



## THE DND'S NORTHERN INFRASTRUCTURE DILEMMA: THE ABSENCE OF A PAN-DOMAIN PLAN

Lieutenant-Colonel Melanie Arsenault

### JCSP 50

#### Service Paper

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**Lieutenant-Colonel Melanie Arsenault**

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## THE DEPARTMENT OF NATIONAL DEFENCE'S NORTHERN INFRASTRUCTURE DILEMMA: THE ABSENCE OF A PAN-DOMAIN PLAN

### AIM

1. The aim of this service paper is to emphasize the critical necessity for comprehensive pan-domain northern infrastructure planning within the Department of National Defence (DND). Despite recognizing the benefits of comprehensive planning, the Canadian Armed Forces (CAF)/DND has pursued isolated domain-specific capital infrastructure projects in the north without establishing an overarching Northern Master Real Property Development Plan (MRPDP). By evaluating current processes, products, and structures, along with assessing ongoing and emerging projects and programs, this paper advocates for a comprehensive pan-domain infrastructure plan for DND's Northern Real Property Portfolio.

### INTRODUCTION

2. Canada's Arctic and Northern Policy Framework (ANPF) underscores the challenges faced in Arctic and Northern regions due to their remote locations. Crucial for supporting communication, emergency management, military capabilities, and secure transportation, robust critical infrastructure becomes imperative in this context.<sup>1</sup> The Canadian Armed Forces (CAF) engages in deliberate and reactive northern activities that are categorized into four roles: demonstrating visible and persistent presence, ensuring surveillance and control, supporting northern peoples and communities, and contributing to whole-of-nations' partnerships and cooperation.<sup>2</sup> These functions present formidable challenges, akin to an expeditionary endeavour, possibly necessitating a Pan-Domain<sup>3</sup> Arctic Campaign Plan.<sup>4</sup> However, in contrast to foreign expeditionary campaigns, the provision of Real Property (infrastructure) in the Canadian north relies on support from DND's institutional Real Property custodian, the Assistant Deputy Minister (Infrastructure and Environment) [ADM(IE)]. This CAF-DND dependency adds complexities to campaign planning, emphasizing its importance.

3. ADM(IE) is DND's institutional Level 1 responsible for developing and executing comprehensive infrastructure plans, programs, and projects. Overseeing DND's substantial \$26 billion Real Property Portfolio, ADM(IE) is responsible for all lands, buildings, and real property used for CAF/DND purposes, wielding technical, financial, and project management authority

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<sup>1</sup> Government of Canada, Canada's Arctic and Northern Policy Framework (Ottawa, 2019), 73.

<sup>2</sup> Comd JTFN, Presentation to Joint Command and Staff Programme, January 31, 2024.

<sup>3</sup> "Pan-domain means across the operating environment as a unified whole." Canada, Department of National Defence, Pan-Domain Force Employment Concept: Prevailing in a Dangerous World (Ottawa: CJOC, 2023), 19.

<sup>4</sup> "A campaign plan articulates the operational design aimed at accomplishing national, strategic and operational objectives. A campaign plan is prepared when contemplated military operations exceed the scope of a single major joint operation. Thus, a campaign plan provides the framework for a series of related plans or orders aimed at accomplishing a strategic or operational objective within a given time and space. Campaign planning may begin during deliberate planning when the actual threat, national guidance, and available resources become evident, but may not be completed until after the CDS or operational commander select the course of action during rapid response action planning." Canada, Department of National Defence, B-GJ-005-500/FP-000, Canadian Forces Joint Publication 5.0. The Canadian Forces Operational Planning Process (OPP) (Ottawa: Strategic Joint Staff, 2008), 3-7.

for all defence infrastructure.<sup>5</sup> Furthermore, on behalf of the Deputy Minister, ADM(IE) has Authority, Responsibility, and Accountability (ARA) for Director General Indigenous Affairs and Director General Environment and Sustainable Management. Through close adherence to various rules, regulations, and Memoranda of Understanding (MOUs) with Crown Corporations,<sup>6</sup> ADM(IE) works in partnership with various federal, territorial, and local stakeholders to support CAF/DND and broader Government of Canada (GoC) infrastructure priorities in the Arctic region. Having introduced the intricate challenges and the CAF-DND relationship, the subsequent sections will emphasize the imperative for a comprehensive pan-domain infrastructure plan, closely analyzing processes, products, and organizational structures under ADM(IE), alongside a review of existing and nascent projects and programs in the North.

## DISCUSSION

### The Importance of a Pan-Domain Infrastructure Plan

4. Infrastructure planning in the north requires harmonization of the five Canadian Armed Forces (CAF) domains,<sup>7</sup> and integration between DND and Other Government Departments (OGDs), allies, and First Nations, Inuit, and Metis partners.<sup>8</sup> Success in this endeavour hinges on collaboration among all stakeholders. The coordination of efforts with diverse partners not only enhances operational efficiency but also mitigates the risk of duplication. This collaborative approach is instrumental in facilitating the attainment of shared objectives, underlining the importance of a comprehensive planning framework.

5. A pan-domain infrastructure plan identifies a desired end state and “creates certainty for if, where, when and how development can take place.”<sup>9</sup> Furthermore, it acts as a deterrent against the ad-hoc development of future infrastructure programs and projects. A pan-domain infrastructure plan promotes the integration of systems, services and assets, serving as a blueprint guiding structured growth and sustainable development. This is particularly important for utility services like power generation and distribution, waste management, and water/wastewater management. Given the remote nature of many locations in northern Canada, “long-term considerations for power supply”<sup>10</sup> are integral to the planning process to avoid disjointed utility systems that fail to maximize their collective impact.

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<sup>5</sup> Canada, Department of National Defence, Assistant Deputy Minister (Infrastructure and Environment), accessed February 14, 2024.

<http://intranet.mil.ca/en/infrastructure-environment/infrastructure-environment-index.page>.

<sup>6</sup> Canada, Department of National Defence, Assistant Deputy Minister (Infrastructure and Environment).

“Memorandum of Understanding Between the Department of National Defence and Defence Construction (1951) Limited, Concerning the Administrative and Operational Framework Governing the Participants’ Working Relationship”, January 2022.

<sup>7</sup> The CAF recognizes five domains: maritime, land, air, space, and cyber” Canada, Department of National Defence, Pan-Domain Force Employment Concept: Prevailing in a Dangerous World (Ottawa: CJOC, 2023), 15.

<sup>8</sup> Department of National Defence, *Strong Secure Engaged: Canada’s Defence Policy*, 80.

<sup>9</sup> Government of NWT, “Land Use Planning in the North West Territories”, accessed Feb 16, 2024, <https://www.gov.nt.ca/ecc/en/services/land-use-planning-nwt>.

<sup>10</sup> Canada, Department of National Defence, Defence of Canada: Final Costing Ground Rules & Assumptions “Northern Operational Support Hubs (NOSH) [Project # - TBD] – Identification (Ottawa, CJOC, June 2021).

6. Finally, a well-crafted plan, particularly for a northern context, considers the complex interdependencies among diverse support components such as supply chains, Human Resources, Operations and Maintenance, and contracting mechanisms. For example, rather than considering contracting methods after an individual project has been identified, a comprehensive infrastructure planning process would proactively and holistically explore various Courses of Action (CoA) for non-traditional procurement options, such as progressive public-private partnerships (P3),<sup>11</sup> Innovative Financing and Asset Commercialization,<sup>12</sup> temporary leases, long-term leases with capital fit-up, and Vote 10 government-wide initiatives<sup>13</sup> earlier in the process.

7. Despite the compelling arguments for the implementation of a pan-domain infrastructure plan, the absence of such a plan prompts further exploration in the next section. This section delves into the Planning, Products, and Structure under ADM(IE), shedding light on the development and utilization of the Master Real Property Development Plan (MRPDP).

## **ADM(IE)'s Planning, Products, and Structure**

### **Planning and Products**

8. Infrastructure plans are a key component of the Defence Real Property Portfolio Strategy<sup>14</sup>, shaping the broader decision-making environment. Developed under the purview of Director Real Property Planning and Programming (DRPPP), a Level 3 organization within Director General Portfolio Requirements (DGPR), the Master Real Property Development Plan (MRPDP) serves as DND's equivalent to a municipal "Official Plan," guiding the trajectory of defense Real Property. While MRPDPs exist for most Bases and Wings in the southern portfolio, a counterpart for the northern portfolio has not yet been established. Underscoring the urgent need for the development of a dedicated Northern MRPDP tailored to the unique requirements and challenges of the region.

9. An improvement to DRPPP's processes and products was recently made with the release of a November 2023 MRPDP Development Guide and Template. A meticulous examination of the new MRPDP Development Guide and Template unveils a welcomed alignment with Canadian Forces Operational Planning Process (CFOPP). This convergence between industry urban planning principles and CFOPP principles signifies a proactive endeavor to optimize planning methodologies and cultivate synergies across various aspects of defense infrastructure

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<sup>11</sup> Paige Jenkins, A/Manager, Public-Private Partnerships (P3) & Power Purchase Agreements (PPA), Directorate of Portfolio Innovation (DPI), ADM(Infrastructure and Environment), email correspondence to author, January 23, 2024.

<sup>12</sup> Ibid.

<sup>13</sup> Vote 10 – Government-wide Initiatives. Subject to the approval of the Treasury Board, to supplement other appropriations in support of the implementation of strategic management initiatives in the public service of Canada. Government of Canada, Treasury Board Secretariat, accessed February 15, 2024.

<https://www.canada.ca/en/treasury-board-secretariat/services/planned-government-spending/government-expenditure-plan-main-estimates/2019-20-estimates/allocations-central-votes.html>

<sup>14</sup> Canada, Department of National Defence, Defence Real Property Portfolio Strategy, accessed 19 February, 2024. <https://www.canada.ca/en/department-national-defence/corporate/reports-publications/real-property-portfolio-strategy.html#toc0>

planning. Furthermore, considering that DND doesn't develop or employ implementation plans akin to industry standards, this operationalization of the MRPDP provides the necessary bridge between strategic conceptualization and the formulation of actionable, attributable, and achievable plans, ensuring a more effective and streamlined approach to infrastructure development.

10. This commendable progression also situates ADM(IE)'s DND Public Servant employees for active engagement in pan-domain planning initiatives.<sup>15</sup> It is imperative to emphasize that the establishment of a Northern MRPDP may be contingent upon the formulation of a comprehensive pan-domain Arctic Campaign Plan, underscoring the critical importance of achieving synchronization across the CAF/DND and emphasizing the interdependence of strategic and operational planning efforts.

### **Organizational Structure for the Northern Portfolio**

11. In addition to increasing proficiency in pan-domain planning, ADM(IE) can further enhance the management of the northern RP portfolio through a more centralized organizational structure. While the existing dispersed organizational structure<sup>16</sup> effectively supports the Bases and Wings in the southern portfolio, it may not be suited to address the challenges that the north presents. In the northern context, where support components like supply chains, Human Resources, Operations and Maintenance, and contracting mechanisms must be more deliberately considered at the start of portfolio planning and project execution, a centralized organization overseeing the entire northern portfolio may offer a more conducive environment for ensuring unity of efforts.

12. Despite the existence of multiple working groups, stakeholder engagement sessions, and matrixed program and project teams within ADM(IE), the current organizational structure lacks the requisite ARA to cohesively plan, deliver, operate, and maintain the northern portfolio. This deficiency is evidenced by the involvement of no fewer than ten (10) Level 3 organizations, each currently addressing different components of the northern portfolio. These organizations report to at least five (5) separate Level 2 Director Generals, highlighting the siloed nature of dispersed Command and Control (C2) in this nuanced context. A thoughtful revision of the hierarchical framework could enhance the coordination needed to optimally support CAF operations in the north. If the establishment of a unified northern portfolio organization proves unachievable, a Northern MRPDP and subordinate Site Development Plans (SDP) must incorporate task matrices with attributable tasks for execution so that the priorities of each stakeholder are aligned and in sync.

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<sup>15</sup> ADM(IE)'s DND Public Servant employees and Defence Construction Canada should be essential participants in Arctic campaign planning because not every CAF Engineers (MOSID 00181 and 00189) possess the requisite knowledge and experience in domestic Real Property management to suitably advise a Designated Supporting Commander (DSC).

<sup>16</sup> Canada, Department of National Defence, Assistant Deputy Minister (Infrastructure and Environment), accessed February 14, 2024.  
<http://intranet.mil.ca/en/infrastructure-environment/infrastructure-environment-index.page>.

13. Although ADM(IE) is striving for continuous improvement in processes, products, or organizational structure, the evident absence of complete synchronization is underscored by the current execution of various single-domain infrastructure projects. Lacking a comprehensive pan-domain approach, these initiatives highlight current disjointedness within DND's planning framework. Rectifying this is imperative for enhancing operational efficiency and ensuring a unified approach.

### **Extant and Nascent Projects**

14. Multiple<sup>17</sup> extant and nascent northern infrastructure projects and programs are currently underway by DND in Canada's north. Specific focus will be directed towards a select few for illustrative purposes. The primary distinguishing feature of these initiatives is their significant contribution to domain-specific defence capabilities, frequently executed as Defence Capability Infrastructure (DCI) projects supporting domain-specific capital equipment procurement, including Royal Canadian Air Force (RCAF) airframes and Royal Canadian Navy (RCN) ships. Regrettably, the lack of a comprehensive pan-domain infrastructure plan has resulted in a fragmented management approach, giving rise to isolated silos among these endeavors.

15. The Nanisivik Naval Facility project serves to bolster the operational presence of the RCN and other government vessels in the northern region. This deep-water port facility plays a pivotal role in refueling Arctic and Offshore Patrol ships during the navigable season. Additionally, it provides crucial support to the Canadian Coast Guard by offering essential refueling services and storage capabilities for re-supply missions.<sup>18</sup> While the project is an example of a Whole-of-Government (WOG) approach, the absence of a Northern MRDPDP introduces uncertainty regarding the future consideration of infrastructure requirements from other CAF domains at this location.

16. The Inuvik Airport Runway Extension project upgrades the airport's 6,000-foot runway which supports the Royal Canadian Air Force's large-heavy aircraft, reinforcing Canadian sovereignty in the north and facilitating North American Aerospace Defense Command (NORAD) operations.<sup>19</sup> Concurrently, yet under a separate program envelope, in June 2022, former Minister Anand announced a \$38.6 billion investment over twenty years to reinforce Canada's commitment to NORAD Modernization, addressing an array of threats that could impact national security, economic prosperity, democratic institutions, and alliances.<sup>20</sup>

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<sup>17</sup> At the time of submission, the author's request for a consolidated list was not received. Molly Ellis, Deputy Director, NORAD Modernization Infrastructure Program Management Office (NMIPMO), ADM(IE), email correspondence to author, February 2, 2024.

<sup>18</sup> Canada, Department of National Defence, Infrastructure in the North, accessed February 13, 2024. <https://www.canada.ca/en/department-national-defence/corporate/reports-publications/proactive-disclosure/sectd-april-24-2023/infrastructure-north.html>

<sup>19</sup> Ibid.

<sup>20</sup> Canada, Department of National Defence, "Minister Anand announces continental defence modernization to protect Canadians", accessed February 13, 2024. <https://www.canada.ca/en/department-national-defence/news/2022/06/minister-anand-announces-continental-defence-modernization-to-protect-canadians.html>

17. The NORAD Modernization DCI projects, particularly the NORAD Northern Basing Initiative (NNBI), will “upgrade Canadian Armed Forces’ infrastructure at four Forward Operating Locations (FOLs) in Canada’s north (Inuvik, Yellowknife, Iqaluit, and Goose Bay).”<sup>21</sup> Regrettably, due to the absence of a pre-existing pan-domain infrastructure plan, the NNBI project team now faces the complex task of deconflicting requirements that have either been duplicated or excluded from other extant and nascent projects. Also, it necessitates the concurrent formulation of a comprehensive SDP in parallel with the development and implementation of the NNBI project deliverables. This multifaceted undertaking demands a meticulous approach to align the project’s specific NORAD objectives with the CAF’s undefined pan-domain requirements. This struggle is evidenced by verbiage in the Draft Iqaluit SDP, which notes, “It is more likely that at least two facilities would be required to better accommodate Northern tasks, but this needs to be justified by a more detailed analysis from operating L1s.”<sup>22</sup>

18. The Canadian Joint Operations Command (CJOC)-sponsored Northern Operational Support Hubs (NOSH) project is in its embryonic stages and has not secured funding from the Treasury Board. The NOSH concept envisions the establishment of two large primary logistical support hubs, seven secondary support hubs, and fifteen tertiary hubs strategically positioned across Canada’s northern regions.<sup>23</sup> In addition to a range of speculative and ambitious assumptions about supporting infrastructure and operations and maintenance, the NOSH project is notably afflicted by two fundamental fallacies in reasoning.

19. First, an erroneous line of thinking posits that the CAF’s operational support deficiencies in the north should be addressed exclusively through the implementation of static vertical infrastructure. While it is imperative for the CAF to enhance its Northern Operational Support Capabilities (NOSC), the precise infrastructure requirements may not entirely align with the propositions outlined in the 2021 NOSH Ground Rules and Assumptions (GR&A).<sup>24</sup> The construction of static, long-term hubs lacks the requisite flexibility and adaptability for the CAF to respond dynamically to changes in geographical locations driven by operational exigencies. It is incumbent upon the CAF to explore a more agile solution which could be sustained by less permanent vertical infrastructure and a more resource-efficient horizontal infrastructure.

20. Second, synchronization between a NOSC and the NNBI project must be enhanced. While acknowledging the necessity for domain-specific infrastructure aligned with NORAD’s security and rapid response needs, it is crucial to highlight that the 2021 Ground Rules and Assumptions (GR&A) fell short in thoroughly exploring the potential for shared supporting infrastructure between the two initiatives. This encompasses various assets such as horizontal construction, power, water, waste/water management, fuel farms, accommodations, and multi-purpose non-secure warehousing facilities. The potential for shared assets necessitates a

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<sup>21</sup> Canada, Department of National Defence, “NORAD modernization project timelines”, accessed February 15, 2024. <https://www.canada.ca/en/department-national-defence/services/operations/allies-partners/norad/norad-modernization-project-timelines.html>

<sup>22</sup> Canada, Department of National Defence, Assistant Deputy Minister (Infrastructure and Environment). “Site Development Plan, Iqaluit (Draft)”, Feb 2024.

<sup>23</sup> Canada, Department of National Defence, Defence of Canada: Final Costing Ground Rules & Assumptions “Northern Operational Support Hubs (NOSH) [Project # - TBD] – Identification (Ottawa, CJOC, June 2021).

<sup>24</sup> Ibid.



comprehensive reevaluation, emphasizing collaboration and resource optimization, to improve operational capabilities, meet security imperatives, and enhance overall mission effectiveness.

21. Although research and analysis have commenced, the Northern Operational Support Hubs (NOSH) concept should not progress as a capital infrastructure project until a comprehensive pan-domain infrastructure plan is formalized. Implementing a Northern Operational Support Capability (NOSC) requires a thorough re-evaluation of requirements, encompassing the optimization of existing and forthcoming infrastructure to enhance operational efficiencies, improve maintenance effectiveness, and ensure overall sustainability. This commitment to a collective and resource-efficient plan aligns with the broader objective of fostering synergy across all domains for the collective benefit of CAF operations.

## **CONCLUSION**

22. In conclusion, this paper highlights the need for a comprehensive pan-domain infrastructure plan to address the challenges and complexities associated with the Northern Real Property Portfolio. Despite advancements in ADM(IE)'s planning processes and the introduction of an updated MRDP Development Guide and Template, ongoing and nascent projects in the north, reveal various requirement coordination challenges stemming from the absence of a cohesive pan-domain approach. In order to enhance operational efficiency and ensure the successful implementation of projects in the Northern Real Property portfolio, the adoption of a cohesive pan-domain infrastructure plan is imperative, emphasizing the importance of a unified and integrated approach for addressing ongoing and future challenges.

## **RECOMMENDATIONS**

A summary of the explicit and implicit recommendations made in this paper include:

- Initiate Pan-Domain Arctic Campaign Planning, subsequently informing the development of a comprehensive pan-domain infrastructure plan (Northern MRDP).
- Incorporate ADM(IE) Public Servants and Defence Construction Canada into domestic pan-domain campaign planning alongside CAF Military Engineers.
- Consider the inclusion of introductory Canadian Forces Operational Planning Process (CFOPP) courses in the individual learning plans of Director Real Property Planning and Programming (DRPPP) planners for ongoing professional development in the context of CAF-DND pan-domain planning.
- Evaluate the feasibility of establishing a unified northern portfolio command structure within ADM(IE); "Director General Northern Portfolio" with the ARA for Requirements, Projects, and Operations and Maintenance. If this is unachievable, a Northern MRDP and subordinate Site Development Plans (SDP) must incorporate task matrices with attributable tasks for execution so that the priorities of each contributing stakeholder are aligned and in-sync.

- Exercise caution in advancing the NOSH capital infrastructure project to the Treasury Board, contingent on the detailed articulation of Northern Operational Support Capability requirements within the pan-domain Arctic campaign planning process and the creation of a pan-domain MRPDP.

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### **Personal Communication**

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