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INCREASING ADM(IE) PROJECT APPROVAL AUTHORITIES

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AIM

1. The aim of this paper is to outline how the Associate Deputy Minister of Infrastructure and Environment (ADM(IE)) can further improve its project management professionalism, with the ultimate goal of increasing its autonomous project approval authorities to $25M. Using reflective analysis, this paper assesses associated threats to the organization's credibility, and recommends counter measures including better performance metrics and technical expertise in the cost validation process.

INTRODUCTION

2. In April 2019, Treasury Board (TB) repealed several separate policies relating to project management and replaced it with a single "Policy on the Planning and Management of Investments"[1]. Following suit, the Department of National Defence (DND) updated its own Project Approval Directive (PAD), a several hundred-page framework outlining project approval authorities and processes within the department. In the previous PAD, ADM(IE) was given special authorities beyond those of the other Level 1 Organizations (L1s) in order to expeditiously execute its low-risk and routine portfolio of infrastructure projects. Where the majority of other L1s were limited to $1M approval level, ADM(IE) had special authority to approve and govern its own projects up to $5M[2], as well as a streamlined departmental approval process for projects up to $25M[3].

3. Stemming from the more relaxed TB policy this past Spring, the new PAD grants increased authorizations to all L1s. Every L1 received a baseline increase from $1M to $2.5M, under which they have complete autonomy for approval and implementation of projects[4]. Further, the new PAD sub-divides risk into financial envelopes. The lowest-risk $2.5M-10M envelope allows L1's to generate only basic project documentation and simply report planned and executed activity to the Project Management Board (PMB)[5]. While ADM(IE) also benefits from this bump in near-autonomous approval authority from $5M to $10M, it interestingly loses much of its "special" authority compared to that of other L1s. The sole exception is the continued streamlined departmental approval process for infrastructure projects under $25M[6], in which they are still required to prepare a full corporate submission package and abide by stringent review standards, but do not need to seek TB approval.

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[1] Canada, Policy on the Planning and Management of Investments (11 Apr 2019).

[2] Minister of National Defence (MND), Project Approval Directive (2015), 191.

[3] Vice Chief of Defence Staff, "Proposal – Approval Process for $5-$25M Capital Infrastructure Projects", (11 Jan 2016).

[4] Minister of National Defence (MND), Project Approval Directive v.1.1 (2019), 326.

[5] *Ibid*., 326.

[6] *Ibid*., 46.

4. This paper will make the case as to why the ADM(IE) project approval authorities must be increased. ADM(IE) requires special delegations above its peers because the nature of its business professionalises project management, and the projects that it manages are largely low-risk and routine comparative to other organizations. The paper will specifically examine the risk factors associated with increased delegations of authority. It will argue that cost is the sole risk of relevance in the infrastructure portfolio, and how the degree of impact associated with that risk is unlikely to jeopardize the Department's project management credibility. Finally, it will highlight barriers to success in reducing cost risks, including improved analytics and organizational expertise. The entire argument sets the conditions towards proving ADM(IE)'s ability to exceed its peers in the project management domain, with the view of increasing its autonomous project approval authorities with the next iteration of the PAD in the years to come.

DISCUSSION

5. Problem Statement. In the current state of the Department's project approval process, a 10 year project life cycle is unfortunately considered the idealized average[7]. After significant effort is applied by project sponsors to prepare corporate submissions for TB, files can wait in queue for years at times waiting to be tabled on the agenda of the various gate review boards for ultimate approval. This level of delay is inappropriate given the low-risk associated with infrastructure projects, coupled with the required timeliness to meet departmental priorities, set out in the 2017 Defence Policy. Strong, Secure, Engaged (SSE) sets out several infrastructure priorities, including consolidating the footprint to reduce cost of ownership and improve energy efficiency towards reducing greenhouse gas emissions by 40% by 2030[8]. Of the 64 ADM(IE) projects currently approved on the Defence Capabilities Blueprint, 75% achieve subsets of SSE or have major operational impacts[9]. Beyond what has already been approved, ADM(IE) currently has 167 projects awaiting approval with over 50% having direct linkages to SSE and 25% specifically focused on energy and consolidation[10]. If the 10-year life cycle for many of those projects hold true, then the Department is hampering its own ability to achieve its strategic goals. There is a need for greater flexibility.

> The overall condition of the infrastructure portfolio is degraded. The process of recapitalization of the portfolio generates a large number of low value, low risk projects that are valued at more than $5M but less than $25M. These low risk, low complexity, and low cost projects currently follow the same process as all other projects which impacts capacity. Therefore this proposed process is seen as a low risk, high value initiative.[11]

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[7] MND, Project Approval Directive (2019)…, 35.
[8] Canada, Strong Secured, Engaged: Canada's Defence Policy (2017), 112.
[9] Canada, Defence Capabilities Blueprint, last accessed 19 October 2019, http://dgpaapp.forces.gc.ca/en/defence-capabilities-blueprint/index.asp
[10] "ADM(IE) FY2019-20 Validation Board Consolidated Demand List" (21 Feb 2019).
[11] Vice Chief of Defence Staff, "Proposal …", 1.

6. Risk. In the quote above, a representative from Chief of Programme (CProg) makes an ultimately successful argument to the Deputy Minister (DM) in 2016 towards streamlining ADM(IE) infrastructure project approvals. The same reasoning can be applied to argue for even more autonomy. The following will examine risk with more granularity.

a. Expertise. Unlike other L1s, ADM(IE) operates almost exclusively in the field of project management. On top of the thousands of maintenance and repair, and minor capital projects well within its own authority, it has by far the highest percentage of approved major capital projects of all other L1s[12]. Similarly, it owns the low-cost and low-risk domain. ADM(IE) sponsors the vast majority of the projects listed under $20M, a category that only represents only 4% of interest from other L1s, but over 30% of ADM(IE)'s interests. This analysis showcases the "large number of low value, low risk projects"[13] that are simply an extension of similar effort applied to the rest of ADM(IE)'s routine business. Project management professionalism is institutionalized above other L1s, therefore special authorities are appropriate.

b. OPMCA and PCRA. The Organizational Project Management Capacity Assessment (OPMCA) rating is applied departmentally and drives project management authorities granted from TB. DND has recently re-asserted its capacity class-3 status[14], providing a valued position of authority. Complimenting the OPMCA departmental rating, the Project Complexity and Risk Assessment (PCRA) is a project-by-project estimate of the level of risk involved. Both ratings are on a 1 to 4 scale and TB grants authority to all departments to approve any project within its capacity class; therefore, DND can approve any project with a PCRA of 3 or lower as shown in Figure 1 below. The mechanism of review is done during the PCRA validation, an average 30-day exercise[15] in which TB approves the sponsor's assessment of the project risk and can choose still to restrict approvals on lower PCRA projects if sufficient politically risk exists.

[12] Canada, Defence Capabilities Blueprint…
[13] Vice Chief of Defence Staff, "Proposal …", 1.
[14] MND, Project Approval Directive (2019)…, 9.
[15] Vice Chief of Defence Staff, "Proposal …", 2.

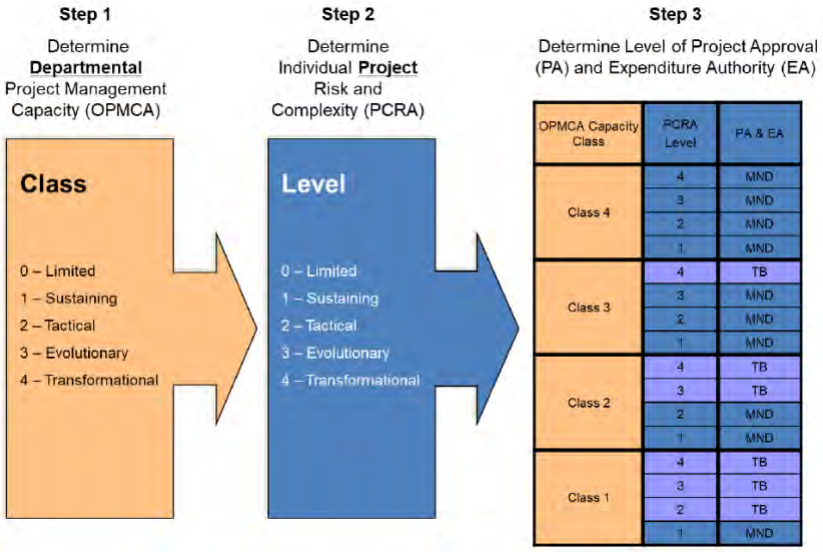

Figure 1 – Relationship between OPMCA and PCRA
Source: Project Approval Directive v.1.1 (2019), 9.

The relevance for ADM(IE) is that the majority of its projects have a PCRA of 2 or lower, signifying low-risk nature of the entire portfolio. Further, ADM(IE) does not have the type of projects that are likely to adversely impact the Department's OPMCA score, should a project go wrong. Therefore, increased authorities for ADM(IE) are unlikely to jeopardize the Department's treasured OPMCA rating. Annex A further examines how each score is evaluated, and exemplifies the low-risk imposed from typical infrastructure projects.

c. Typical Risk Factors. The PAD outlines typical risk in the form of scope, schedule and cost[16]. Infrastructure projects are low-risk in most of these areas, with the exception of cost. In terms of scope, there is typically not much to review at a strategic level beyond the need to conduct the project in the first place. This is contrasted against many equipment and platform purchases that can have extensive discussions on scope and capability endorsement. In fact, the majority of infrastructure projects support pre-endorsed and long-standing defence capabilities. Further, determining whether to conduct an infrastructure project on a case-by-case basis is a rather narrow and tactical decision model that is better left to the Master Real Property Development Plans (MRPDPs) strategically conducted at each base every 5 years. Secondly, infrastructure schedule risks are minor compared to that of other projects – and schedule slippage is not likely a high cost-driver in fixed-price construction contracts. Lastly, however, cost is the highest risk factor with infrastructure projects, and deserves special consideration below.

[16] MND, Project Approval Directive (2019)…, 200.

d. Costing. Within DND, infrastructure project costs are estimated with relative simplicity. Since the organization lacks the capacity to conduct its own cost estimates, they are produced almost exclusively by third party consultants. Upwards of 85% of the project value is the construction cost, with the remainder assigned to pay design consultants, contracting authority's fees, and other miscellaneous project costs. Project managers (PMs) do their best to validate consultant cost estimates, but often lack specific expertise and capacity to do so. The process of cost validation consists of external financial analysts, largely conducting sensitivity analysis on project assumptions to determine cost risks. It is a statistical, rather than technical review exercise that is ultimately done with the aim of reducing actual cost variance to ideally +/- 10-20% of the projected cost[17]. A deep dive into costing efficiency within ADM(IE) (available as Annex B) yielded several interesting insights. 1,300 projects were analyzed over a 4-year span, and subdivided into cost envelopes. Notably, the average project across all cost envelopes ranging from under $100K to over $60M was awarded for less than was initially estimated in the project. Additionally, the average cost growth occurring after contract award was between 9-20% across all envelopes. The net impact to initial cost estimates has typically been in the range of +/- 7%, well with 10-20%. Overall this is indicative of a costing process that is effective in the eyes of TB, but can and should be improved upon in order to reinforce ADM(IE)'s credibility.

7. Barriers to Success. As discussed, cost estimation and control is arguably the only notable risk factor for ADM(IE)'s infrastructure projects, with reflective analysis showing that it can be improved. The following issues must be addressed in order to improve costing performance and the organization's project management reputation.

a. Performance Metrics. The statistical analysis shown in Annex B and discussed above, was the result of a labour-intensive manipulation of multi-source data. It is currently not easy to compare initial project estimates, with initial contract award values, with final costs. Those metrics, however, provide valuable information for a host of reasons including validating costing accuracy, assessing scope definition and control, etc. Further, the deep dive could not glean potentially valuable benchmarking information such as projects of 'x' type are more likely to yield cost overruns than others – information that is quite valuable during the initial cost estimation. Performance metrics of that type are vital towards not only monitoring and adjusting to improve organizational success, but also in accurately depicting organizational performance to the Minister and TB. Without institutionalized metrics, performance audits would simply pick select projects at random, potentially focusing on

[17] MND, Project Approval Directive (2019)…, 182.

several poor performances without any visibility on the more dominant good performances.

b. Costing Expertise. As discussed, once third party consultants provide their report on project cost estimates, the Project Manager typically reviews it for accuracy. This is a best practice rather than a hard requirement, and the effort applied is commensurate with the time available to the PM who is typically balancing several ongoing projects. Then financial analysts within ADM Finance (Fin) communicate back and forth with the PM on project assumptions to dig into the volatility of the numbers, a process that can take 10 weeks on average[18]. Most analysts are certified with the International Cost Estimating and Analysis Association[19], and while they apply expertise on currency fluctuations and inflation changes[20], they lack technical experience to evaluate technical assumptions such as the construction material markets, or flaws in the scope of requirements. Their ability to truly review and validate costs pales in comparison to that of a Professional Quantity Surveyor (PQS). "A PQS has a detailed and comprehensive knowledge of construction and construction methods, as well as the laws relating to construction projects and accounting, in order to provide cost and financial advice"[21]. Whereas a PM's ability to validate a consultant cost estimate is as function of their time available and exposure/recent experience, and whereas a financial analyst is limited mainly to knowledge of economic forces, a centralized PQS cell could maintain the required global situational awareness, technical expertise, and statistical knowledge for quick and effective cost validation.

CONCLUSION

8. The PAD describes several characteristics of well-executed projects that include: a well defined project scope of requirements; a clear and comprehensive schedule; sufficient budgetary controls and contingencies; skilled and motivated personnel; and high fidelity reporting and communications[22]. All of those factors play a routine role in the thousands of projects performed across all cost and portfolio envelopes in ADM(IE). The problem facing both ADM(IE) and the Department is a lack of throughput and agility to support its strategic intent outlined in the Defence Policy. The organization is being largely grouped into blanket policies when analysis shows that there is both a need, and minimal risk, of increased autonomy and special authorities. Instead of scope and schedule issues, cost estimation and control is evaluated as the primary credibility threat. If ADM(IE) can concentrate on reducing barriers to success in that domain by

[18] MND, Project Approval Directive (2019)…, 81.
[19] Canada, Defence Investment Plan (2018), 14.
[20] *Ibid*., 14.
[21] Canadian Institute of Quantity Surveyors, Professional Quantity Surveyor, last accessed 20 Oct 2019, http://www.ciqs.org/english/designations-defined-professional-quantity-surveyor
[22] MND, Project Approval Directive (2019)…, 181.

institutionalizing real-time performance metrics and cultivating better costing expertise, it can begin to properly defend its narrative as specialists in project management with the ultimate goal of increasing its delegated project approval authority with the next update to the PAD.

RECOMMENDATION

9. ADM(IE) missed a window of momentum behind the TB policy review and subsequent DND PAD re-write. It fell short of significantly moving the yard stick, allowing other L1s to gain ground on delegated authorities instead of using it as a spring board. ADM(IE) now has its footing after a successful centralization of infrastructure authorities in 2016, seeing significant achievements in data analytics and works standardization since that time. Now it must concentrate on the offensive, reverse engineering the process used to evaluate its project management capacity to inform better practices. Cost estimation is an exploitable area in which marginal improvement will enable a better depiction of the success that it already attains, but could still improve upon. Then it will be in a position to bring new information to the table in discussion of increased authorities. The recommended bound is to seek an increase in autonomous ADM(IE) authority to $25M, similar to the way in which it manages its own projects under what was $5M, and is now $10M with minor reporting requirement to the PMB.

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ANNEX A – OVERVIEW OF OPMCA AND PCRA QUESTIONS

1. OPMCA. The Organizational Project Management Capacity Assessment tool judges Departments on their ability to manage projects. ADM(IE) is a special division of DND in that it manages projects that are more predictable and repeatable, and its business processes are very much tailored to support project management. The table below assesses the risk that ADM(IE) imposes on the Department's OPMCA score. It is believed that ADM(IE) has the appropriate internal systems in place to manage higher dollar value projects, without jeopardizing the level of Departmental risk. Each question is assessed on a range from 0-5, with the highest score adhering the best to acceptable project management practices. The typical definition of a 5 point assessment is that "over 90% of projects" adhere to that standard.

OPMCA Category	**Risk**	**Description / *Comment***
Investment Portfolio/ Program Management (10 Questions)		How projects are planned, prioritized, reviewed, and in line with strategic objectives. *Most notable area of risk is ability to estimate project cost and schedule. Metrics are provided at Annex B, and discussed in the BN para 8c(1).*
Organizational Support Structures (9 Questions)		How organizational systems and policies guide and support project management.
Management Standards (20 Questions)		How PM framework and processes are controlled, implemented and adhered to.
Integration Management (21 Questions)		How well is governance controlled, responsibilities outlined, progress/ change/ and close-out managed.
Scope Management (4 Questions)		How well work breakdown structure is defined, assigned, and endorsed prior to project start.
Time Management (5 Questions)		How well are project schedules prepared, aligned, and reviewed against baseline for progress.
Cost Management (7 Questions)		How costs are estimated, benchmarked, baselined and reviewed, and tracked. *(Does not address accuracy of cost estimates)*
Risk Assessment (4 Questions)		How well risks are assessed, articulated, mitigated, accounted for in schedule/cost. *This is likely an area of improvement.*
Quality Management (2 Questions)		How well are quality standards implemented for both project management and outputs.
Procurement Management (4 Questions)		How is procurement controlled and monitored, also how well contracts are enforced and closed out.
HR Management (4 Questions)		How are HR requirements for the project implementation planned and managed. *(N/A – most projects done with internal staff)*
Communication Management (2 Questions)		How well are stakeholders engaged, informed, and information retained for reference.

2. PCRA. The Project Complexity Risk Assessment is completed for each project. A total of 64 questions are applied with scores ranging from 1-5, where 5 is the highest risk. The final score will be in the form of a percentage with the following outcomes:

a. 25% - 44% = PCRA Level 1;
b. 45% - 63% = PCRA Level 2;
c. 64% - 82% = PCRA Level 3; and
d. 82% and above = PCRA Level 4.

Because each question is assigned at least a score of 1, under 25% is impossible. The table below summarizes the categories of questions with a description of each. A sample assessment was conducted with a "typical" <$15M Capital Project in mind. Anything that scored a 3 or higher is highlighted in red. Under the risk column, green indicates less than 45% risk (PCRA Level 1) and yellow indicates risks between 45%-64% (PCRA Level 2).

Sample Assessment of a "Typical" < $15M Capital Construction Project
Overall risk just breached into PCRA Level 2 (45%)

PCRA Category	Risk	Description / Area of Risk	
Project Characteristics (18 Questions)		Total Cost	# of Personnel Assigned
		Procurement Cost	Total Time
		Relative Size/Scope	Governance
		Costing Methods	Risk of Delay
		Environment Risk	Socio-Economic Risk
		Public Perception	Aboriginal Engagement
Strategic Management Risks (6 Questions)		Strategic Alignment	Priority to Organization
		Business Case	Stakeholder Comms
		Comms Plan	Senior Sponsorship
Procurement Risks (20 Questions)		Procurement Strategy	Availability of Industry
		Contract Expertise	# of Required Contracts
		Sub Contracts	Interdependencies
		DCC	Control/Communication
		Public Tender vs	SOA/SA
Human Resources Risks (5 Questions)		Manning	Stability
		% Assigned Full Time	Experience
Business Risks (5 Questions)		Effect on Business	Change Management
		Public Involvement	Legal Risk
		Policy Compliance	
Project Management Integration Risks (6 Questions)		Full Project Plan	Team Composition
		Control Processes	Quality Assurance
		Risk Management	Outcome Management
		Issue Management	Information Management
Requirements Risks		Intricate Requirements	Ease to Define Reqmts

(15 Questions)		Extent of Research	Feasibility Study
		Dependent Reqmts	Dependent Projects
		Clarity of Reqmts	Stability of Reqmts
		Systems Integration	Relative Scope
		Critical Path	Contingency Planning
		Scarcity of Resources	

ANNEX B - DCC REPORT OF PERFORMANCE METRICS

	Average Contract Award Value Variance*	Average Contract Cost Growth	Average Contract Schedule Change (days)
$100K to $1 M	**-11.1%**	**19%**	**78.4**
$1M to $2.5M	**-13.7%**	**17%**	**121.8**
$2.5 to $5M	**-13.0%**	**20%**	**71.5**
$5M to $15M	**-18.3%**	**11%**	**61.7**
$15M to $40M	**-2.3%**	**9%**	**65**
$40M to $60M	**-5%**	**9%**	**-177**
$60M+	**-48%**	**11%**	**0**

*Average Contract Award Value Variance

% increase or decrease over project estimate

Sample size

1300 Construction contracts completed between 1 April 2014 and 31 March 2018

Exclusions

Contracts under $100K
Modified Design Build and Design Build Contracts
SOA, SC, SO and GD contracts
CFHA contracts
Contracts in Latvia
Timber sale contracts

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