Evaluation of Infrastructure Management—Real Property

Performance Measurement and Evaluation Committee (PMEC) Meeting

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Table of Contents

Acronyms and Abbreviations

ADM(IE)	Assistant Deputy Minister (Infrastructure and Environment)
ADM(RS)	Assistant Deputy Minister (Review Services)
ARA	Authorities, Responsibilities and Accountabilities
CAF	Canadian Armed Forces
DAOD	Defence Administrative Orders and Directives
DGESM	Director General Environment and Sustainable Management
DND	Department of National Defence
DRMIS	Defence Resource Management Information System
IAN	Indigenous Affairs Network
IAS	Indigenous Affairs Secretariat
IE	Infrastructure and Environment
IEBM	Infrastructure and Environment Business Modernization
IERIS	Infrastructure and Environment Resource Information System
IIM	Integrated Information Management
PMEC	Performance Measurement and Evaluation Committee
TB	Treasury Board
VFA	A set of software products used for capital asset management

Executive Summary

This report presents the results of the Evaluation of Infrastructure Readiness – Real Property. The evaluation was conducted by the Assistant Deputy Minister (Review Services) (ADM(RS)) in compliance with the Treasury Board (TB) Policy on Results (2016). As the Policy on Results provides flexibility for evaluations to focus on specific program areas of concern or risk, the scope of this "targeted evaluation" examines the Assistant Deputy Minister (Infrastructure and Environment) (ADM(IE)) Group's immediate outcome of "informed decision making". The evaluation examines relevance and performance and assesses the achievement of organizational results to inform and support ADM(IE) decision makers in a timely manner during the early stages of the Group's transformation.

The evaluation assessed the extent that ADM(IE) decision makers and committees have the necessary information to support informed decision making for: real property management; health and safety requirements; environmental management; and obligations regarding indigenous issues. The evaluation also assessed the extent that ADM(IE) performance measures, data, and tools enable - or are being designed to enable - informed decision making across the Headquarters, Regional, and Detachment levels.

Program Description

The mission of the ADM(IE) Group is to enable operational success of the Canadian Armed Forces (CAF) by effectively managing and delivering the Department's infrastructure and environment programs and services to meet the Department of National Defence (DND)/CAF program requirements.

In 2016, the ADM(IE) Group completed a centralization initiative, transitioning from an advisory function to a nation-wide integrated real property management and service delivery model. The ADM(IE) Group is presently engaged in a five-year Transformation Project (2016-2021) to evolve the management and delivery of the ADM(IE) Group's various programs and services.

Relevance

The evaluation's discussion of relevance focused on the alignment of ADM(IE) decision making with the TB Policy on Results and the 2017 defence policy: *Strong, Secure, Engaged.* Defence policy initiatives require ADM(IE) decision makers and committees to leverage informed decision making to achieve results.

> ### Overall Assessment
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> - Guidance on roles, responsibilities, and the expectations for the use of data and performance measures to support decision making needs further development.
>
> - Varying levels of integration of new data management tools, insufficient training for these tools, and lack of data standards and processes have contributed to limited confidence in available data. This has limited the ADM(IE) Group's ability to conduct comprehensive analysis.
>
> - There is a need for improved awareness across the ADM(IE) Group of Transformation Project initiatives and how they will enable an improved use of data to support decision making, contribute to organizational priorities and the achievement of long-term objectives.

Informed decision making also aligns with the expectations and priorities of the TB Policy on Results and the TB Directive on Results. In summary, both the defence policy and the TB Policy on Results are directly supported through ADM(IE) decision making.

Performance

To assess the effectiveness of "informed decision making", the evaluation focused on three main areas of inquiry: the planning for data; the collection and analysis of data; and the use of data for decision making in the ADM(IE) Group.

Planning for Data: The full capabilities of ADM(IE) data planning and use of data tools continues to be guided by the ADM(IE) Transformation Project. ADM(IE) staff indicated a need for further guidance on the expectations for the use of data and performance measures to support decision making. As accountabilities and authorities continue to be developed, applied and integrated, the improved clarity of roles and responsibilities should also lead to corresponding data planning improvements. For the ADM(IE) environmental and indigenous affairs programs, the absence of clearly defined roles and engagement criteria with other Level One Groups in the DND/CAF has created challenges for ADM(IE) to collect and use this data for decision making and reporting.

Data Collection and Analysis: Some ADM(IE) information management systems are integrated with the Defence Resource Management Information System (DRMIS) and enable staff to analyze data in new ways, however, other systems are still in the process of being integrated. A lack of promulgated data standards and processes has led to issues where data collection requirements are not well understood or coordinated across the ADM(IE) Group. These issues, in addition to reported concerns with the availability and content of training to use the new data management tools, have fostered data reliability concerns among staff which has negatively impacted the ADM(IE) Group's ability to exploit data and conduct comprehensive analysis.

Use of Data for Decision Making: Within the ADM(IE) Group, relevant available data has been used for project prioritization and integrated resource planning by some divisions and committees to support decision making. Regional and Detachment level staff, however, expressed limited confidence that their data and performance measurement needs will be met through Transformation initiatives. A challenge for ADM(IE) management is to develop a common understanding among all staff of how the Transformation Project is facilitating the increased and improved use of data to inform decisions. The development of a data-centric culture within the ADM(IE) Group would recognize the need for accurate and reliable data for external reporting and the increased use of data in decision making.

Key Findings and Recommendations

Key Findings	Recommendations
Relevance	
1. ADM(IE) decision making supports Canada's defence policy and the TB Policy on Results.	
Performance–Effectiveness	
2. The necessary strategies, directives, plans and defined roles for the identification, collection and use of data to support informed decision making and the achievement of results are components of the ongoing Transformation Project and remain in development, which has created challenges for ADM(IE) Group staff.	**Guidance and Direction** 1. Ensure Transformation Project deliverables include clear guidance and direction regarding data and performance measurement to ADM(IE) staff at all levels and to ADM(IE) committees. Specifically, guidance and direction should explain the need to capture data and performance measures, what specific types of information are needed, and how data and performance measurement will be used to support real property, environmental and indigenous related decision making within the ADM(IE) Group.
3. ADM(IE) staff generally indicated limited confidence in the reliability of data. Staff attributed this limited confidence to: user challenges with IERIS; insufficient training; and the lack of promulgated data standards and processes that would achieve a consistent approach to data collection across the organization.	**Data Reliability** 2. To further enable comprehensive data analysis and informed decision making, verify the key issues that impede the achievement data consistency and reliability across the ADM(IE) Group and develop a plan and timeline to remedy those issues.
4. Data reliability concerns have negatively impacted the ADM(IE) Group's ability to exploit data, conduct comprehensive analysis and enable informed decision making.	
5. The level of confidence that the Transformation Project will result in improved data use to enable informed decision making, and achieve the organizational end-state, differs significantly between Real Property Operations Group Regional / Detachment staff and the ADM(IE) headquarters staff.	**Transformation Project Awareness** 3. To ensure a common understanding across the ADM(IE) organization, ADM(IE) staff should be informed regularly on the progress of the Transformation Project and how the achievement of the transformation initiatives contribute to organizational priorities and long-term objectives. This should include the leveraging of planned and collected data through the use of tailored business analytic processes to inform infrastructure management and investment decisions, fully identifying and considering linked environmental and indigenous considerations.

Table 1. Summary of Key Findings and Recommendations. This table provides a consolidation of report findings and recommendations.

Note: Please refer to Annex A—Management Action Plan for the management responses to the ADM(RS) recommendations.

1.0 Introduction

1.1 Context for the Evaluation

This report presents the findings and recommendations of the Evaluation of Infrastructure Management – Real Property. The ADM(IE) Group transitioned from an advisory function to a nation-wide integrated real property management and service delivery model[1] through a centralization initiative in 2016, and then embarked on a five-year Transformation Project (2016-2021).[2] This targeted evaluation is conducted in compliance with the TB Policy on Results and directly supports the ongoing ADM(IE) transformation by evaluating the specific outcome area of "informed decision making".[3] The evaluation assesses the extent that ADM(IE) decision makers have the necessary information and tools, direction and guidance to effectively manage the expanded portfolios and new responsibilities, and is intended to inform and assist ADM(IE) decision makers to further enable success for the ongoing transformation. The evaluation is a component of the FY 2017/18 DND/CAF Evaluation Plan, as approved by the Performance Management and Evaluation Committee (PMEC) in July 2017. The evaluation was initiated in August 2017.

Since 2011, there have been six audits and three evaluations conducted by ADM(RS) and the Office of the Auditor General of Canada related to aspects of the ADM(IE) portfolio.[4]

1.2 Program Profile

1.2.1 Program Description

The mission of ADM(IE) is to enable operational success of the CAF by effectively managing and delivering the Department's infrastructure, environment and other programs and services to meet the DND/CAF program requirements.[5] The broader responsibilities of the ADM(IE) Group include:

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[1] ADM(IE) 2017/18 Integrated Resource Plan.

[2] As of April 2017, ADM(IE) completed the first year of a five-year, four-phase transformation agenda. The Transformation Project is designed to position the organization to meet its strategic intent of better serving CAF operations and DND programs with real property industry best practices. To achieve this, the Transformation Project intends to deliver an Integrated Business Model across the six design layers of: (1) Information; (2) Technology; (3) Processes and Functions; (4) Delivery Model; (5) People and Organization; and (6) Governance.

[3] The ADM(IE) Logic Model was approved November 30, 2016. The Logic Model Immediate Outcome "Informed decision making is enabled and occurs" is one of nine Immediate Outcomes that support five Intermediate Outcomes and three Ultimate Outcomes. The ADM(IE) Logic Model is provided in Annex C.

[4] ADM(RS) Audit of Range and Training Area Management (2017); ADM(RS) Audit of Municipal Works (2016); Office of the Auditor General Audit of Canadian Forces Housing (2016); ADM(RS) Audit of Contaminated and Unexploded Explosive Ordnance Legacy Site Liabilities (2015); ADM(RS) Evaluation of Contributions in Support of the Capital Assistance Program (2014); ADM(RS) Evaluation of Environmental Protection and Stewardship (2014); Office of the Auditor General Audit of Real Property Management (2012); DND Evaluation of Real Property Acquisition, Maintenance and Disposal (2011); DND Audit of the Defence Sustainable Development Strategy (2011).

[5] ADM(IE) Functional Planning Guidance FY 2018/19.

- Real property services. This includes real property operations, architecture and engineering, construction projects, portfolio planning and procurement services;
- Environmental support and expertise. Effective environmental management is recognized as a critical component to CAF operational readiness, to ensure compliance with relevant laws and regulations, and to sustainably manage the land and infrastructure;
- Contaminated sites management. This includes project management services and provision of expert advice in relation to contaminated sites. This also includes unexploded explosive ordnance issues facing the Department;
- Expertise, advice and coordination on indigenous issues. These activities contribute to ensuring DND/CAF employees are aware of legal commitments and consider indigenous consultation requirements and treaty obligations when carrying out DND/CAF activities, roles and responsibilities;
- A comprehensive nuclear safety program, to ensure regulatory compliance of radioactive materials and sources of ionizing radiation used within DND/CAF; and
- Fire safety and protection services, including fire reporting and investigation, and fire safety engineering.

In support of these responsibilities, the ADM(IE) exercises functional authority[6] in the following five areas:

- Real Property and immovables lifecycle;
- Environmental protection and stewardship;
- Indigenous Affairs;
- Fire Protection and respiratory protection; and
- Ionizing radiation regulation and safety.

On behalf of the DND/CAF, ADM(IE) is the custodian of the largest real property portfolio in the federal government. These real property assets consist of land, buildings, military-specific operational works and municipal works. Specifically, the DND/CAF maintains approximately 21,000 buildings, including 12,000 residential housing units; 2.2 million hectares of land; and over 13,500 works (such as jetties, airfields, training areas, roads and municipal services).[7]

The management of the ADM(IE) real property portfolio includes the recapitalization, maintenance and repair of existing buildings, new construction projects, and the disposal and remediation of outdated facilities. Due to the number of DND/CAF locations across Canada, the number and diversity of buildings, the amount of municipal infrastructure for serving CAF members, and various land uses that support CAF operations and training, the management of the portfolio is complex. Real property pressures include the growing proportion of built assets

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[6] DAOD 1000-11, Policy Framework for Infrastructure and Environment Management, assigns functional authority to the ADM(IE) to develop and issue DAODs in the functional areas of infrastructure and environment management: real property and immovable life cycle; environmental protection and stewardship; and aboriginal issues.

[7] ADM(IE) 2017/18 Integrated Resource Plan.

that are at the end of their economic life cycle.[8] Over half of the infrastructure is more than 50 years old and much of it is not designed to meet modern operational requirements.[9]

1.2.2 Program Background

Prior to 2016, the DND/CAF managed real property under a decentralized model. As the functional authority for real property, ADM(IE) had provided portfolio oversight, management direction and technical advice to nine different CAF custodial organizations across Canada and each organization had direct responsibility for the operations and management of the real property under their control. Since 2011, internal studies conducted by ADM(IE), audits and evaluations by ADM(RS) and the Auditor General of Canada have highlighted challenges[10] and proposed improvements to the management of DND/CAF real property. As a result, both the Defence Real Property Management Framework and Strategy[11] were developed in 2013 with the intent, among other objectives, to implement a centralization of DND/CAF real property activities under the governance of ADM(IE).

The centralization of real property management and real property service delivery was completed in April 2016. ADM(IE) was provided with the authority, responsibility and accountability (ARA) to ensure the real property portfolio supported DND/CAF operations in a suitable and sustainable manner.[12] Following centralization, the ADM(IE) Group embarked on the five-year Transformation Project to evolve the management and delivery of the ADM(IE) Group's various programs and services. Interviewees stated that the progress of the Project was stalled by numerous gaps and changes in senior management within the ADM(IE) Group. As senior management positions have been filled, Transformation Project initiatives are progressing.

1.2.3 Stakeholders

The principal stakeholder for this evaluation is ADM(IE), as the single portfolio manager and custodian for real property service delivery in the DND/CAF. Other key stakeholders linked to the ADM(IE) portfolio include:

- Commander Royal Canadian Navy
- Commander Canadian Army
- Commander Royal Canadian Air Force
- Assistant Deputy Minister (Materiel)
- Commander Canadian Special Operation Forces Command
- Commander Canadian Joint Operations Command

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[8] As noted within the 2012 Fall Report of the Auditor General of Canada, DND has experienced a steady decline in the condition of its Real Property since the 1990s. This has resulted in a large portion of the Real Property Portfolio being less suited to serve current operational needs.

[9] Defence Renewal Charter http://intranet.mil.ca/assets/DefenceTeam/docs/en/change/defence-renewal-charter.pdf.

[10] The 2012 Fall Report of the Auditor General of Canada highlighted a key shortfall in the Department's stewardship was the complexity of real property governance through a devolved or federated management model.

[11] Defence Real Property Management Framework, December 31, 2013; Defence Real Property Strategy, October 2013.

[12] 1901-1 (COS(IE)) Concept of Operations, DND Real Property Management, May 15, 2013.

- Military Personnel Command
- Chief of Force Development
- Public Services and Procurement Canada
- Defence Construction Canada

1.3 Evaluation Coverage

1.3.1 Scope Background

An evaluation of Defence Real Property was first initiated in January 2016 as a component of the previous five-year DND/CAF evaluation plan. In October 2016, a deferment of the evaluation to the next five-year evaluation plan was accepted by the Departmental Evaluation Committee.[13] This deferment was based on two premises: potential duplication of findings and Management Action Plan responses resulting from the 2016 ADM(RS) Audit of Municipal Works;[14] and to allow the opportunity of additional time to review the progress of transformation and the achievement of results.

The scheduling of the current Evaluation of Infrastructure Management – Real Property was approved by PMEC in July 2017, with a plan to evaluate the effectiveness of real property management in the Pacific Region. During initial evaluation scoping activities with ADM(IE) staff it was determined that this evaluation focus would be unrepresentative of key issues and ill-timed with the ongoing transformation.

1.3.2 Evaluation Scope

The revised evaluation scope focuses on the centralized ADM(IE) organization and the achievement of organizational results by examining the specific ADM(IE) immediate outcome area of "informed decision making." The evaluation assesses the extent that:

- ADM(IE) decision makers and committees have the necessary information to support informed decision making for real property management; health and safety requirements; environmental management; and obligations regarding indigenous issues; and
- ADM(IE) performance measures, data, and tools enable - or are being designed to enable - informed decision making across the Headquarters, Regional, and Detachment levels.

The evaluation recognizes the critical importance of having information that is accurate, timely, relevant, and complete to support effective decision making in the ADM(IE) Group and achieve program outcomes. The use of information for decision making and information management were noted as risks for DND in the 2016/17 Management Accountability Framework and in the ADM(IE) Integrated Resource Plan for 2017/18 respectively.

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[13] In accordance with the TB Policy on Results, the former Departmental Evaluation Committee (DEC) has expanded its mandate and has become the Performance Measurement and Evaluation Committee (PMEC).
[14] Information management was a component of the Audit of Municipal Works, but not the focus. The current Evaluation of Infrastructure Management – Real Property examines the use of data for informed decision making in greater detail.

The process that led to the centralization of the ADM(IE) portfolio is not a focus of the evaluation. The ongoing five-year Transformation Project is also not explicitly evaluated, except to assess the extent that ongoing transformation initiatives support decision making within the ADM(IE) Group. The ADM(IE) Group's capacity for, and extent of, engagement and decision making with other DND/CAF Level One Groups was not within the scope of the evaluation.

1.3.3 Program Resources

ADM(IE) has an approximate $1.8 billion annual budget and employs approximately 13 percent (2,970) of the DND civilian workforce and 290 military members.[15]

1.3.4 Issues and Questions

In accordance with the TB Policy on Results, the evaluation addresses questions related to program relevance and performance.

- Relevance: The evaluation assesses the extent that ADM(IE) decision making supports Government of Canada priorities. The discussion of relevance focuses on the alignment of ADM(IE) decision making with the TB Policy on Results and Canada's defence policy.
- Performance - Effectiveness: The evaluation assesses the extent that ADM(IE) decision makers and committees have the necessary information to enable decision making within the ADM(IE) Group in support of ADM(IE) key outcomes.

An evaluation matrix listing each of the evaluation questions, with associated indicators and data sources, is provided in Annex D. The methodology used to gather evidence in support of the evaluation questions can be found in Annex B.

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[15] As reported in the ADM(IE) Integrated Resource Plan 2017/18, this FTE Snapshot was as of October 25, 2016.

2.0 Findings and Recommendations

The following sections of relevance and performance discuss the ADM(IE) outcome area of "informed decision making". The evaluation addresses relevance through the outcome's alignment with the TB Policy on Results and the 2017 defence policy: *Strong, Secure, Engaged*. As a measure of performance and to assess the achievement of this outcome, the evaluation looked primarily at the ADM(IE) functional areas of Real Property Management (including health and safety considerations), Environment, and Indigenous Affairs.

2.1 Relevance—Alignment with Government Priorities

The discussion of relevance is based on evidence from document reviews and interviews.

> **Key Finding 1:** ADM(IE) decision making supports Canada's defence policy and the TB Policy on Results.

Alignment with the TB Policy on Results

The evaluation's focus on the ADM(IE) immediate outcome area of "informed decision making" aligns well with the expectations and priorities of the TB Policy on Results and the TB Directive on Results.

The TB Policy on Results seeks to improve the achievement of results across government. The expected results of the policy are for Departments to be clear on what they are trying to achieve and how they assess success. Departments are expected to measure and evaluate their performance and use the resulting information to manage and improve programs, policies and services. The TB Directive on Results outlines that the annual planning exercise for departmental evaluation coverage needs should consider, *inter alia*, "the recentness and sufficiency of existing performance information for management, decision making, and accountability."

For ADM(IE) decision makers, a capacity to leverage and integrate information across divisions, regions and detachments should facilitate better informed decisions. The use of information for decision making has also been noted as a departmental risk.[16] Therefore, it is incumbent upon all DND/CAF groups, including the ADM(IE) organization, to ensure decision makers have the necessary information, performance measures and committee structures to enable informed decision making to achieve results.

Alignment with Canada's Defence Policy

To contribute to program efficiencies, the defence policy: *Strong, Secure, Engaged* outlines two initiatives related to infrastructure and real property management and two initiatives focused on

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[16] DND Management Accountability Framework (2016/17).

environmental issues.[17] These four policy initiatives and other commitments necessitate quality, reliability and timeliness of environmental and real property data and information, including the establishment of appropriate decision-making processes. These initiatives will require ADM(IE) decision makers and committees to leverage data and information to support decision making for the subsequent achievement of results.

Previous evaluations, audits and policy direction have provided ample confirmation of the need for effective infrastructure management in the DND/CAF. As stated in Defence Portfolio 2030, the present size and composition of the real property portfolio is unsustainable and the defence budget does not fully support the entirety of the portfolio.[18] The portfolio must be efficient, effective, and operationally aligned to generate and sustain military capabilities. The portfolio must also account for evolving demands and emerging capabilities. Real property assets often represent complex and expensive long-term investments and must be managed responsibly with the right information, tools and processes in place for decision makers to develop and maintain a portfolio of the right size, condition, and asset mix. [19]

2.2 Performance—Achievement of Expected Outcomes (Effectiveness)

Effectiveness was measured by assessing the extent that the ADM(IE) immediate outcome of "Informed Decision Making is Enabled and Occurs" is being achieved at the Headquarters, Regional and Detachment levels.

The evaluation focused on decision making internal to the ADM(IE) Group, with emphasis on the ADM(IE) functional areas of Real Property Operations (including health and safety considerations), Environment, and Indigenous Affairs. The evaluation engaged 29 ADM(IE) stakeholders at the Director General, Director and/or Manager and staff levels through 19 interviews. Outside of National Defence Headquarters, 32 of 34 Real Property Operations Regional Commanding Officers and Detachment Commanding Officers were engaged by means of an evaluation questionnaire. Throughout the report, these two separate groups of stakeholders are referred to as "interview participants"/"interviewees" and "questionnaire respondents" respectively.

Evaluation findings that address the effectiveness of decision making are based on evidence from document reviews, stakeholder interviews and the evaluation questionnaire responses. To assess "Informed Decision Making" across the various ADM(IE) functional areas and address the evaluation questions, key issues and indicators listed in the evaluation matrix, the evaluation focused on three main areas of inquiry:

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[17] Initiative 101 and 102 focus on reducing greenhouse gas emissions and examining alternative energy options. Initiative 103 focuses on the disposal of underutilized or obsolete buildings. Initiative 104 focuses on improving infrastructure on bases and wings, including housing for CAF personnel.
[18] Defence Portfolio 2030 "Towards a Sustainable Real Property Footprint", dated March 2016.
[19] Real Property Management is subject to the practices and reporting requirements set out in the TB Policy on the Management of Real Property (2016).

- **Planning for data**. The evaluation assessed whether data and information requirements have been identified to support ADM(IE) priorities; if appropriate tools to enable data usage have been identified and/or delivered; and whether appropriate and sufficient direction and guidance regarding data and performance measurement has been provided.

- **Data collection and analysis**. The evaluation reviewed roles and responsibilities for data collection; whether the required data is available; and the capacity and limitations of data collection. For analysis, the evaluation assessed the availability of tools and the capacity to analyze data; whether the analysis of data is focused to address identified areas of inquiry; and whether the quality, consistency and reliability of data is known.

- **Use of data for decision making**. The evaluation assessed the current state of data use to support decision making; the extent that the Transformation Project is influencing the achievement of results; and whether the information needs of decision makers are being met.

2.2.1 Planning for Data

Effective data planning requires appropriate guidance and tools to meet organizational data needs. In addition, a clear vision of the desired organizational impact must shape an integrated approach to data sourcing and organizational transformation. In the discussion of planning for data, the evaluation assessed the extent that requisite direction and guidance towards the establishment of clear goals has been communicated, whether there is an understanding of roles and responsibilities for data planning and use, and if staff have the right tools to facilitate data use.

> **Key Finding 2:** The necessary strategies, directives, plans and defined roles for the identification, collection and use of data to support informed decision making and the achievement of results are components of the ongoing Transformation Project and remain in development, which has created challenges for ADM(IE) Group staff.

Guidance and direction

The ADM(IE) Group is leveraging organizational, departmental and government-wide policies and directives to identify and plan its data and performance measurement needs. Evidence presented suggests that staff are aware of and responsive to data needs within ADM(IE) functional areas. To realize organizational goals, however, appropriate strategies and directives should inform how the data and tools are used.[20]

Within an emerging data-centric business environment, ADM(IE) staff require clear guidance at all levels (Headquarters, Regional, Detachment) on the expectations for the use of data and performance measures in decision making. The Real Property Operations Group questionnaire

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[20] Harvard Business Review, "Making Data Analytics Work for You" October 2012.

respondents indicated that different types of information are used inconsistently when making recommendations or taking decisions on matters relating to real property management, health and safety, environmental management, and indigenous affairs. Interview participants and questionnaire respondents indicated that financial data is the most relied upon data source for decision making. While financial data is crucial for planning and effective decision making, the use of financial data alone is limiting. Interview participants indicated that data and information collection requirements within the Real Property Operations Group are still being developed, which has created some misunderstandings of data requirements and information coordination challenges across the organization. The limited understanding and direction of the types of data that should be available and used within each ADM(IE) functional area suggests that data and information requirements should be also defined at the headquarters, regions and detachment levels. While there is ample common data that all users should have access to, some data is more relevant to Detachment-level decision making, whereas other data is more relevant to support strategic, broad portfolio-level decisions. Further definition of specific data types and how data and performance measures are expected to be integrated and used at each level to support decision making will help foster improved organizational coordination, integration and understanding.

> Transformation Initiative #5, Develop ADM(IE) IIM Strategy, and follow-on initiatives could address the need for guidance and direction for the use of data and performance measures for decision making within the ADM(IE) group.

The ADM(IE) Integrated Information Management (IIM) Strategy, a key deliverable of the Transformation Project,[21] should provide overarching guidance for all data management activities in the ADM(IE) Group. Interview participants advised that the IIM Strategy, however, is not intended to define specific roles and responsibilities and establish key ADM(IE) data planning requirements; these will be developed through other means and further defined through Transformation Initiatives #6 (Design ADM(IE) IIM target state), #7 (Build, test and deploy ADM(IE) IIM target state), and #8 (Continually improve IIM capabilities). During the conduct of the evaluation, ADM(IE) staff indicated that that development of the IIM Strategy was behind schedule.

Interview participants advised that ADM(IE) committee guidance documents were being reviewed and revised as part of Transformation Project initiatives #37(a) "Develop ADM(IE) Governance Framework", and #37(b) "Review and Align Governance Structures", and incorporating details on the use of data and performance measures for committee decision making was being considered for these documents.

Among questionnaire respondents at the Regional and Detachment levels who chair ADM(IE) committees, more than half stated that committee guidance documents relevant to their work currently lack direction on how data and performance measures are to be used in the committees' decision-making processes. These same respondents indicated unanimously that they are not

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[21] Transformation Initiative #5 is described as "Develop ADM(IE) Integrated Information Management (IIM) Strategy".

aware of any consultation or other process to identify the data and performance measurement needs of their respective committees. These responses may indicate limited progress to update governance documents to include data considerations across the ADM(IE) Group, or a lack of awareness of ongoing initiatives.

Roles and Responsibilities

A key enabler of effective data requirements planning is a clear understanding across the organization of the roles and responsibilities within each functional area and at each level of management. As Transformation Initiative #36, "Define Accountabilities and Authorities," progresses, an improved clarity of roles and responsibilities for all Level Two and Level Three organizations should lead to corresponding improvements in the approach to data planning. At the time of the evaluation, the completion of Initiative #36 was behind schedule and was reported as "on hold" until the macro-organizational model was reviewed.[22] Some senior interview participants advised that the parameters of ARA within the ADM(IE) Group are generally defined, but added that additional clarity of roles and responsibilities for ADM(IE) Level One and Level Two staff will be helpful as the ARAs are not well understood, applied consistently or integrated. The ADM(IE) Integrated Resource Planning Directive, however, is contributing to the definition of ARA requirements by identifying the organizational priorities that are to be incorporated into annual Level Two planning. In addition, the ADM(IE) Functional Planning Guidance document articulates the service provision and advisory functions that ADM(IE) delivers to the DND/CAF at large, and identifies lead organizations and points of contact responsible for these functions.

Interview participants noted the absence of clearly defined roles and engagement criteria between ADM(IE) organizations for environmental issues[23] and for the Indigenous Affairs Secretariat (IAS) and its liaison between other DND/CAF organizations, which have created challenges for the ADM(IE) Group. Interview participants stated the ADM(IE) Group primarily operates within discrete entities or silos, and as such, a shared understanding of the ARAs within the ADM(IE) Group is limited. Furthermore, they opined that a common understanding of roles and responsibilities will improve the stewardship of ADM(IE) portfolios and will contribute to evolving the Group's focus from transactional activities to more strategic decision making.

Information Management Tools

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[22] Transformation Project Initiative #29 "Establish macro-organizational design" is intended to develop the high-level macro-organizational design and provide precision on the roles and mandate of each Director General or Level Two organization in the ADM(IE) Group. Transformation Project Initiative #30 "Establish micro-organizational design" was completed in November 2016 and is described as an input to Initiative #36.

[23] Although environmental issues are closely linked to Real Property issues, environmental resources (such as designated Environmental Officers) were not part of the Centralization Project and resource transfers did not occur. This has created significant challenges for the delivery and governance of environmental risks for ADM(IE) as the custodian of DND Real Property.

Evidence from interviews and the document review showed that the full capabilities of the ADM(IE) data collection tools continue to be developed as the scope of data requirements is adjusted, user-interface issues are managed and new, emerging data needs are identified.

For real property management, information management systems and processes are being refined to meet the needs of stakeholders, including the user communities at the Real Property Operations Regions and Detachments. The IE Business Modernization (IEBM) project, completed in March 2017, was intended to support modern business governance through the implementation of integrated and standardized business processes and a robust information management solution, based on industry best practices.[24] It was designed to replace and consolidate the functionality of former obsolete applications used to track maintenance, life safety and code compliance for real property into DRMIS. The IEBM project resulted in the introduction of new data management and analysis modules available through DRMIS, referred to as the Infrastructure and Environment Resource Information System (IERIS).

Supported by the ADM(IE) Business and Data Support directorate, which is facilitating the transition of the ADM(IE) Group to a DRMIS-focused data environment, data users have the opportunity to request DRMIS module modifications and new data functions. This adaptability continues to enable planned incremental improvements and facilitate data use to meet the needs of decision makers. For example, interviewees advised that several post-IEBM initiatives to integrate new modules and complementary databases that were not originally within the IEBM project scope include Contract Data Management System data for Aboriginal-related procurement; and environmental modules such as Species at Risk, environmental assessment, Greenhouse Gas emissions, energy consumption and a DRMIS-integrated asbestos inventory. As the real property community and other divisions within the ADM(IE) Group continue to adapt to IEBM implementation, the Group must ensure that sufficient resources are allocated to train and to effectively manage change in an environment of evolving data needs.

> Planned incremental improvements to IERIS are facilitating improved data use to meet the needs of decision makers.

The Director General Environment and Sustainable Management (DGESM) and the IAS have relied on well-established reporting requirements to identify and prioritize data needs, however, much of the data for these functional areas is not yet integrated with DRMIS.[25] For environment-related data, the Defence Energy and Environment Strategy has aligned its performance targets with those of the Federal Sustainable Development Strategy to inform many of the DND/CAF's environmental data needs. DGESM also manages a broad range of other mandatory

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[24] Project Completion Report: Infrastructure and Environment Business Modernization Project, endorsed May 19, 2017.

[25] Energy consumption data is available in DRMIS, but not aggregated in a standalone module; data must be pulled from other sources in the system. Other data not included in DRMIS includes Species at Risk, Green House Gas Emissions, Environmental Assessment, and Contract Data Management System for Aboriginal procurement purposes. Future DRMIS updates are expected to include new modules to integrate these data sources.

environmental reporting requirements on behalf of the DND/CAF.[26] Given the regulatory requirements for environmental data capture and reporting, interview participants advised that plans are underway to also align reporting requirements with the respective performance measurement frameworks, to simplify and add value to data collection planning and processes. Similarly, ADM(IE) is working to establish centralized data and performance reporting for indigenous affairs. Interviewees indicated that ADM(IE) staff are developing a Defence Administrative Order and Directive (DAOD) to outline the requirements necessary to achieve Government of Canada reporting requirements and identify the DND/CAF organizations that oversee performance, set targets and collect data related to indigenous affairs.[27] The DAOD will also outline governing polices pertaining to indigenous affairs within the DND/CAF and the concomitant role of the new ADM(IE) IAS.

As the Transformation Project moves forward, and information management strategies and tools continue to mature, the planning and refinement of data requirements and the definition of roles and responsibilities will be integral to identifying information gaps, redundancies, and opportunities for improved integration and decision making within the ADM(IE) Group.

ADM(RS) Recommendation

1.   Ensure Transformation Project deliverables include clear guidance and direction regarding data and performance measurement to ADM(IE) staff at all levels and to ADM(IE) committees. Specifically, guidance and direction should explain the need to capture data and performance measures, what specific types of information are needed, and how data and performance measurement will be used for real property, environmental and indigenous related decision making within the ADM(IE) Group.

OPI: ADM(IE)

2.2.2 Data Collection and Analysis

In the centralized ADM(IE) organization, the responsibilities for data collection remain largely decentralized across the different functional areas, regions and detachments, and the ADM(IE) staff reviews, reports, and makes decisions on aggregated data through committees and other management bodies. In this section, organizational roles and responsibilities for data collection, the capacity for analysis within the ADM(IE) Group, data reliability and the availability and integration of tools will be discussed.

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[26] The reporting requirements include: environmental assessments; National Pollutant Release Inventory; Halocarbon Management; Polychlorinated Biphenyl Holdings; Waste Water; Defence Environmental Enforcement Actions; Environmental Petitions Process; Federal Contaminated Sites Inventory and Federal Contaminated Sites Action Plan; and the Species at Risk Act.

[27] Mandatory federal reporting requirements include: Annual reporting on uptake and compliance with the Government's Approach to Modern Treaty Implementation; Quarterly reporting for ongoing treaty implementation activities through the Modern Treaty Management Environment; and performance objectives related to the Procurement Strategy for Aboriginal Business.

> **Key Finding 3:** ADM(IE) staff generally indicated limited confidence in the reliability of data. Staff attributed this limited confidence to: user challenges with IERIS; insufficient training; and the lack of promulgated data standards and processes that would achieve a consistent approach to data collection across the organization.

> **Key Finding 4:** Data reliability concerns have negatively impacted the ADM(IE) Group's ability to exploit data, conduct comprehensive analysis and enable informed decision making.

Roles, Responsibilities, and Business Processes

An important factor contributing to the success of the ADM(IE) outcome area of informed decision making is a clear understanding, across the organization, of the roles and responsibilities for data collection at each level and within each functional area. By the nature of their position in Regional and Detachment offices, the Real Property Operations staff is often responsible for the collection of information and data for other ADM(IE) Divisions. Inconsistent identification of data collection requirements for Real Property Operations staff, however, has sometimes led to issues where data collection requirements are not well understood or coordinated. Questionnaire responses from Regional and Detachment Commanders suggest there are opportunities to improve the communication of data standards and processes to achieve a consistent approach across the organization. The questionnaire respondents also described varying and inconsistent approaches to address gaps where required data and performance measures were found to be unavailable or inadequate. Examples of actions taken range from escalating issues through the appropriate chain of command to trying to address issues locally. The 2016 Audit of Municipal Works also noted the need for the ADM(IE) Group to implement information management processes. To ensure the success of the ADM(IE) data collection model, common direction and standards should be applied to the decentralized data collection activities across the organization, to ensure information is available, collected and recorded in a consistent manner across different regions, detachments and functional areas.

Organizational issues

Responsibilities for collecting indigenous-related data are divided between multiple DND/CAF Level One Groups, which makes it difficult for the IAS to collate and use this data for decision making and reporting. A formal directive, to outline the division of roles and responsibilities for indigenous affairs within ADM(IE), DND/CAF stakeholders, and other Government of Canada Departments has not yet been developed. For example, this has led to the IAS staff not having direct access to key Aboriginal procurement data in DRMIS; this data must be requested from the Assistant Deputy Minister (Materiel) Group. Moreover, ADM(IE) staff cannot rely on the accuracy or completeness of the data because DRMIS and the Contract Data Management System are not integrated and there are reported to be discrepancies and duplication between these parallel

> Responsibilities for collecting indigenous and environment-related data are split between multiple Level One Groups, making it difficult for the IAS and DGESM to collect and use this data for decision making.

systems.[28] DGESM has had similar experiences with the responsibilities for environment issues being split between multiple Level One Groups. The guiding document for DGESM, "Concept of Operations - Environmental Support to DND Real Property Management" provides environmental compliance responsibility to Level One Group Principals and Commanders, and functional direction responsibilities to ADM(IE).[29] As a result, DGESM must rely on support from Base and Wing Environment Officers who are primarily responsive to their Level One chain of command. This reporting arrangement has had an adverse impact on the consistency and quality of environmental data received by DGESM.

Capacity and capability to conduct analysis

Interview participants reported that while their staff capacity is presently sufficient to analyze currently available, albeit limited, levels of reliable data, exploiting new data sources and emerging analysis capabilities through DRMIS may require additional staff capacity. On the other hand, one interviewee commented that the increased use of DRMIS for automated data analysis could potentially reduce the demand on staff. A significant number of Regional and Detachment questionnaire respondents indicated that they did not have sufficient time or available personnel to conduct data analysis. Several respondents stated they have not taken any action to address unavailable or inadequate data and performance measures, citing limited human resources that cannot be taken from day-to-day responsibilities to address systemic data issues. In addition, limitations in DRMIS/IERIS that allow only certain personnel to use the system to perform certain functions (known as role assignments) have also had an impact on the ability of staff at Regions and Detachments to use data from IERIS. An interview participant explained that role assignments have a large impact on smaller detachments where there are limited staff and many roles are required to be assigned; one individual is unable to hold more than one role assignment, limiting their ability to effectively utilize DRMIS.

The skill level of ADM(IE) staff is also impacting the ability to exploit new DRMIS capabilities. Multiple interview participants reported that additional training would improve the use of DRMIS for data analysis. In fact, some staff indicated that they have not yet received sufficient training to leverage the full capabilities of DRMIS to address the obligations associated with regulatory and compliance-based reporting. Of the training that was received, one interview participant commented that the training focused on basic use of the IERIS interface rather than "the why" or leveraging the capabilities of the system. For some ADM(IE) staff, skill fade has been an issue; as the use of IERIS may be infrequent, resulting in the loss of skills gained in initial training. Training appears to be an issue at the Regional and Detachment level as well, given that 20 percent of questionnaire respondents stated that the limited IERIS training was impacting their ability to use the system for data analysis. Questionnaire respondents at the Detachment level noted that because of these limitations, data was not being used to its full potential across all functional areas.

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[28] Key informants advised that there is a request from the IAS for a DRMIS module to capture all Contract Data Management System data and eliminate redundancy.
[29] ADM(IE) Concept of Operations – Environmental Support to DND Real Property Management, June 1, 2016

Plans have been developed to improve the capacity of the ADM(IE) group to facilitate the collection and analysis of data over time through the ADM(IE) Human Resources Management Strategy[30] and ongoing IEBM/DRMIS support from the IE Business and Data Support group as the Transformation Project progresses. Transformation initiatives #2 (adopt IEBM technology enablement), #3 (Develop broader ADM(IE) technology strategy), and #4 (ADM(IE) technology improvements), relating to the adoption of IERIS, all touch on this issue of capacity, from improving/fine-tuning the functionality of the tools and addressing capability gaps, to providing additional training to users of IERIS in the National Capital Region as well as to Real Property Operations Group Regions and Detachments. Interviewees commented that the greater use of data and analysis will take time and, as users spend more time working with the new DRMIS tools, they will become increasingly comfortable with them and learn to use them to their full extent.

Integration of DRMIS and other tools

Some data management modules provided by the IEBM project are well integrated within DRMIS, however modules or tools excluded from the IEBM project are still in the process of being integrated with DRMIS. The extent of integration has impacted the ability of ADM(IE) staff to analyze data for decision making. For instance, interview participants indicated that some systems are well integrated and enable ADM(IE) staff to analyze data more thoroughly and in new ways. For example, the Real Property Spatial Data Warehouse, which exists outside of DRMIS, allows Real Property Operations Group staff to geo-reference events such as an environmental spill, display it on a map, and link it to DRMIS. Similarly, interview participants explained that the VFA[31] exists outside of DRMIS but feeds collated data into it. The data within the VFA, however, has not yet been verified for reliability and the extent that it will meet the needs of ADM(IE) Group has not yet been determined.[32]

> Some ADM(IE) information management systems are well integrated with DRMIS and enable staff to analyze data in new ways, however, other systems are still in the process of being integrated.

For environmental data, interview participants reported that an Environmental Management System initiative has been introduced to reconcile environmental data and information into a single format for the ADM(IE) Group.

In other areas, non-integrated systems have hindered the ability of ADM(IE) staff to conduct data collection and analysis. For example, DRMIS cannot yet be used to identify buildings and building systems that contain asbestos. This information is contained in a separate national inventory and needs to be cross-referenced with information contained in DRMIS. In addition, IERIS is not inclusive of all environmental reporting and interview participants indicated that staff require further training to use and effectively integrate available data. One third of

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[30] Transformation Initiative #28 – "Develop IE HR and workforce strategic management plan".

[31] VFA is a set of software products used for capital asset management. ADM(IE) is using VFA products to develop a database of facility condition information across the real property portfolio, which will serve as a baseline for future project planning.

[32] IEBM Implementation Transition Plan Deliverable, Version 2, March 29, 2017.

questionnaire respondents commented that the data management tools they use for analysis are not linked, making it difficult and time consuming to locate and use relevant information for analysis.

Availability and accessibility of analytical tools

Analytical tools are key to improving the use of data and performance measures in decision making. Business Intelligence and Business Objects are tools/capabilities within DRMIS that have been brought online through IEBM. These tools enable ADM(IE) staff to perform data analytics, in alignment with the broader departmental initiative to enable integrated Defence Analytics.[33] Four of 24 respondents to the questionnaire, however, commented that the capabilities of DRMIS did not currently meet their data analysis expectations, which has had an effect on their ability to conduct analysis. Furthermore, some respondents stated that they rely on alternative tools to conduct data analysis. Many regional and detachment commanders also reported using "shadow databases" in Microsoft Excel, allowing them to design the data fields according to their needs and ensure some level of control over the data, compared to the reportedly unreliable DRMIS product. Interview participants also advised that Facilities Management contracts at many sites and the data they generate are incompatible with the intended use of the DRMIS Plant Maintenance module. Data available through these contracts are not presently detailed enough for the level of analysis required by the Real Property Operations Group. This has had an impact on the availability and reliability of data within DRMIS and the ability to analyze data through current methods and through the Business Intelligence and Business Objects modules in DRMIS. Consequently, this constraint can have a follow-on effect, impacting the quality of information being considered at the Real Property Operations Committee and its associated sub-committees, which inform and advise the Infrastructure and Advisory Board on portfolio-wide issues.

Analytics capabilities within the ADM(IE) Group and the wider DND/CAF are critical to identifying broad trends and issues to inform decision making. The implementation of Defence Program Analytics will be focused on "enabling decision makers to adopt the [analytics] capability and on facilitating analytics integration both with governance structures and with strategy and reporting frameworks".[34] The analytics capability will address the "need for the DND/CAF to establish a trusted single source of data for enterprise reporting and analytics" that will support decision makers at the strategic and operational levels.[35] Ideally, the ADM(IE) DRMIS-based analytics capability will be complementary to the broader aims of Defence Program Analytics. With training, ADM(IE) DRMIS and other data users would be able to use analytical tools to generate custom reports on demand using reliable, certified information. In the interim, and to facilitate information sharing, interview participants advised that ADM(IE) plans to share approved reports generated from DRMIS analytics tools across ADM(IE) divisions.

Data reliability

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[33] Chief of the Defence Staff/Deputy Minister Joint Directive to Develop and Operationalize a Defence Program Analytics Capability, July 2017.
[34] Defence Program Analytics Initiating Directive.
[35] Ibid.

A common opinion expressed by ADM(IE) interview participants was that inconsistencies in the quality and reliability of the collected ADM(IE) data threatens ongoing data-centric initiatives and the achievement of data-driven decision making. Of interest, across organizations globally, data quality is most commonly cited as the second biggest barrier to data-based decision making, after the availability of required information.[36] As discussed previously, interview participants and questionnaire respondents attributed a number of issues to their limited confidence in data reliability: lack of promulgated data standards and processes to ensure consistent data collection; division of responsibilities related to the collection of indigenous and environmental data; and insufficient training on IERIS.

Additional data collection requirements were recently introduced through the IEBM and VFA projects. A number of interview participants reported that collection and input of this data is still nascent, resulting in data quality, reliability, consistency, and availability concerns that affect data analysis and its subsequent decision making. Concerns regarding data reliability and completeness were also noted in the Audit of Municipal Works. Interview participants advised that data reliability concerns are affecting ADM(IE) Level Two organizations and committees' ability to incorporate data into decision making. Specific examples include:

- The inability to conduct trend analysis;
- Unreliable corrective and preventative work order cost data;
- Inability to accurately assess asset condition of real property assets;
- Difficulties in accurately measuring and reporting on environmental outcomes; and
- Difficulty in assessing compliance with energy management and health and safety regulations related to halocarbons and asbestos.

At the Regional and Detachment levels, a significant number of questionnaire respondents agreed that the use of data and performance measures in analysis and decision making could be improved. Forty-eight percent of questionnaire respondents stated that the data in DRMIS is often incomplete, incorrect, or out of date. Historical data was also described as lacking, making trend analysis difficult. Questionnaire respondents indicated that data reliability concerns had a negative impact on their ability to use data in decision making and analysis.

Evidence from interviews and document reviews largely suggest that data reliability will improve with time, as ADM(IE) staff become more familiar with the new data collection tools and data becomes more consistent. As the IEBM project was completed in March 2017, related Transformation Project initiatives will continue to address the effectiveness of IERIS in subsequent years. As also noted in the Audit of Municipal Works, implementation of data collection processes will be key to improving the reliability of data available through IERIS. The ongoing VFA project also intends to improve asset condition data. Existing data, such as financial and real estate inventory information is deemed to be reliable and is currently used by the Real Property Operations Group staff for analysis supporting real property management and

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[36] Global Survey – Data-Driven Decision Making – 14 Recommendations on How to Benefit, https://bi-survey.com/data-driven-decision-making-business, accessed February 09, 2018.

at the Infrastructure and Environment Board. DGESM collects a broad range of environment-related data to support mandatory departmental reporting to environmental regulatory agencies and Departmental progress in achieving the targets outlined in the Defence Energy and Environment Strategy and the Federal Sustainable Development Strategy. While not all data is integrated into DRMIS, interview participants advised that data related to energy, contaminated sites, and greenhouse gas emissions is reliable and is used with confidence. Other interviewees also indicated that future improvements in data reliability will allow them to better use data to support project prioritization, the creation of multi-year plans for the real property portfolio, and better support the Real Property Maintenance Plan.

ADM(RS) Recommendation

2.   To further enable comprehensive data analysis and informed decision making, verify the key issues that impede the achievement data consistency and reliability across the ADM(IE) Group and develop a plan and timeline to remedy those issues.

OPI: ADM(IE)

2.2.3 Use of Data for Decision Making

To assess the use of data for decision making, this section discusses the current state of data use to support decision making; the extent that the Transformation Project is influencing the achievement of results; and whether the information needs of decision makers are being met.

> **Key Finding 5:** The level of confidence that the Transformation Project will result in improved data use to enable informed decision making, and achieve the organizational end-state, differs significantly between Real Property Operations Group Regional/Detachment staff and the ADM(IE) headquarters staff.

Successes and areas for improvement

Despite the range of challenges identified earlier in this evaluation report, interview participants and questionnaire respondents advised that limited, reliable data is available within ADM(IE) Divisions and has been used to inform decisions within functional areas. Within some ADM(IE) Divisions, relevant available data is being used for project prioritization and integrated resource planning. For example, both the Real Property Operations and the Director General Portfolio Requirements Groups use a scorecard system to prioritize Real Property projects, assigning points to projects based on a variety of measures with data extracted from DRMIS and other databases. Interview participants indicated that both Real Property Operations and Director General Portfolio Requirements staff plan to rely on DRMIS to a greater extent as relevant data becomes more available and mature. The interviewees also advised that use of data for decision

making is improving as performance measures are now required to support requests for resources, in accordance with the integrated resource planning process.[37]

Interview participants discussed examples of ADM(IE) committees and sub-committees which have used performance data to effectively support decision making, such as the IE Resource Management Board, the IE Management Committee, the Defence Environmental Management Committee and the IE Board.[38] While other ADM(IE) committees and sub-committees may also use various types of available data to support decision making, the terms of reference for committees and sub-committees do not explicitly outline expectations for the use of data to support decisions. In addition, the expectation and type of support to ADM(IE) committees by established ADM(IE) information-sharing networks, such as the Environment Network, Indigenous Affairs Network (IAN), Real Property Network and Portfolio Network, have also not been well defined. Interview participants reported that there are no established means to share information outside of the IAN, or for the IAN and the IAS to receive information from Real Property Regions and Detachments and from other Groups within the DND/CAF. Interview participants indicated, however, that additional resources had been acquired to address this issue and develop a more systematic approach to internal information sharing and communications. In addition, interviewees pointed out that there is presently no dedicated comprehensive body, such as an Indigenous Committee or Working Group, to consider all available information on indigenous issues and take decisions on key issues.[39]

Impact of available data

Data availability and reliability directly affect the analysis of data and its use to support decision making. Interview participants advised that, at present, ADM(IE) financial data is the most reliable and available data source, and as such, it is used extensively. Questionnaire respondents also indicated they rely heavily on financial data for real property management decisions at the Regional and Detachment levels. Anecdotal, experiential, and "gut feeling" information was also mentioned as a component of decision making by interviewees and questionnaire respondents. However, in addition to financial data and important contextual, qualitative information gained from experience and expertise, multiple interview participants reported that they would eventually like to incorporate more diverse data sets in order to support well-informed planning and management decisions. Questionnaire respondents expressed mixed opinions in terms of the extent that currently available data sources were useful and supported real property decision making at the Regional and Detachment levels. A significant number of questionnaire respondents reported that, while they are currently using a wide range of data and information sources, they would like to improve data usage and adopt a systematic use of data to support decision making.

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[37] Integrated Resource Planning Handbook.

[38] The IE Management Committee has used Departmental Performance Management Framework reporting and data from DRMIS and other sources to support decision making. The Infrastructure and Advisory Board has used performance measurement data, although primarily financial, in its assessment of projects for prioritization.

[39] The IE Management Committee has been previously used to share information at the strategic level about Approach to Modern Treaty Implementation obligations.

Going forward

A continuing challenge for ADM(IE) management is to facilitate an improved awareness and a common understanding across the ADM(IE) Group with respect to the aims and objectives of the Transformation Project. Confidence in the ability of the Transformation Project to address the use of data in decision making differed significantly between ADM(IE) staff at the headquarters level and the Regional and Detachment Commanding Officers within the Real Property Operations Group.

Many interview participants at the headquarters level described their vision for future decision making within the ADM(IE) Group and recognized that the Transformation Project continues to be the major driver for the increased and improved use of data to enable informed decisions. Over three quarters of questionnaire respondents from Regions and Detachments, however, expressed limited confidence that the Transformation Project would be successful and indicated that they somewhat disagreed, strongly disagreed or were neutral that their data and performance measurement needs can be met in the next five years through Transformation. One interview participant noted that for the 39 transformation initiatives to be implemented in a cascading fashion, there needs to be a shared and common understanding of the initiatives, their priorities, and the intended end-state for the ADM(IE) Group.

Several interview participants noted that there continues to be a misunderstanding of centralization versus transformation and the associated objectives among various staff at different levels. The lessons learned section of the 2017 Transformation Year-end Report[40] stated that "ADM(IE) staff do not have a clear picture of what transformation is and what it means for them." As an action plan for this issue, the Report indicated the intention to "develop plain language artifacts to explain transformation." Four of five items listed in the ADM(IE) Transformation Risk Register[41] noted risks related to change management, organizational capacity, and project management. The Risk Register also noted the impact of each risk and an Action Plan to mitigate the risks.

Moreover, questionnaire respondents highlighted a need for a culture change within the ADM(IE) Group, appropriate resources and meaningful direction in order to meet an end-state that is not yet clearly understood. Interview participants also opined that a broad culture change is required within the ADM(IE) Group to enable a greater use of data to support decision making. The development of a data-centric culture within the ADM(IE) Group would ensure the systematic use of data in external reporting, increased use of data in decision making, and the recognition of the need for accurate and reliable data for these purposes. A key challenge to the success of an emerging ADM(IE) data-centric organization is building both understanding and consensus for the use of data by management, staff, and by committees to support decision making to achieve results.

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[40] ADM(IE) Transformation Project Year End Report (April 2017).
[41] ADM(IE) Transformation Risk Register (October 2017).

ADM(RS) Recommendation

3.   To ensure a common understanding across the ADM(IE) organization, ADM(IE) staff should be informed regularly on the progress of the Transformation Project and how the achievement of the transformation initiatives contribute to organizational priorities and long-term objectives. This should include information on the leveraging of planned and collected data, through the use of tailored business analytic processes to inform infrastructure management and investment decisions, fully identifying and considering linked environmental and indigenous considerations.

OPI: ADM(IE)

Annex A—Management Action Plan

Guidance and Direction

ADM(RS) Recommendation

1.   Ensure Transformation Project deliverables include clear guidance and direction regarding data and performance measurement to ADM(IE) staff at all levels and to ADM(IE) committees. Specifically, guidance and direction should explain the need to capture data and performance measures, what specific types of information are needed, and how data and performance measurement will be used to support real property, environmental and indigenous related decision making within the ADM(IE) Group.

Management Action

Agreed. As part of Transformation, ADM(IE) will continue to develop clear guidance and direction regarding data and performance measurement in conjunction with the Departmental Results Framework (DRF).

Milestone	Target Date	OPI
1. Develop a Governance Framework as a guide to ensure that ADM(IE) is effectively managing its real property assets. It will integrate all accountability requirements for the planning and management of investment decisions under the Policy on the Planning and Management of Investments.	April 2019	ADM(IE) (DGIEGPS)
2. Successfully collect and report on the new performance indicators under the Departmental Results Framework and share the results with ADM(IE) staff and management committees.	April 2019	
3. ADM(IE) will review and align its Governance Structures to reflect the requirements identified in the Governance Framework. To ensure data quality, consistency, and clear direction, a Terms of Reference for each Committee will be promulgated and will include guidelines about decision making and roles and responsibilities for data oversight.	November 2019	
4. Finalize development of performance information necessary for internal decision making and for Performance Information Profiles (PIPs) under ADM(IE) DRF Programs.	June 2020	

Table A-1. Milestones for Management Action Plan 1. This table shows the milestones, target completion date, and OPI for Management Action Plan 1.

Data Reliability

ADM(RS) Recommendation

2.   To further enable comprehensive data analysis and informed decision making, verify the key issues that impede the achievement data consistency and reliability across the ADM(IE) Group and develop a plan and timeline to remedy those issues.

Management Action

Agreed. ADM(IE) is establishing an analytics capability that is aligned and consistent with Defence Program Analytic direction. This capability will help verify some of the key issues that impede the achievement of data consistency and reliability across the ADM(IE) Group. Specifically, ADM(IE) will:

Milestone	Target Date	OPI
1. Establish a committee with defined roles and responsibilities that will be tasked with the ongoing oversight and monitoring of key information management activities including analytics and data governance.	September 2018	ADM(IE) (COS(IE))
2. Identify and establish reporting requirements including the identification of the data required to support analysis and reporting for PIPs and other internal Performance Measures.	December 2018	
3. Issue direction that details clear responsibilities at the L2 and L3 levels for capturing, validating, and certification of data.	April 2019	

Table A-2. Milestones for Management Action Plan 2. This table shows the milestones, target completion date, and OPI for Management Action Plan 2.

Transformation Project Awareness

ADM(RS) Recommendation

3.   To ensure a common understanding across the ADM(IE) organization, ADM(IE) staff should be informed regularly on the progress of the Transformation Project and how the achievement of the transformation initiatives contribute to organizational priorities and long-term objectives. This should include information on the leveraging of planned and collected data, through the use of tailored business analytic processes to inform infrastructure management and investment decisions, fully identifying and considering linked environmental and indigenous considerations.

Management Action

Agreed. To ensure a common understanding and regular updates of the Transformation project, ADM(IE) will develop and execute a Communications Plan to engage stakeholders and all ADM(IE) staff on the progress of the Transformation initiatives and how these initiatives contribute to the desired ADM(IE) end-state.

Milestone	Target Date	OPI
1. Finalize the Communication Plan.	November 2018	ADM(IE) (DGIEGPS)
2. Implement the Communication Plan for the Year 3 Transformation Initiatives.	March 2019	

Table A-3. Milestones for Management Action Plan 3. This table shows the milestones, target completion date, and OPI for Management Action Plan 3.

Annex B—Evaluation Methodology and Limitations

1.0 Methodology

The evaluation of the Infrastructure Management – Real Property considered multiple lines of evidence to assess relevance and performance. The aim of this evaluation was to assess whether decision makers have the necessary information available to make well-informed decisions. The evaluation did not assess the effectiveness or the outcomes of decisions.

The methodology established a consistent approach in the collection and analysis of data to help ensure the reliability of the evaluation process. Qualitative information was used to establish context for decision making in the ADM(IE) Group as well as to interpret the significance of key information. Qualitative assessments were used to validate the overall analysis and to develop the evaluation findings and recommendations.

1.1 Overview of Data Collection Methods

Data collection methods were selected based on the data required to address performance indicators in the evaluation matrix. The following data collection methods were used to gather qualitative and quantitative data:

- document and literature reviews;
- stakeholder questionnaire; and
- key informant interviews.

1.2 Details on Data Collection Methods

1.2.1 Document and Literature Review

A preliminary document review was conducted, as part of the planning phase of the evaluation, to garner a foundational understanding of the ADM(IE) organization, and ADM(IE) centralization and transformation initiatives. A comprehensive document review was conducted as part of the conduct phase of the evaluation, focusing on aspects of informed decision making. The literature review was limited due to time constraints.

The following documents were reviewed during the scoping and conduct phase of the evaluation:

- Canada's defence policy: *Strong, Secure, Engaged*;
- Corporate documents: Reports on Plans and Priorities, Departmental Performance Reports, Departmental directives, ADM(IE) Strategy, ADM(IE) Integrated Resource Plans, Strategic Planning Guidance, and Transformation documents;
- Legal and policy documents: Acts and Regulations, and TB policies;
- Academic papers and articles; and
- Other documents: ADM(RS) evaluations and audits, Office of the Auditor General audits, other internal studies or reviews.

1.2.2 Stakeholder Questionnaire

A bilingual (English and French) stakeholder questionnaire was developed by ADM(RS) and distributed to Commanding Officers of Real Property Operations Group Detachments and Regions. Recipients were identified using information from Real Property Operations Group and the Microsoft Outlook Address Book/Global Address List (GAL). The survey was distributed to 34 recipients, was online for three weeks, and had a response rate of 94 percent.

The questionnaire asked questions on the subject of whether ADM(IE) decision makers and committees have the necessary data and information to enable well-informed decisions that support results. Questions were organized to receive feedback on data and information specific to the functional areas – Real Property Management (including health and safety), Environment, and Indigenous Affairs – as well as decision making in general, and for ADM(IE) committees.

1.2.3 Key Informant Interviews

Key informant interviews and discussions with ADM(IE) staff and other stakeholders provided important sources of qualitative information.

Informal pre-scoping interviews were conducted with seven key ADM(IE) stakeholders to determine appropriate areas of inquiry within the initially prescribed scope and develop the foundation for the development of comprehensive key informant interview guides. These initial interviews, with additional research, determined that the initial scope was unrepresentative of key issues and risk areas and that the ongoing ADM(IE) Transformation Project had already identified key issues that were being addressed through transformation initiatives.

The revised scope, which focuses specifically on the ADM(IE) immediate outcome area of "informed decision making" was approved in mid-October 2017. To support this area of inquiry, 19 interviews were conducted with 29 ADM(IE) staff at the Director General, Director and staff level. Interviews were semi-structured and conducted in-person, either one-on-one or in a group setting. Some informants were interviewed multiple times. Detailed notes were taken during the interviews and then transcribed and analyzed according to research themes. Interview notes were shared with key informants for fact verification when required. When necessary, interviewees provided written responses to the interview questions after the interview was completed to provide more detailed responses.
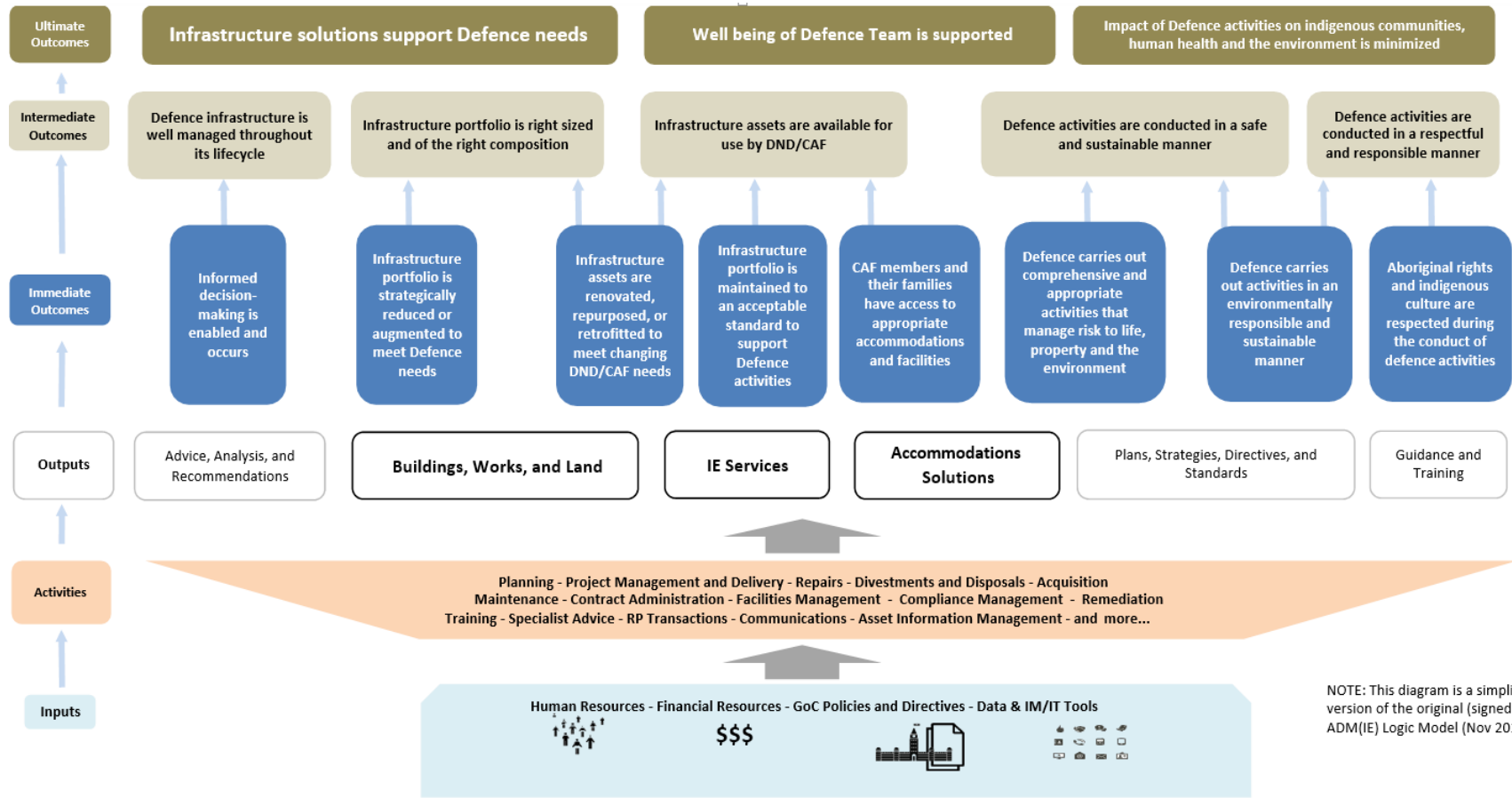
2.0 Limitations

Table B-1 describes the limitations and mitigation strategies employed in the Evaluation of Infrastructure Management – Real Property:

Limitation	Mitigation Strategy
Methodological • Although the Infrastructure Management – Real Property program involves numerous stakeholders over multiple levels throughout the entire DND/CAF, the	The evaluation team sought to interview a large number of stakeholders throughout the ADM(IE) Group. A questionnaire was used to gain further comment from ADM(IE)

evaluation focused on decision making within the ADM(IE) Group.	stakeholders who were unable to be interviewed.
Program Maturity • The centralization of ADM(IE) was completed on April 1, 2016. However, the centralized ADM(IE) Group continues to undergo transformation and outcomes may not yet be fully realized.	Evidence was considered in context as capabilities are being developed and are evolving to support the achievement of outcomes. Where the Transformation Project is discussed, the evaluation team made sure to note that reference to the initiatives and their progress was current when drafting the evaluation text.
Time constraints • The evaluation had a limited time period to conduct the evaluation in order to meet required deadlines. In addition, changes were made to the evaluation scope late in the evaluation process, limiting time available to conduct the main data collection and analysis phase of the evaluation.	In consultation with ADM(IE) staff, the decision was made to focus the evaluation on one outcome of the ADM(IE) Group Logic Model, "Informed decision making is enabled and occurs." This permitted the evaluation team to focus their efforts and assess this limited scope.
Attribution to Outcomes • Attribution of activities and outputs to immediate outcomes are challenging due to ongoing Transformation Project initiatives.	Focus was placed on measuring the extent that the outcome "Informed decision making is enabled and occurs" is achieved. This assessment may then contribute to assessing the achievement of intermediate outcomes.

Table B-1. Evaluation Limitations and Mitigation Strategies. List of the limitations of the evaluation and the corresponding mitigation strategy.

Reviewed by ADM(RS) in accordance with the *Access to Information Act.* Information UNCLASSIFIED.

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Annex C—Logic Model

Figure C-1. Logic Model for ADM(IE). This flowchart shows the relationship between ADM(IE)'s main activities, outputs and expected outcomes. Approved November 30, 2016.

Reviewed by ADM(RS) in accordance with the *Access to Information Act.* Information UNCLASSIFIED.

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Annex D—Evaluation Matrix

Evaluation Matrix – Infrastructure Management – Real Property				
Evaluation Question	**Key Issues to be examined**	**Indicators**	**Program Data**	**Doc & Lit Review**
1.0 To what extent does ADM(IE) informed decision making support Government of Canada priorities?	**1.1** ADM(IE) informed decision making supports Canada's defence policy: *Strong, Secure, Engaged* and the TB Policy on Results.	**1.1.1** Alignment of ADM(IE) informed decision making with the TB Policy on Results.	No	Yes
		1.1.2 Alignment of ADM(IE) informed decision making with Canada's defence policy: *Strong, Secure, Engaged* (2017).	No	Yes
2.0 To what extent is the ADM(IE) immediate outcome, "informed decision making is enabled and occurs" being achieved at the headquarters, regional, and detachment levels?	**2.1** Whether ADM(IE) decision makers and committees have the necessary information to support informed decision making **2.2** An assessment of how performance measurement, data, and tools enable decision making in the ADM(IE) Group particularly through: a. In Real Property Operations and meeting health and safety requirements; b. To support environmental requirements; and c. To support obligations regarding indigenous rights. Questions will be addressed at three levels: Headquarters, Regional, and Detachment levels.	**2.1.1** Performance measures, data and tools meet the needs of decision makers at each level: • Needs and requirements of decision makers are taken into account in the development of data collection and performance measures. • Performance measures, data, and information management tools meet identified requirements and support decisions. • Decision makers are able to use data and performance measures to make informed decisions.	Yes	Yes
		2.1.2 ADM(IE) committees have the ability to use data and performance measurement in decision making at each level. • Capacity of ADM(IE) staff to provide support to committees for analysis and preparation of information for committee meetings. • Extent to which ADM(IE) committee structure, roles and responsibilities includes considers performance measurement and data.	Yes	Yes

Table D-1. Evaluation Matrix. This table indicates the data collection methods used to assess the evaluation issues/questions for determining the Infrastructure Management - Real Property Program's relevance and effectiveness.