, in time, provide an integrated control framework by documenting the total resource implications of projects, including CISOE.  Immediate steps will be taken to put the proposed Management Control Framework into place.
2.	<b>Early Review by ADM(IE):</b> Infrastructure plans for all MCP equipment projects should have the endorsement of ADM(IE) prior to EPA approval.	<b>OPI:</b> VCDS  <b>OCIs:</b> ADM(IE), ADM(Mat), ECSs	Vice Chief of the Defence Staff/Director Force Planning and Program Coordination (VCDS/DFPPC) is in the preliminary stages of setting up a Capabilities Initiatives Database (CID) User Group study to seek input on expansion of the embedded tools. One such tool would require every CID project file to answer an infrastructure questionnaire and liaise with infrastructure subject matter experts before submitting project approval documents.  We will continue to ensure that the IE Group is appropriately represented at all equipment Senior Review Boards (SRBs) that have potential CISOE implications.



Serial	CRS Recommendation	OPI	Management Action Plan
			Discussions between ADM(IE) and VCDS/DFPPC will take place to review options and select a preferred approach to securing ADM(IE) endorsement for Major Crown equipment projects.
3.	<b>Construction Cost Attribution Model:</b> Develop a standardized departmental construction cost attribution model to define budget accountabilities for CISOE. (Further cost attribution considerations are provided at report Annex D.)	<b>OPI:</b> ADM(IE)/DGRPP  <b>OCIs:</b> VCDS, ADM(IE)/DGME, ADM(Mat), ECSs	The proposed considerations for a Cost Attribution Model are accepted. A Construction Cost Attribution Model will be developed by ADM(IE) and DFPPC staffs and brought forward for approval and inclusion in the Project Approval Guide.
4.	<b>Expenditure Reporting:</b> Require specific reporting of projected and actual CISOE expenditures as part of the LTCP(C).	<b>OPI:</b> ADM(IE)/DGRPP  <b>OCIs :</b> ADM(IE)/DGME, ADM(Mat), ECSs	The Capability Investment Database (CID) is the departmental investment database intended to provide project status and current capital expenditure data for all capital projects. As such, in future, information will be extracted from the CID to assist in populating the LTCP(C). This, along with ADM(IE)'s CISOE project review process, should ensure more accurate reporting of CISOE costs.



## INTRODUCTION

### Audit Objectives

The objectives of this audit were to assess:

- The effectiveness of the practices employed by the Department for the planning, approval and management of CISOE; and
- The appropriateness and completeness of information provided for decision-making in relation to CISOE.

### Scope

The scope of this audit included all CISOE policies, procedures, guidelines and practices endorsed by the Department and used in the planning and management of infrastructure requirements in capital equipment projects that were funded through the LTCP(E). Specifically, this audit selected a sample of four Major Crown Projects to review, to draw observations, and to make conclusions regarding the management of infrastructure requirements across all Major Crown Projects.

The sample included projects from each Environment and represented 75 per cent of the entire CISOE budget across all capital equipment projects for 2002-2003 (as per Annex D of the 2002-2003 LTCP(C)).

#### Table 2 Notes:

- (1) The CISOE estimates were identified from Annex D of the 2002-2003 LTCP(C). As previously noted, these amounts do not, in all cases, match cost estimates included in project approval documents, i.e. Table 1.
- (2) As per 2002-2003 LTCP(C).

Table 2 – Audit Sample				
Project Name	Sponsor	Type	Project Status	CISOE Estimate (1) (\$M)
Maritime Helicopter Replacement (MHP)	CMS	MCP	Implementation	\$24.3
APC Replacement	CLS	MCP	Implementation	\$129
Canadian Search and Rescue Helicopter (CSH)	CAS	MCP	Implementation	\$16.5
Submarine Capability Life Extension (SCLE) Project	CMS	MCP	Implementation	\$16.8
Sub-Total				\$186.6
<b>Total Estimated CISOE Budget of All Capital Equipment Projects (2)</b>				<b>\$250</b>
<b>% of Estimated Total CISOE Reviewed Through This Audit</b>				<b>75%</b>



## Background

There is a perception in the Department that because CISOE is typically a relatively small component of overall capital equipment acquisition budgets, it does not warrant extensive management attention and review. While it is true that planned and actual CISOE expenditures accounted for approximately 2 per cent of the total equipment acquisition budgets for the four projects reviewed, this statistic does not provide a full picture of the scope and relative importance of CISOE.

The total amount of infrastructure spending within equipment projects is significant when contrasted to the combined devolved L1 construction budgets. Planned cash phasing for the projects reviewed in this audit was equivalent to between approximately 8 per cent and 37 per cent of the construction budgets for the applicable L1s.

Table 3 outlines the scope and relative size of the sampled CISOE projects as compared to planned L1 construction budgets. The CISOE Planned Cash Phasing column in this Table is provided for comparative purposes only, highlighting the materiality of CISOE to Environmental Chief of Staff (ECS) construction budgets during the listed, comparable years. The amounts in this column will not necessarily agree with Table 1 because of timing/cash phasing differences.

Table 3 – Comparison of CISOE Spending with L1 Construction Plans										
Project	Sponsor	Relevant ECS Construction Plans (LTCP C)						Total Relevant ECS Construction Budget	CISOE Planned Cash Phasing	CISOE as a Percentage of ECS Const. Budgets
		1999	2000	2001	2002	2003	2004			
APC	CLS	N/A	\$74.0M	\$83.3M	\$49.2M	\$50.6M	\$92.3M	\$349.5M	\$129M(1) (Revised EPA 2004)	37%
CSH	CAS	\$57.8M	\$59.1M	\$76.1M	\$63.6M	N/A	N/A	\$256.6M	\$19.8M (2) (Actual)	8%
SCLE	CMS	N/A	N/A	\$30.0M	\$28.0M	N/A	N/A	\$57.5M	\$14.2M(3) (Actual, including West Coast)	25%
MHP	CAS	N/A	\$59.1M	\$76.1M	\$63.6M	\$60.2M	\$48.7M	\$307.8M	\$23.5M(4) (EPA 2004)	8%

### Table 3 Notes:

- (1) While none of the increased CISOE budget (\$129M) has yet been spent, it is scheduled to be spent over the 5-year period from fiscal 2006 to 2010. In an effort to create a valid comparison, the audit team compared the planned CISOE expenditures to the Chief of the Land Staff (CLS) plan over the most recent 5-year period.
- (2) The CISOE costs were incurred over the 3-year period from fiscal 1999 to 2002. The costs have been compared to the Chief of the Air Staff (CAS) plan for the same years.
- (3) The audit team was able to determine that \$14.2M in CISOE costs (of the revised total CISOE budget of \$19.2M) was incurred in fiscal 2001 and 2002. The Chief of the Maritime Staff (CMS) budget for these years has been used as the comparison.
- (4) While the MHP CISOE budget has not yet been spent, it is understood that the training centre is to be built within 6 months of delivery of the first helicopter, which is to occur within 48 months of contract award. This results in an approximately 4.5-year time period; therefore the full \$23.5M has been compared to the CAS budget over the past five years.



## Methodology

Annex A provides the audit program, including the general approach and detailed audit criteria and procedures. In summary, the audit team:

- reviewed policies and procedures;
- selected a sample of four equipment acquisition projects to review compliance with controls;
- examined the CISOE management control framework through individual project reviews, documentation reviews, and interviews with CISOE stakeholders; and
- developed findings and observations for improvements to the CISOE management control framework.



## DETAILED OBSERVATIONS AND RECOMMENDATIONS

### Effectiveness of CISOE Management Practices

Sufficient planning activities are generally not undertaken by equipment acquisition projects to fully identify, assess, cost and budget infrastructure requirements prior to project implementation. We found that actual infrastructure requirements exceeded planned requirements by between 227 per cent and 977 per cent. Four principal contributing factors for this are:

- Infrastructure requirements constitute a relatively small portion of the total project budget for equipment acquisitions;
- Limited involvement of key infrastructure staff early in the capital project life cycle;
- Limited challenge regarding infrastructure assumptions and plans; and
- Ambiguous direction as to who budgets and who pays for infrastructure requirements for newly acquired equipment.

***Infrastructure requirements are generally not sufficiently identified prior to EPA.***

***Infrastructure requirements identified after EPA exceeded original requirements by as much as 977 per cent for the four projects reviewed.***

- In general, we observed that prior to project implementation, sufficient planning activities are generally not undertaken by equipment acquisition projects to fully identify, assess and cost infrastructure requirements.
- Specifically, of the four projects reviewed:
  - Infrastructure requirements identified after EPA exceeded original requirements by between 227 per cent and 977 per cent.
  - Infrastructure requirements identified after EPA included:
    - the replacement of an entire hangar to house new helicopters;
    - the planned construction of an estimated 74,807 sq. metres of new and renovated shelters and maintenance space for new vehicles;
    - the installation of a battery maintenance facility; and
    - minor construction and building repairs to support operations.
- Table 4 provides a summary of the additional infrastructure requirements that were identified by each equipment project after EPA.



Table 4 – Summary of Planned Versus Actual CISOE Spending in the Four Projects Reviewed				
Project	Total Project Cost	Planned CISOE at EPA	Actual and/or Estimated CISOE <sup>(2)</sup>	Actual CISOE as a Percentage of Planned CISOE at EPA (rounded)
APC	\$2,355M	\$14.7M <sup>(3)</sup>	\$143.7M (Revised Estimate)	977%
CSH	\$784.3M	\$8.7M	\$19.8M (Actual)	227%
SCLE	\$897M	\$2.4M <sup>(4)</sup>	\$10.9M (Excludes West Coast \$7.8M) <sup>(5)</sup>	454%
MHP <sup>(1)</sup>	\$3,100M	\$23.5M	>\$148.5M (Estimate)	>632%

**Table 4 Notes:**

- (1) A definitive assessment of MHP planned versus actual CISOE expenditures is not currently possible because the project has just begun Implementation Phase. Decisions are outstanding regarding the attribution between MHP and CMS of over \$125M incremental infrastructure costs.
- (2) The “Actual CISOE” column represents the revised CISOE budget or the estimated CISOE costs to complete the project.
- (3) On 16 August 1995, an announcement was made regarding the intention to award a contract for the purchase of 240 new APCs. The proposed contract included three options to procure an additional 411 APCs. The APC EPA documents dated December 1995 identified \$7.3M of CISOE. Upon the approval of the third and last option (November 1999), a total of \$14.7M for minor construction/infrastructure requirements had been identified.
- (4) SCLE EPA documents identified \$19.5M for infrastructure and relocation of the trainer. Subsequently, the Chief Review Services (CRS) Review of SCLE 7050-11-33 identified that \$2.4M of the \$19.5M was designated for infrastructure.
- (5) The actual CISOE cost provided here does not include the costs of infrastructure requirements on the west coast (approx. \$7.8M) since the decision to base a submarine on the west coast was made after implementation and was outside of the control of Project Management Office (PMO) SCLE.



***APC: Subsequent to the EPA for the last vehicle purchase option, an additional \$129M in infrastructure requirements was identified.***

***CSH: Subsequent to EPA, the need for a new hangar was identified. The value of the new infrastructure requirement was \$13M.***

- The following provides a summary of the projects examined by this audit and the scope and effectiveness of the pre-EPA definition of infrastructure requirements:
  - **APC:** The purpose of the Armoured Personnel Carrier Replacement project was to replace a portion of the Army's aging APC fleet. On 16 August 1995, the intention was announced to award a contract for the purchase of 240 new APCs. The proposed contract included three options to procure an additional 411 APCs. The new vehicle was designated Light Armoured Vehicle (LAV) III. The APC EPA documents, dated December 1995, identified a need for minor construction at the base level. Upon the approval of the third and last option (November 1999), a total of \$14.7M for minor construction/infrastructure requirements had been identified. Subsequent to the EPA for the last vehicle purchase option, an additional \$129M in infrastructure requirements were identified. The additional requirements were for an estimated 74,807 sq. metres of new and renovated shelters and maintenance space for the new vehicles.
  - **CSH:** The purpose of the Canadian Search and Rescue Helicopter project was to acquire a new helicopter fleet to replace the aging CH113 Labrador through a competitive procurement process. The project was to address operational deficiencies, to eliminate supportability difficulties associated with the older airframe, and provide a sufficient fleet size for continuous operations for the next 25 to 30 years. The CSH EPA documents, dated March 1998, assumed that existing infrastructure would be sufficient to meet the requirements of the new helicopters, with only minor construction required at the base level. At the time of EPA, a total of \$8.7M was budgeted for minor construction at four bases. Subsequent to EPA, the need for a new hangar at one of these bases was identified. The value of this new infrastructure was estimated at \$13M, for a planned total of \$21.7M; \$19.8M was actually spent.



**SCLE:** Subsequent to the project EPA, an additional \$8.5M in infrastructure requirements was identified.

**MHP:** The Department has not yet budgeted for over \$125M in additional infrastructure requirements.

**Equipment budget requirements receive priority over infrastructure.**

- **SCLE:** The Submarine Capability Life Extension project was for the acquisition of a complete submarine capability (four functional UPHOLDER class submarines plus associated training, spares, support and technical data packages) to replace the existing OBERON class submarines. The SCLE EPA documents, dated May 1998, identified \$19.5M for infrastructure and relocation of a trainer. In May 2003, the CRS Review of SCLE 7050-11-33 identified that \$2.4M of the \$19.5M was designated for infrastructure. Subsequent to the project EPA, additional \$8.5M in infrastructure requirements were identified. The additional requirements were primarily for construction in Halifax. *(Note: The total \$10.9M CISOE requirement does not include the costs of infrastructure requirements on the West Coast (approx. \$7.8M). This resulted from a well-considered change in basing strategy and, as such, the incremental costs were not within the control of the Project Management Office.)*
- **MHP:** The 1994 Defence White Paper stated that: “There is an urgent need for robust and capable new shipborne helicopters.” The Policy identified the need to replace the CH124 Sea King with a fleet of 28 new helicopters. It further defined the requirement to “begin immediately to identify options and plans to put into service new affordable replacement helicopters by the end of the decade.” The purpose of the Maritime Helicopter Project is to meet this requirement. At the time of EPA (Fall 2004), MHP had identified \$4.5M in minor construction requirements for base-level improvements and \$19M for the construction of the new Maritime Helicopter Training Centre. Subsequent to EPA, over \$125M in additional related infrastructure requirements were identified. MHP is currently in the Implementation Phase, and allocation and funding decisions regarding the additional infrastructure have yet to be made. The Department has not allocated funding in the LTCP(C) for these requirements.
- Team members from all four projects indicated that there is implicit pressure not to allow infrastructure costs to put upward pressure on the total project budget – i.e., as expressed in the Synopsis Sheet – Identification (SS(ID)).



***Planning for Infrastructure requirements is often perceived as being secondary, vice integral, to planning for equipment requirements.***

- Consensus exists amongst departmental staff involved in the capital equipment and infrastructure planning communities that the definition and planning of infrastructure requirements have typically taken a lower profile and are perceived to be of lesser importance than the planning and management of the equipment acquisitions they support. It is suggested that this, in part, has resulted in insufficient planning for infrastructure requirements prior to EPA. It is important to note, however, that recent experiences with unanticipated infrastructure requirements (e.g., APC, SCLE, CSH) would appear to have increased the general level of awareness and attention paid to infrastructure in capital equipment acquisitions projects. Specifically, over the past several years, both the Navy and Army have made organizational changes to consolidate equipment and infrastructure planning functions into one organization.
- Most capital equipment acquisition projects follow the four-phased project life cycle as defined in the Department National Defence (DND) PAG. The philosophy behind the project lifecycle is that project plans (e.g., budgets, implementation plans, Work Structure Breakdown, requirements, etc.) become increasingly more detailed and reliable as a project advances through the lifecycle. The phases are as follows:
  - Identification: estimates and plans anticipated to be rough order of magnitude.
  - Options Analysis: estimates and plans anticipated to be indicative.
  - Definition: estimates and plans anticipated to be substantive.
  - Implementation: actual costs and progress against plans monitored against Definition Phase documents.
- During the project life cycle described above, the principal opportunities to identify and assess infrastructure requirements exist during the Options Analysis and Definition Phases. During the Identification Phase, only high-level infrastructure requirements identification and analysis activities are possible, while after Definition Phase the identification of infrastructure requirements is problematic as budgets have been set, funding sources have been secured and most importantly expenditure authority (where required) has been obtained.



***Neither departmental policy nor practice mandates the specific involvement of key departmental infrastructure subject matter experts early in the capital equipment planning lifecycle.***

- Currently, neither departmental policy nor practice mandates the involvement of key departmental infrastructure experts early in the capital equipment planning life cycle. Specifically, L1 infrastructure requirements planning staff are not required to be involved in the planning of all capital equipment acquisition projects. Consequently, the Department is not fully leveraging its internal expertise to ensure that capital equipment projects identify all infrastructure requirements early in the planning process, and thereby avoid potentially costly and problematic new requirements once projects reach implementation.
- The following is an outline of typical responsibilities for the planning and assessment of infrastructure requirements during the capital equipment acquisition lifecycle:
  - Early in the planning phases (Project Identification and Options Analysis Phases) the responsibility to ensure that all infrastructure requirements have been identified and assessed rests with L1 equipment planning staff.
  - Once project leadership has shifted from the sponsoring organization (the L1s) to the implementing organization (usually the equipment project teams within Assistant Deputy Minister (Materiel) (ADM(Mat)), the responsibility to ensure that all infrastructure requirements have been identified and assessed rests with the individual equipment project teams during Project Options Analysis and Definition Phases (depending on when the integrated equipment project teams are stood up).
  - For MCPs, there tends to be less involvement of L1 and ADM(IE) infrastructure planning staffs in LTCP(E) projects than in projects funded through the LTCP(C). Interestingly, the Department has recognized the value and need for the early involvement of L1 infrastructure-planning staff in construction projects funded from the LTCP(C).



***Early infrastructure requirements estimates are often based upon the assumption that existing infrastructure will be sufficient to meet the needs of the new equipment.***

***Responsibilities for challenging stated infrastructure requirements are not clear.***

***Projects are at risk that incorrect assumptions made in the planning phases regarding infrastructure will not be discovered prior to the Implementation Phase.***

- The examined projects illustrate the impact of insufficient involvement of the L1 infrastructure requirements planning staff early in the capital equipment acquisition project lifecycle. Specifically, early estimates are often based upon the assumption that existing infrastructure will be sufficient to meet the needs of the new asset. In these situations, detailed infrastructure requirement identification, planning and analysis activities are generally not conducted.
- Responsibilities for challenging infrastructure assumptions and requirements throughout the project lifecycle are not clear:
  - ECS equipment requirements staff are responsible for the development of equipment and infrastructure requirements in the early project planning phases; however, it is not clear if equipment or infrastructure staff own the challenge function for infrastructure assumptions at each phase of the life cycle.
  - The responsibility of ADM(Mat) Equipment/MCP Project Managers to challenge infrastructure assumptions included in Statement of Requirement (SOR) documents is not clear. There is no explicit departmental guidance or policy regarding their responsibility to validate the infrastructure requirements provided to them. Consequently, projects are at an increased risk that infrastructure planning is incomplete.
  - The ADM(IE) role in planning departmental infrastructure and ensuring capital projects include the requisite construction, is not clear.
- Existing policy, guidance and common practices for Major Capital Equipment Projects do not specifically mandate the challenge of infrastructure requirements. Specific controls are not in place to enforce the review and assessment of infrastructure assumptions and planning throughout the project planning and implementation cycle:
  - The current control framework does not explicitly include a requirement for the identification of CISOE costs for equipment acquisition projects during the project Identification Phase.
  - The clear definition of infrastructure challenge roles and responsibilities is an important preventative control to ensure that infrastructure requirements are sufficiently identified prior to project implementation.



*Key planning-phase challenge function is not operating as intended.*

*A high level of ambiguity exists within the Department regarding acceptable criteria for deciding the scope of infrastructure requirements to be included in equipment acquisition projects.*

- A review of SRB minutes shows that the ADM(IE) challenge has not consistently functioned as intended within the projects reviewed. For example:
  - **CSH:** SRB minutes show that prior to 1999, an ADM(IE) representative did not attend SRBs during the early planning phase and did not consistently attend following the planning phase.
  - **SCLE & APC:** A review of the SRB minutes relative to project implementation, shows that ADM(IE) representation was inconsistent for these projects.
  - **MHP:** SRB minutes show that, of the four meetings for which minutes were available, an ADM(IE) representative attended the latter two.
- As a consequence of inconsistent challenge, all projects do not receive the same level of review and assessment of their infrastructure assumptions and plans.
- ADM(IE) recently initiated a working group to explore options to increase the effectiveness of CISOE controls within the Department.
- A high level of ambiguity exists within the Department regarding acceptable criteria for deciding the scope of infrastructure requirements to be included in equipment acquisition projects. Specifically, it was observed that inconsistent decisions are made across capital acquisition projects regarding infrastructure requirements that should be included in the scope of equipment projects; and infrastructure requirements that should be included in the individual L1 annual construction plans. Typically, infrastructure requirements are:
  - included in equipment acquisition projects if they are deemed to be direct or related costs of the project; and
  - included in the L1 construction plans if they are new construction not driven by an equipment project or the recapitalization of an existing asset.



*Some cost attribution guidance exists, but it is relatively ambiguous and difficult to determine the funding source.*

*Problems arise when infrastructure can be argued to be either a recapitalization cost (Environmental L1 construction budget responsibility) or a related cost of the equipment project (usually an ADM(Mat) administered capital cost).*

- While some guidance is available regarding the distinction between CISOE and recapitalization, it is relatively ambiguous regarding the funding source and cannot be considered thorough and complete criteria for construction cost attribution. Specifically, the Department's PAG provides the following definitions and guidance:
  - **PAG chapter 6.2.1:** The Capital Construction program includes projects which fall under one of the following three categories:
    - New Construction, including CISOE, of buildings or facilities in support of new tasks or missions.
    - Recapitalization Construction to replace existing infrastructure to meet current codes and standards.
    - Recapitalization Betterment to increase output or service capacity (e.g., replacement of waterlines with larger pipe sizes, projects which extend life, or useful life, more than one year).
  - **PAG chapter 6.2.2:** The above three categories are further subdivided according to the funding source of the projects. These are:
    - Level 1 Management funded projects, including new construction of buildings or facilities in support of new or existing tasks, and, recapitalization projects to existing realty assets; and
    - Centrally Funded projects, including legacy construction, CISOE projects.
  - **PAG chapter 9.2.2:** The following shall be included in project costs and shall be used when requesting approval in all decision documents:
    - Direct Costs. Those costs directly and solely attributable to the project such as: site preparation, consultants, acquisition, quality assurance, training, prime equipment, initial support spares, test equipment, documentation, transportation, travel, installation, trials, ammunition (initial operational stock and training requirements), project management, industrial preparedness, etc.



*It is not clear whether CISOE should be included as centrally funded projects (e.g., MCPs), or from Level 1 Management- funded projects. Partially as a result of this ambiguity, it sometimes happens that neither funding source budgets appropriately for CISOE.*

- Related Costs. Those costs not directly associated with the project but which are nevertheless applicable if the project is approved. These include related construction costs (for equipment projects), collateral requirements (e.g., extended airfield facilities in support of new aircraft, additional married quarters at an enlarged training site, additional base support personnel resulting from expanded operations), etc.
  - Contingency Costs. Those additional costs which cannot be specifically identified at the time but which may be incurred as a result of estimating uncertainties and normal adjustments during implementation. This category includes deviations from the DND economic model.
- Ambiguity typically arises when an infrastructure requirement can be perceived as both a recapitalization and a related equipment project cost. For example, a 20-year equipment capability is to be sheltered in a facility that is reaching the end of its effective lifecycle. In this situation, modifications to the shelter can be perceived as both recapitalization and a direct project cost.
  - Given the ambiguous definitions previously provided, construction cost responsibility is open to interpretation in some instances. Two examples of differing interpretations and their impacts, are provided below:
    - **CSH:** At issue was the appropriate allocation of costs for the construction of a new hangar at one of the sites. Chief of the Air Staff (CAS) identified the requirement for the new hangar. PMO CSH felt that this was an infrastructure recapitalization issue and that the cost should not be borne by the project. Subsequently, the CSH SRB decided that PMO CSH would pay for the \$13M hangar. This decision impacted the project contingency funds and resulted in reallocations from within the project's budget.
    - **MHP:** MHP project staff is aware that the bases at which the helicopters will be located require substantial upgrading/recapitalization. The rough estimate to date suggests that the bases will require over \$125M of construction work to support the operations of the new helicopters. PMO MHP has budgeted only \$4.5M in minor construction costs. The assumption is that the majority of construction costs will be deemed recapitalization and funded from the devolved L1 construction budget; however, the CMS LTCP(C) does not include this construction spending.



*Four typical impacts associated with the insufficient identification of infrastructure requirements prior to project implementation were identified.*

## Impacts of Inadequate Planning/Budgeting for CISOE

### 1. Reallocations required from within equipment project budgets

- Some capital equipment projects fund unplanned infrastructure requirements without the provision of additional funds from the LTCP(E). This results in internal project budget reallocations.
- As an example, during the Implementation Phase of the CSH project, a new requirement for a hangar was identified and funded through project contingency funds and reallocations from within the project's budget. The Engineering Change Proposal (ECP) and Integrated Logistics Support (ILS) budgets were reduced by roughly 24 per cent and 4 per cent respectively.

### 2. Funding from other construction budgets

- Unplanned infrastructure requirements are sometimes funded from L1 construction budgets. As an example, the SCLE project identified \$16.8M in additional infrastructure requirements. A portion (\$8.6M) of these requirements was funded through the CMS construction budget, representing 15 per cent of the CMS construction budget during the 2-year period that the activity took place.
- Funding from other construction budgets increases the risk that recapitalization projects will receive less funding and further contributes to the “rust out” issues facing the Department. Specifically, industry standards suggest that organizations should invest approximately 2 per cent of the total value of their asset base into recapitalization. The Department is currently investing less than 1 per cent of the total asset base into recapitalization, thereby creating a backlog of requirements. The funding of equipment infrastructure requirements from other construction budgets further reduces the amount available for recapitalization, thus exacerbating this issue. This issue will become increasingly important due to the Department's aging infrastructure.



**3. Reallocations within the LTCP(E)**

- Unplanned infrastructure requirements are sometimes funded from the LTCP(E), thereby adding additional pressures, in the short term, to the LTCP(E).
- For example, the APC project identified an additional requirement for \$129M for shelters and maintenance facilities. In March 2004, an amendment was approved to the APC expenditure authority to include this new infrastructure. The audit team understands that this new requirement will be “cash managed” within existing commitments by ADM(Mat).

**4. Credibility Risk**

- Insufficient planning for infrastructure requirements can also affect the credibility of the Department as it relates to financial planning for capital projects. Specifically:
  - When additional funds are required (approved by Program Management Board (PMB) and funded from the capital equipment budget), the Department must also seek amendment to the approved project expenditure authority.
  - The external perception of the validity and reliability of the Department’s capital planning process is lessened each time the Department seeks additional spending authority in these types of situations.
  - This audit observed that for two of the four projects reviewed (APC and SCLE) an amendment to the expenditure authority was sought.



## Recommendations

- ADM(IE) develop a CISOE Management Framework for all DND organizations to use. CRS has suggested a framework at Annex B.
- ADM(IE) develop an infrastructure probability assessment tool for use by ECS infrastructure requirements staff (reference Annex C for information regarding tool development).
- ADM(IE) be given responsibility and accountability for reviewing infrastructure plans for all MCP equipment projects prior to EPA approval.
- ADM(IE) develop a standardized departmental construction cost attribution model to define budget accountabilities for CISOE and lead the implementation of the model across the Department. The model should provide:
  - Improved guidelines to differentiate between project costs and recapitalization costs; and
  - A formula for cost sharing in cases where costs are not clearly attributable between an equipment project and an Environment. Further attribution model considerations are provided in Annex D.



## Monitoring and Reporting of CISOE

The reporting of CISOE expenditures is not reliable. Consequently, it is difficult to determine and monitor the full scope of equipment-related construction activity undertaken across the Department.

***Construction spending is not specifically tracked within some larger equipment projects.***

***The information and reporting of planned and actual CISOE is not reliable.***

***Planned CISOE for the MHP, as reported in Annex D of the LTCP(C), has varied by 100 per cent over the past three years.***

- Annex D to the LTCP(C) provides a project-by-project listing of planned CISOE expenditures; however, this information does not provide a timely and accurate reflection of all planned CISOE.
- Construction spending is not specifically tracked within some larger equipment projects, preventing effective monitoring of total CISOE expenditures. Specifically:
  - MHP has identified a requirement for the construction of a new Marine Helicopter Training Centre (MHTC) at Shearwater (estimated to be \$19M). The construction of the MHTC will be part of a contract for the delivery of 28 fully-integrated maritime helicopters, a simulation and training suite, integrated logistic support and ship modifications. However, the cost of construction for the MHTC will not be individually itemized and the Department will not receive a final accounting for the cost of the MHTC.
  - Consequently, the Department will be unable to evaluate the accuracy of the numbers reported in the LTCP(C) Annex D for the MHTC.
- The reported planned and actual CISOE expenditures were found to be unreliable. The following examples of inaccurate reporting of CISOE were observed:
  1. A review of Annex D of the LTCP(C) for the years 2002, 2003 and 2004 shows that reported forecasted CISOE expenditures do not consistently match project documentation and projections. Specifically, over this 3-year period, Annex D reported CISOE expenditures for MHP as follows: 2002 – \$48M; 2003 – \$82.5M; and 2004 – \$24.3M; however, MHP project documentation consistently identified approximately \$22M in planned total CISOE expenditures.



*An undefined but potentially significant number of projects with CISOE remain unreported in the LTCP(C).*

2. Based on a recent ADM(IE) study of capital equipment project approval documents in the CID, at least eight equipment projects totaling \$40M of infrastructure requirements (identified within their approval documents) have not been captured in the LTCP(C) Annex D.
- Without accurate and timely reporting of CISOE, the Department has limited ability to determine the full scope of construction activity undertaken across the organization.
  - It should be noted that a level of awareness already exists within the Department regarding the reliability of the information contained in the CISOE annex to the LTCP(C). When asked, interview participants consistently expressed the notion that the CISOE annex was provided for “visibility” purposes only and was not necessarily accurate.

## Recommendations

ADM(IE) should strengthen the integrity, reliability and completeness of planned and actual CISOE expenditures reported through the LTCP(C). Consideration should be given to integrating the reporting of CISOE into the main body of the LTCP(C). Integration should provide senior leadership with a more robust picture of construction activity by environment and location.



## ANNEX A – AUDIT PROGRAM

<b>Objectives</b>
<ul style="list-style-type: none"> <li>• <b>Objective 1:</b> To review the effectiveness of practices employed by the Department for the planning, approval and management of CISOE.</li> <li>• <b>Objective 2:</b> To review the appropriateness and completeness of information provided for decision-making in relation to CISOE.</li> </ul>
<b>General Approach</b>
<ul style="list-style-type: none"> <li>• The project team will use a project review and interview approach to determine compliance with management controls.</li> <li>• The project team will use a documentation review and interview approach to review the effectiveness of the risk mitigation strategies and management practices employed by the Department for the planning, approval and management of CISOE.</li> <li>• Observations will be captured regarding the appropriateness and completeness of information provided for decision-making in relation to CISOE through activities undertaken to achieve Objectives 1 and 2.</li> </ul>
<b>Scope</b>
<ul style="list-style-type: none"> <li>• The scope will include the CISOE policies, procedures, guidelines and practices endorsed by the Department.</li> <li>• Will include a review of the risk mitigation strategies and management practices employed by the Department.</li> </ul>
<b>Population to be Examined</b>
<ul style="list-style-type: none"> <li>• All capital equipment acquisition projects that are currently in the Definition or Implementation Phase during this period.</li> <li>• The audit population requires projects that are sufficiently complete to allow the project team to assess the effectiveness of the CISOE planning activities. E.g., The projects must be sufficiently advanced in the Definition or Implementation Phase to have produced detailed CISOE requirements and consequently allow the audit team to assess the effectiveness of CISOE management controls.</li> </ul>
<b>Sample Selection Criteria</b>
<ul style="list-style-type: none"> <li>• The audit sample should: <ul style="list-style-type: none"> <li>– Comprise projects that represent significant departmental investments: are Major Crown Projects.</li> <li>– Include at least one project in the Definition Phase.</li> </ul> </li> </ul>



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<b>Assessment Criteria</b>	
<ul style="list-style-type: none"> <li>Each project will be assessed against the management controls effective at time of approval.</li> <li>The management control framework is comprised of the project approval mechanism identified in Defence Management System (DMS) Chapter 7 – Capital Project Approvals, in DMS Chapter 9 – Project Management Considerations and the guidance provided by ADM(Mat) in the Equipment Management Handbook (A-LP-005-000/AG-008). Detailed criteria are included in Appendix A – CISOE Management Controls.</li> </ul>	
<b>Procedures</b>	
<b>Review of Compliance to Controls</b>	
<ul style="list-style-type: none"> <li>It is anticipated interviews will be required with the following personnel for each project reviewed: the responsible VCDS/DFPPC 6 LTCP(E) analyst, the responsible VCDS/DFPPC environment analyst, the ADM(IE) representative present at the project SRB, the ADM(Mat) representative present at the SRB, and the project leadership including the Project Director, Project Manager, and other staff responsible for input into the CISOE component of the project.</li> <li>It is anticipated that the following files will be reviewed for each project: Rough Order of Magnitude (ROM) Cost Estimates, Statement of Operational Requirements (SOR), SS(ID); Costed Options Analysis, Project Profile and Risk Assessment (if required), refined Statement of Requirement, Project Charter, Synopsis Sheet (Preliminary Project Approval) (SS(PPA)); Finalized SOR, substantive project costs, Project Management Plan, Construction Design Validation, Synopsis Sheet (Effective Project Approval) (SS(EPA)); and any SS(EPA) amendments.</li> <li>The audit team will review the aggregate results of project compliance to management controls to identify possible weaknesses in existing management practices and information provided for decision-making.</li> </ul>	
<b>Review of CISOE Management Control Framework</b>	
<ul style="list-style-type: none"> <li>It is anticipated executive level interviews will be required to accomplish this objective. Representatives from the following groups will be interviewed.</li> <li>VCDS/DFPPC: CISOE planning and implementation</li> <li>ADM(IE)/RPP: CISOE planning and implementation</li> <li>ADM(Mat)/DMGC: CISOE expenditure reporting</li> <li>ADM(Mat)/COS ADM(Mat): CISOE planning, implementation, expenditure reporting</li> <li>ADM(Fin CS): CISOE expenditure reporting and planning</li> <li>VCDS/DFPPC: CISOE planning, approval and implementation</li> <li>VCDS/DGSP: CISOE planning, approval and implementation</li> <li>Requirements Managers from each Environment: CISOE planning, approval and implementation</li> </ul>	



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Procedures (Cont'd)
<ul style="list-style-type: none"> <li>Assess effectiveness and CISOE planning performance by identifying CISOE spending that has occurred both inside and outside capital equipment budgets in the past eight years. This will be accomplished through:               <ul style="list-style-type: none"> <li>Working with the CRS Computer Assisted Audit Techniques (CAATs) specialist to identify possible CISOE expenditures funded through non-equipment capital budgets; and</li> <li>Validating these possible expenditures with the Requirements Managers within each Environment.</li> </ul> </li> </ul>
Outline of Anticipated Results
<b>Review of Compliance to Controls</b> <ul style="list-style-type: none"> <li>Total cost of planned CISOE at SS(PPA).</li> <li>Total cost of planned CISOE at SS(EPA).</li> <li>Total cost of CISOE at project completion or current expenditures to-date.</li> <li>Analysis of the delivery of CISOE to support in-service date of equipment. E.g., Review of difference (if any) between the in-service date of the CISOE and the in-service date of the associated equipment.</li> <li>Summary of aggregate compliance to management controls.</li> <li>Observations regarding the effectiveness of the CISOE management controls.</li> <li>Observations regarding possible improvements to CISOE management controls.</li> </ul>
<b>Review of CISOE Management Control Framework</b> <ul style="list-style-type: none"> <li>Observations regarding the effectiveness of the risk mitigation strategies and management practices employed by the Department for the planning, approval and management of CISOE.</li> <li>Observations will be captured regarding the appropriateness and completeness of information provided for decision-making in relation to CISOE through activities undertaken to achieve activities 1 and 2.</li> <li>An assessment of CISOE expenditures that have occurred within and outside the LTCP(E) over the past five years.</li> </ul>



**ANNEX B – SUGGESTED ENHANCEMENTS TO CISOE MANAGEMENT CONTROL FRAMEWORK**

<b>Capital Equipment Project Phase</b>	<b>Control Objective</b>	<b>Control Activities</b>	<b>Responsibility and Accountability</b>
<b>Project Identification</b>	<ul style="list-style-type: none"> <li>That all capital equipment projects assess and document the probability that new or modifications to existing infrastructure will be required prior to SS(ID) approval.</li> </ul>	<ul style="list-style-type: none"> <li>ECS infrastructure staff conducts and documents probability assessment prior to SS(ID) approval.</li> <li>CISOE costs are included in rough order of magnitude cost estimates.</li> </ul>	<ul style="list-style-type: none"> <li>ECS Requirements Organizations.</li> </ul>
<b>Project Options Analysis</b>	<ul style="list-style-type: none"> <li>That all capital equipment projects assess the infrastructure requirements for each option identified.</li> <li>That the infrastructure assumptions of the preferred option presented be identified and assessed for potential areas of risk.</li> </ul>	<ul style="list-style-type: none"> <li>ECS infrastructure staff conducts and document an assessment of infrastructure assumptions and potential risks prior to SS(PPA) approval. The assessment information is included in the SRB approval documentation.</li> <li>Infrastructure costs are included in the SS(PPA) documentation.</li> <li>Infrastructure requirements are addressed, at a high level, in the SOR.</li> </ul>	<ul style="list-style-type: none"> <li>ECS Requirements Organizations.</li> <li>ADM(IE) attends PPA SRBs to provide challenge function.</li> </ul>



## ANNEX B

Capital Equipment Project Phase	Control Objective	Control Activities	Responsibility and Accountability
<b>Project Definition</b>	<ul style="list-style-type: none"> <li>That departmental functional expertise, independent to the project teams, assesses project infrastructure assumptions and cost estimates prior to EPA approval.</li> <li>That the CISOE infrastructure assumptions embedded in the SOR and PPA documentation be validated.</li> </ul>	<ul style="list-style-type: none"> <li>Guidance is provided regarding CISOE responsibilities and accountabilities for all stakeholders in the capital equipment planning process.</li> <li>Equipment project teams validate the infrastructure assumptions and requirements outlined in the SOR by ensuring the CISOE controls in the Identification and Options Analysis Phases have been appropriately followed.</li> <li>ADM(IE) staff reviews and assesses the infrastructure plans of all equipment projects prior to the EPA SRB.</li> </ul>	<ul style="list-style-type: none"> <li>Equipment project teams.</li> <li>ADM(IE).</li> </ul>
<b>Project Implementation</b>	<ul style="list-style-type: none"> <li>That accurate and timely CISOE budgets and actual expenditures be included in the annex to the LTCP(C).</li> </ul>	<ul style="list-style-type: none"> <li>ADM(IE) staff ensures CISOE budgets and actual expenditures information is extracted from the systems of record (CID and FMAS).</li> </ul>	<ul style="list-style-type: none"> <li>ADM(IE).</li> </ul>



## ANNEX C – CONSIDERATIONS FOR DEVELOPING CISOE ASSESSMENT TOOLS

### *Considerations for developing the CISOE assessment tools.*

#### **Identification Phase: Infrastructure Probability Assessment Tool**

- The tool should assess the probability that new construction or modifications to existing infrastructure will be required for a project. Probability factors could include:
  - Existing infrastructure and facilities (both maintenance and storage);
  - The age of the existing infrastructure and facilities; and
  - Departmental or others nations' experience with similar equipment.
- The tool should also include a signature block for ECS infrastructure requirements staff to sign upon completion.

#### **Options Analysis Phase: Infrastructure Assumptions Risk Assessment Tool**

- The tool should assess the potential risks to the infrastructure assumptions, including:
  - Have recapitalization issues been clearly addressed?
  - What degree of planning went into assumptions? E.g., Studied impacts or only made assumptions?
  - Is the scope of planning appropriate (e.g., considered infrastructure requirements for training, personnel accommodations, shelters, and maintenance)?
- The tool should also include a signature block for ECS infrastructure requirements staff to sign upon completion.



## ANNEX D – CONSIDERATIONS FOR DEVELOPING THE COST ATTRIBUTION MODEL

### *Considerations for developing the cost attribution model.*

- A cost attribution model (a tool to assign a cost or group of costs to one or more organizational units) provides direction for associating construction costs with a particular project or other event (including equipment acquisitions as well as recapitalization efforts), and it guides stakeholders in determining fiscal responsibility.
- Building on the Cost Attribution Model developed by the Shearwater/Pat Bay Master Realty Asset Development Plan (MRADP) team, the audit team provides the following process and principles for consideration:
  - Identify the costs that require attribution, considering indirect costs and the timing of costs.
  - Use/follow existing policies to define project costs. The PAG provides definitions for direct, related and contingency costs to be included as part of project costs.
  - Where the attribution is not clear, follow a number of key principles as guidelines/prompts in assigning costs, including:
    - Policies in place that specify infrastructure requirements.
    - Need for construction – Is the need for construction being driven solely by a specific project team, or would it be required in the short-term regardless of peripheral activities?
    - Life expectancy – Who will benefit from the construction efforts in the long-term? What is the comparative life expectancy of the equipment versus the infrastructure?
    - Higher Cost Requirements – If lower-cost construction options are available, who is requiring the higher cost option be chosen?
  - Allocate costs. Potential allocations include:
    - 100 % attribution to party with majority interest; and
    - A cost sharing formula that allocates costs across all interested parties using percentages based on the principles cited above.



## ANNEX E – SUMMARY OF ACRONYMS IN THIS REPORT

ADM(Mat)	Assistant Deputy Minister (Materiel)	EPA	Effective Project Approval
ADM(IE)	Assistant Deputy Minister (Infrastructure and Environment)	ILS	Integrated Logistics Support
APC	Armoured Personnel Carrier	L1	Level One (reports directly to either DM or CDS)
CAAT	Computer Assisted Audit Techniques	LTCP (C)	Long Term Capital Plan (Construction)
CAS	Chief of the Air Staff	LTCP(E)	Long Term Capital Plan (Equipment)
CID	Capability Initiatives Data Base	MCP	Major Crown Project
CISOE	Construction in Support of Equipment	MHP	Maritime Helicopter Project
CLS	Chief of the Land Staff	MHTC	Marine Helicopter Training Centre
CMS	Chief of the Maritime Staff	MRADP	Master Realty Asset Development Plan
COS ADM(Mat)	Chief of Staff, Assistant Deputy Minister (Material)	PPA	Preliminary Project Approval
CRS	Chief Review Services	PAG	Project Approval Guide
CSH	Canadian Search and Rescue Helicopter	PMB	Program Management Board
DFPPC	Director Force Planning and Program Coordination	PMO	Project Management Office
DGME	Director General Military Engineering	ROM	Rough Order of Magnitude
DGSP	Director General Strategic Planning	SCIP	Strategic Capability Investment Plan
DMGC	Director Material Group Comptrollership	SCLE	Submarine Capability Life Extension
DMS	Defence Management System	SRB	Senior Review Board
DND	Department National Defence	SS(ID)	Synopsis Sheet (Identification)
ECS	Environmental Chief of Staff, i.e., CMS, CLS, etc.	SS(EPA)	Synopsis Sheet (Effective Project Approval)
ECP	Engineering Change Proposal	SS(PPA)	Synopsis Sheet (Preliminary Project Approval)
		SOR	Statement of Requirement
		VCDS	Vice Chief of the Defence Staff

