Improving Real Property Portfolio Planning and Governance at the Department of National Defence

Supervised Research Project
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ABSTRACT / RÉSUMÉ

In 2012, the Office of the Auditor General identified major concerns with the way that the Department of National Defence (DND) manages its real property (RP) portfolio. Subsequently, in 2016, DND centralized the management of all of its RP under the Assistant Deputy Minister (Infrastructure and Environment) and promulgated a long-term comprehensive national RP management strategy. This supervised research project (SRP) conveys a holistic overview of how Canada, the United States, United Kingdom and Australia manage their Defence RP, offers recommendations on how to improve RP management at the DND national level and provides a standard framework for the development of regional plans. The SRP also examines the local and regional effects of Base expansion, redevelopment, and closures on neighbouring communities.

The detailed examination of the Canadian, UK, US and Australian national and regional RP management strategies demonstrate that despite significant differences in terms of scale, geography and Defence operational priorities and capabilities, there are numerous commonalities between Canadian, US, UK and Australian Defence RP management. Best practices and successes are identified to suggest improvements to DND's portfolio management strategy in terms of better master planning, a Commonwealth standard performance management framework, a commission, framework and tools to evaluate Base disposition, a set of recommendations to improve business processes, and an operations and maintenance program reform.

The SRP also looks at the potential local and regional effects of military base expansion, redevelopment and closures on surrounding communities and finds that Base closures in the US, Sweden and Germany had relatively little or no impact on local and regional economies. This counterintuitive result is supported, in whole or in part, by all the academic literature that could be found in preparation of this SRP. A matrix that gives an indication of the positive and negative effects of a community's ability to recover was developed to aid DND planners in developing a more elaborate template when considering Base redevelopment and closures.

The information gathered and the tools provided in this SRP can improve DND's real property portfolio management strategy, as well as its planning and governance processes to effectively and efficiently address and align national, regional and local requirements, while adequately attending to the effects of Defence establishment expansion, redevelopment and closures on local and regional communities.

En 2012, le Bureau du vérificateur général du Canada identifia des lacunes majeures au niveau de la gestion du portfolio des biens immobiliers (BI) du ministère de la Défense nationale (MDN). Par la suite, en 2016, le MDN centralisa la gestion des ses BI sous la direction du sous-ministre adjoint (Infrastructure et environnement) (SMA(IE)), qui promulguait ensuite une stratégie nationale de gestion des BI. Ce projet de recherche fait part d'une vue d'ensemble de comment le Canada, les États-Unis, le Royaume-Uni et l'Australie gèrent leur portfolio de BI de la Défense, propose des recommandations pour améliorer la gestion de ces BI au niveau national et apporte un cadre de référence pour le développement de plans régionaux. Le projet de recherche examine aussi les effets locaux et régionaux de la croissance, le réaménagement et les fermetures des Bases militaires sur les populations et les économies environnantes.

L'étude approfondie des stratégies nationales et régionales de gestion des BI de la Défense au Canada, aux États-Unis, au Royaume-Uni et en Australie démontre que malgré des différences importantes en terme de taille, géographie ainsi que priorités et capacités opérationnelles, il y a plusieurs points communs au niveau de la gestion des BI de la Défense pour les pays susmentionnés. Ma recherche identifie aussi les bonnes pratiques et les succès afin de suggérer des améliorations à la stratégie de gestion des BI du MDN en terme de développement de plans d'ensemble, l'instauration d'un standard du Commonwealth pour la gestion du rendement, la mise en place d'un comité, un cadre et des outils pour évaluer la disposition des Bases, des recommandations pour améliorer les processus d'entreprise et une réforme du programme d'exploitation et d'entretien.

Le projet de recherche examine aussi les effets locaux et régionaux de la croissance, le réaménagement et les fermetures des Bases militaires sur les régions environnantes et démontre que les fermetures de Bases aux États-Unis, en Suède et en Allemagne ont eu peu d'incidences sur les économies locales et régionales. Ce résultat contre-intuitif est appuyé, en totalité ou en partie, par toute la littérature académique qui a été retrouvée au cours de ce projet de recherche. Une matrice qui donne une indication des effets bénéfiques et néfastes de la capacité d'une communauté de se remettre suite à un réaménagement ou fermeture de Base a aussi été créée. Cette matrice fournit des pistes de départ aux urbanistes du MDN afin qu'ils puissent développer leur propre modèle plus élaboré pour informer le processus décisionnel lorsqu'un réaménagement ou une fermeture de Base est envisagé.

Les informations élaborées ainsi que les outils fournis dans ce projet de recherche servent à améliorer les stratégies de gestion du portfolio des BI, ainsi que les processus de planification et de gouvernance du MDN afin d'aligner les besoins nationaux, régionaux et locaux, tout en considérant les effets de la croissance, le réaménagement et les fermetures des établissements de la Défense sur les populations et les économies environnantes.

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CHAPTER 1 – INTRODUCTION

1.1. Context

"The current Department of National Defence (DND) real property (RP) portfolio stretches from coast to coast to coast, consisting of more than 20,000 buildings, 12,000 residential housing units, 15,000 works (sewers, pipelines, electrical circuits), and over 2 million hectares of land. Put together, this equates to a land mass four times the size of Prince Edward Island. The number of locations, the number and diversity of buildings, the amount of municipal infrastructure, and land uses unique in their support of Canadian Armed Forces (CAF) operations makes the management of the portfolio a complex undertaking." (DND, 2016a)

In the fall of 2012, a report from the Office of the Auditor General (OAG) identified some major concerns regarding Department of National Defence (DND) real property (RP) and provided recommendations in three broad categories: planning for real property needs; real property management practices; and resource management (OAG, 2012). This report also officialised what DND had known for a long time, which is that its real property portfolio is not sustainable in its current configuration (DND, 2015d). In conjunction with subsequent policy documents (Defence Real Property Strategy, Defence Renewal Plan, etc.), a project called Infrastructure and Environment (IE) Transformation ensued to gradually centralize all RP authorities, responsibilities and accountabilities to the Assistant Deputy Minister (Infrastructure and Environment) (ADM(IE)), in accordance with Treasury Board policy, OAG report recommendations, Federal Budgets and DND program requirements and renewal objectives (DND, 2015a). Consequently, on 1 April 2016, the ADM(IE) became the sole manager of all DND RP, as opposed to the past situation which saw each local commander (Base or Wing Commander) as the manager of said RP.

It is expected that national oversight of all RP management, maintenance and construction will lead to better use of DND monetary and personnel resources. The current DND RP planning[1] structure begins at the local level with a Master Real Property Development Plan (MRPDP), which solely takes into account a local Base/Wing. ADM(IE) has promulgated a long-term national strategy (Defence Portfolio 2030: A Sustainable Defence Footprint for the Future) that will see the implementation of a comprehensive portfolio planning approach, including the development of Regional Real Property Development Plans (RRPDP), to give better direction and guidance for the development of local plans; thus ensuring the consideration of principles such as life cycle management, best value for money and sound stewardship. Furthermore, as responsible land custodians, RP managers need to address the rationalisation aspects of Defence Portfolio 2030, which could include Base expansion, redevelopment and closures. These rationalisation efforts will impact communities, both positively (freeing up land needed for development, nuisance reduction) and negatively (loss of jobs, reduction of economic

[1] The word "planning" is used, but not in the sense of urban and regional planning, rather in the sense of developing a real property strategy that takes into account evolving Defence requirements. To avoid confusion throughout the SRP, DND urban planning will refer to urban planning and DND planning will speak to real property strategy development. The same principle will be used for DND urban planners and DND planners. Where this is not feasible, the reader should consider the context to determine the sense of the word "planning".

activity). As an arm of the federal government, the DND, ADM(IE) and its real property managers must take into account the local and regional effects of its policies and actions on neighbouring communities (DND, 2013) in order to mitigate negative effects and to capitalize on opportunities.

This Supervised Research Project (SRP) examines the best practices and successes of three Defence allies (United States of America (US), United Kingdom (UK), and Australia), focusing on the national and regional levels. The SRP also provides national level recommendations, while serving as a model to provide regional guidance for the development of individual RRPDPs. Said guidance is supported by academic literary research of the local and regional effects of Defence establishment expansion, redevelopment and closures in the US, Sweden and Germany. Once the Regional Plans are developed, the modification of current and the creation of new MRPDPs can ensue. The alignment of national, regional and local strategies will ensure synergy and collaboration at all levels; thus ensuring the optimal stewardship of DND's vast RP portfolio.

1.2. Objectives

This SRP answers the following core research question: How can the Department of National Defence improve its real property portfolio management strategy as well as DND planning and governance processes to effectively and efficiently address and align national, regional and local requirements, while adequately attending to the effects of Defence establishment expansion, redevelopment and closures on local and regional communities?

The SRP seeks to do two things. Firstly, it details the DND real property portfolio management strategy, and sees how it compares with portfolio management strategies in other allied countries. Secondly, the SRP proposes a framework that will assist DND when considering the impacts of its portfolio decisions on local and regional communities. The information gathered in these two facets is key to fulfilling the four following main research objectives: identify best practices and successes from three allied nations (United States of America (US), United Kingdom (UK), and Australia) at the national and regional levels of RP management[2]; study the local and regional effects of Defence establishment expansion, redevelopment and closures on neighbouring communities; offer recommendations to enhance national and regional RP policies and processes; and provide an optimal and flexible framework that can be used to develop a Regional Real Property Development Plan (RRPDP) for all Regions in Canada (see Appendix A).

1.3. Methodology

The overall strategy of the SRP is to convey a holistic overview of how DND, US, UK and Australian RP is managed, offers recommendations on how to improve RP management at the DND national level and provides a standard framework for the development of a RRPDP, which can be used for all DND Regions across Canada. The SRP also examines the local and regional effects of Base expansion, redevelopment and closures on neighbouring communities. The research was conducted using three

[2] RP management includes both DND RP planning and RP governance

main sources: national DND policy; real property governance and planning policies from three DND allies (US, UK, Australia); and academic literature concerning the local and regional effects of Base expansion, redevelopment and closures in the US, Sweden and Germany.

a. Research methods

The three main research methods included the review and analysis of existing policy documentation from Canada, US, UK and Australia, at the national and regional levels; discussions with DND RP management personnel; and the analysis of academic literature.

b. Analytical framework

The SRP gives special attention to four areas. The first three areas include the identification of what worked and what didn't work in the application of new policies and governance structures, the possibility of creating partnerships with municipal, provincial and other federal government departments in order to share the use and cost of real property, and the potential positive effects of Base expansion, redevelopment and closures on local and regional communities. Lastly, the research examines how organizational differences/cultures were mitigated during regional plan development through external (municipal, provincial and other federal government departments) and internal (Level 1 organizations, Base/Wing level) lenses.

c. Data sources

The strategic framework for the development of Regional Real Property Development Plans structure was developed using national policy, but was also inspired by the effects experienced in the US, Sweden and Germany in regards to Base expansion, redevelopment and closures, as well as civilian provincial and regional planning guidelines. More specifically for the latter, the process used to develop a "schéma d'aménagement" (Québec, 2016) in the province of Québec was used as a first guiding document.

d. Precedents

Much like Canada, many of its allies are continuously optimizing their RP planning processes, management tools and strategies. This SRP identified some of the best practices and successes of its allies to provide recommendations to improve RP planning at DND.

e. Research limitations

The SRP has four main research limitations. These include information paucity from allies, the lack of DND regional planning theory, the absence of Defence regional planning models and modifications to the research analytical framework. We expand on each of these items below.

(1) Information paucity from allies

The initial intent was to examine the most recent unclassified documentation from US, UK and Australian Defence in terms of RP management; which would then be corroborated through interviews with key stakeholders in said three organizations. However, finding key stakeholders proved much more difficult than initially predicted. Contact was attempted through personnel within ADM(IE)'s Directorate of Portfolio Planning and Canadian Armed Forces (CAF) members who either served or are presently serving with US, UK or Australian Defence. Over a two month period, very little progress was made and,

although at least one point of contact was identified in each allied country, all of them were reticent to provide documentation and be interviewed. This issue of gathering information from allies may have been better tackled had there been more time dedicated to establishing links with key stakeholders outside DND or if initial contact had been made through official national level channels. Consequently, it is impossible to confirm if the information gathered via the internet and DND internal resources are comprehensive and up to date.

(2) Regional planning theory

The literature review was supposed to include a large section regarding regional planning theory. More specifically, it was to answer the following five questions:

- What is regional planning?
- How do we plan at the regional level?
- What organizations/governments use regional planning?
- What are the advantages/disadvantages of planning at the regional level?
- What are examples of successes/failures of the use of regional planning?

The answers to these questions would have served as the central focus for the SRP to explain how regional planning is done outside Defence; identifying current planning tendencies, potential synergies with neighbouring communities and links between civilian practices and DND processes. Unfortunately, regional planning in the professional sphere is different from regional planning in the Defence environment. Consultations with Professor Jean Dubé at Université Laval[3] demonstrated that DND does not practice regional planning per se, because its regions are defined exogenously[4]. For example, predefining Québec as a DND planning region is an administrative process, as opposed to the planning region surrounding Canadian Forces Base (CFB) Bagotville which is endogenously defined by its area of influence (social, economic, etc.). Consequently, there is very little correlation between civilian regional planning and DND regional planning. This conclusion was further supported by Professor Richard Shearmur at McGill University[5], who is an expert in the field of regional planning. However, Professor Shearmur highlighted that Canadian Forces Bases did have a regional influence on what DND would consider a sub-region; such as the sub-regions surrounding CFB Valcartier, CFB Borden and CFB Edmonton, for example. Since regional planning from the DND perspective is much different than regional planning from an urban planning perspective, the reader must be attentive when reading the SRP to ensure that the terms "region" and "regional" are well understood, depending on the context. More specifically, DND "regional" planning refers to the development of real property and portfolio management strategies that take into account evolving Defence requirements.

[3] Jean Dubé is a specialist professor at *L'École supérieure d'aménagement du territoire et de développement régional* (ÉSAD), which is Laval University's land management and regional planning graduate school, in Québec City. See his complete profile at https://www.crad.ulaval.ca/membres/jean-dube.html.

[4] DND has divided Canada into administrative regions (Ontario, Atlantic, etc.) to ensure a manageable span of control for each Regional Commander, as shown at Figure 2. These administrative regions are used in all spheres of DND business, such as military operations, logistics, maintenance, construction, RP planning, etc. This process is similar to large businesses that divide its operations into departments.

[5] Richard Shearmur is a specialist professor at the McGill School of Urban Planning. See his complete profile at https://www.mcgill.ca/urbanplanning/people/shearmur.

DND regional planning is therefore an administrative business process which more closely resembles portfolio management. Portfolio management literature focuses mainly on the financial management of real estate portfolios, and rarely deals with operational rationalisation of property portfolios used in the production and retail processes. An in-depth review of said literature was not conducted due to the inability of being able to find reference material. Even with the help of a librarian at McGill University, it was not possible to find a civilian business model that resembled that of DND's in order to compare and provide suggestions for improvement. At the time of writing, there was not enough time to continue researching said administrative business models, therefore the SRP's construct was slightly modified to its current form.

(3) Lack of Defence regional planning models

The documentation obtained regarding US, UK and Australian Defence RP management do not indicate that any of these Defence organizations plan at the regional level. However, UK documentation does allude to planning regions such as Wales, Germany, etc., but no relevant information could be found on the subject. More current information regarding our allies' RP planning and interviews with key stakeholders would provide more detail regarding regional planning.

(4) Modification of analytical framework

The lack of available information, as explained above, and the inability to interview key stakeholders restricted the possibility of addressing two key aspects of the analytical framework: the possibility of creating partnerships with municipal, provincial and other federal government departments in order to share the use and cost of real property; and how organizational differences/cultures were mitigated during regional plan development. Further study of US, UK and Australian RP management models could help analyze these two items. Of note, this research limitation deals solely with partnerships regarding the cost and use of government RP. It does not preclude cooperation with administrations at the municipal, regional and provincial levels. In fact, cooperation with said entities is desirable, especially when dealing with the possible devolution of federal RP assets.

CHAPTER 2 – DOCUMENTATION REVIEW

2.1. Department of National Defence – Canada

The Department of National Defence's and Canadian Armed Forces' roles and missions are set forth in a Government of Canada June 2008 publication: *Canada First Defence Strategy* (CFDS). The three roles of the CAF are to defend Canada, defend North America, and contribute to international peace and security. In addition, the CAF's six core missions include conducting domestic and continental operations, supporting major domestic international events (i.e. 2010 Vancouver Olympics), responding to major terrorist attacks, supporting civilian authorities during domestic crises (i.e. natural disasters), conducting major international operations abroad, and deploying forces in response to crises around the globe (i.e. Haiti earthquake). The CFDS further describes the four pillars upon which the military capabilities are built: personnel, equipment, readiness and infrastructure. (DND, 2008) As the manager of DND real property, ADM(IE) has a direct impact on the infrastructure pillar of the CFDS, which enables the DND/CAF to fulfill its roles and missions.

On 1 April 2016, ADM(IE) became the sole proprietor of all DND RP. Consequently, ADM(IE) has promulgated a long-term rationalisation strategy (DND, 2016a) that will see the implementation of comprehensive portfolio management approaches; with a vision to "deliver the right assets, in the right place, at the right time and for the right cost and supported by the right workforce for the Defence Team". Said strategy, Defence Portfolio 2030: A Sustainable Real Property Footprint for the Future (Defence 2030), identifies several main issues and challenges, as follows:

- The number of locations, the number and diversity of buildings, their historical significance, the amount of municipal infrastructure, and land uses unique in their support of Canadian Armed Forces (CAF) operations makes the management of the RP portfolio a complex undertaking. It should be noted that DND no longer possesses Defence establishments outside of Canada.
- More than half of DND's infrastructure is over 50 years old and much of the portfolio was not designed for today's operational requirements.
- The present size and composition of the RP portfolio is unsustainable and DND does not have the financial resources to fully support the entirety of the portfolio.
- ADM(IE) must mitigate the environmental impact of the portfolio, while assessing and planning for the effects of climate change.
- The provision of a relevant RP portfolio must account for constantly evolving demands and pressures; such as emerging operational capabilities, new technology, new equipment and urban encroachment.
- The need to make plans that address land development and environmental trends (including loss of biodiversity, urbanization, climate change, and water scarcity), sustainability trends (including communities, transportation, and agriculture), buildings and energy trends (including sustainable buildings and energy), information technology trends, and other societal trends.

Defence 2030 puts forward an integrated approach to portfolio planning, which includes three main interrelated components: development planning, asset management planning, and investment

planning (see Figure 1). The application of this model ensures that all activities related to the planning, acquisition, use, and disposal of RP are aligned. (DND, 2016a)

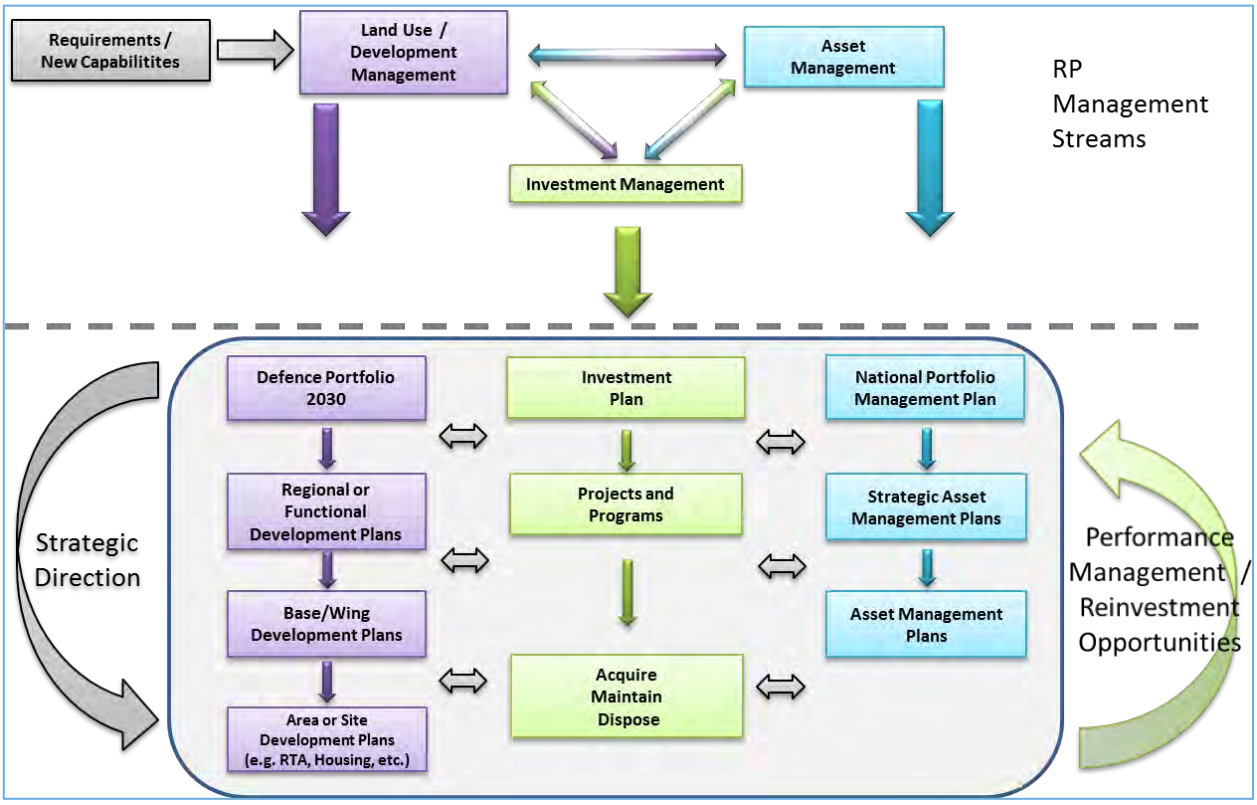

Figure 1 – Integrated Real Property Portfolio Management (DND, 2016a)

This SRP focuses on the development planning component, although it is understood that a successful portfolio planning strategy rests on the symbiotic interplay between all three planning streams. Let us examine some key components of the Concept of Development set out by DND.

a. Land Use / Development Planning

Development planning's long term and comprehensive approach covers planning at the national, regional, local and site levels, as follows (DND, 2016a):

(1) *National Level – Defence 2030*. Defence 2030 provides strategic decision-making direction for future RP development and is the enabler for lower level development plans. It sets out typologies and the comprehensive land use planning hierarchy; enabling a systematic and holistic assessment of the Defence RP portfolio.

(2) *Regional Level – Regional Real Property Development Plans (RRPDP)*. RRPDPs will assess all DND lands and infrastructure in a given region to identify opportunities to relocate or optimize facilities and reduce the real property footprint. The regions are shown at Figure 2. Appendix A sets out the proposed Strategic Framework for the Development of Regional Real Property Development Plans (RRPDP). This regional approach is new at DND and is critical in leveraging partnerships with regional communities and DND organizations.

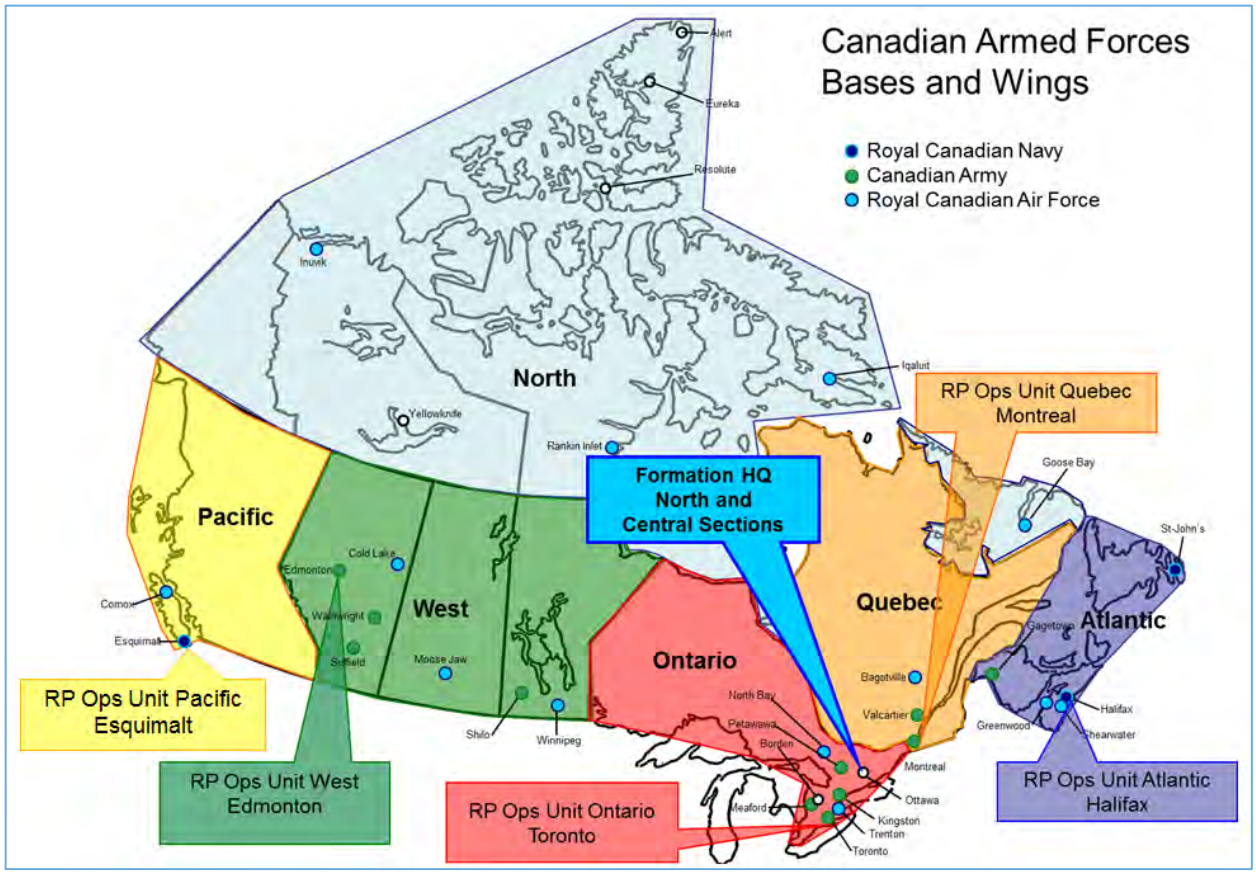

Figure 2 – DND Planning Regions

(3) *Base/Wing Level – Master Real Property Development Plan (MRPDP)*. MRPDPs focus on rationalizing current RP, increasing the utilization of retained real property, and the sustainability of future RP. MRPDPs assess the requirements of stakeholders within entire municipalities (local or regional) to seek efficiencies in the delivery of RP services and infrastructure.

(4) *Site Level - Site Development Plan (SDP)*. A SDP will be one of potentially multiple subsets of the MRPDP that address sites that require further study or attention. Urban design and environmental sustainability are tackled at this level; covering items such as energy efficiency, site layout, water conservation, relationships between buildings and streets and others which contribute to sustainable long-terms RP solutions.

In developing the various afore-mentioned development plans, DND uses the following overarching planning principles (DND, 2016a).

- Consolidate/maximize utilization of RP in support of CAF operations, and dispose of RP that is no longer required or is no longer able to effectively deliver a capability.
- Encourage collaboration and partnership with other government departments, other levels of government and other stakeholders.
- Encourage joint use facilities and multi-function facilities (i.e. increase density).

- Preserve opportunities for evolving CAF operational and training requirements through flexible and relevant RP.
- Improve fiscal and environmental sustainability of existing and future infrastructure through the implementation of a full-lifecycle management approach and mitigation of environmental impacts.
- Consult with all Level 1[6] organizations to ensure that current and future RP plans and characteristics meet CAF operational objectives, requirements and constraints.

Prior to discussing Asset Planning, it is important to understand the different Defence Establishment typologies.

b. Defence Establishment Typologies

In order to categorize, inventory and establish a baseline for all RP, DND put forward a plan to classify each of its Defence Establishments (DE). Discerning the typologies of each DE will be important throughout the RP portfolio planning process (see Figure 5). Defence 2030 sets out four DE typologies, as follows (DND, 2016a). A graphic representation of the relationship between said typologies can be seen in Figure 3.

(1) *Type 1 – Full-service establishments*. These establishments serve as hubs within a region. DND's intent is to consolidate indirect support functions (i.e. administrative support) that are currently performed as type 2 (specialized) and type 3 (satellite) DEs if cost-effective in the long-term. Example: CFB Esquimalt

(2) *Type 2: Specialized establishments*. These locations focus on delivering a specialized or unique capability and typically take advantage of their setting by way of access to industry, educational facilities, or physical/geographical features. Example: CFB Nanoose

(3) *Type 3: Satellite locations*. These locations serve a specific purpose that is mission critical or to provide direct support. Example: Fell Armoury, North Vancouver

(4) *Type 4: Disposal locations*. RP that is no longer required and that should be divested through the federal disposal process.

[6] A senior organization, either civilian or military, which has direct accountability to the Deputy Minister or the Chief of Defence Staff. The following L1s were included in the consultation process: RCN, CA, RCAF, VCDS, SJS, CJOC, CANSOFCOM, CFINTCOM, CMP, ADM(Mat), ADM(IM), ADM(S&T), ADM(IE)/CFHA.

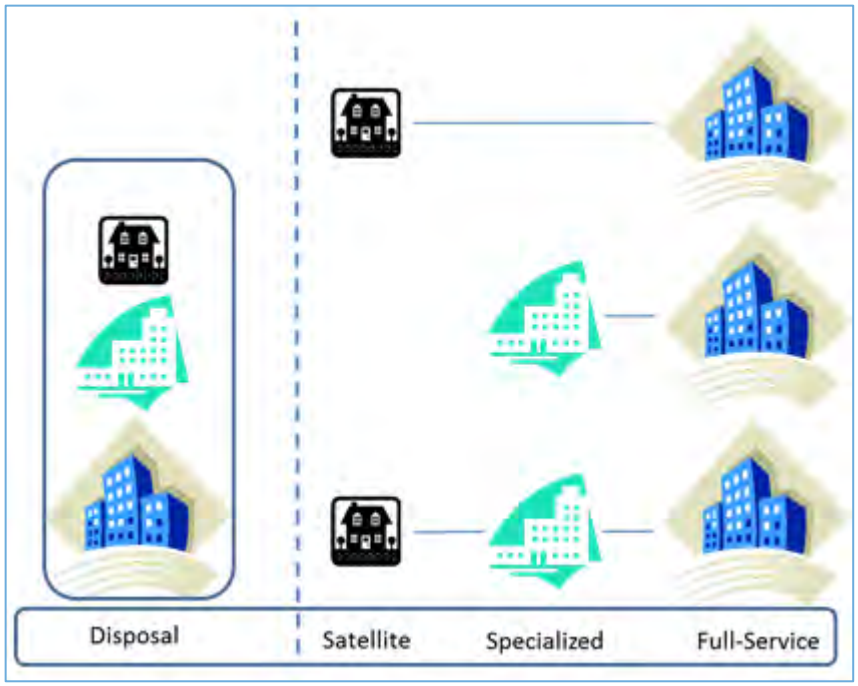

Figure 3 – Defence Establishment Typologies (DND, 2016a)

c. Asset Planning

Asset planning is a significant part of Defence 2030 and is a key component in a complementary process called IE Business Modernization (IEBM). In short, IEBM aims to provide DND real property managers with the information and decision-making tools needed to realize a more effective and efficient real property portfolio. Asset management and planning is largely based on the International Infrastructure Management Manual. A more detailed description of the asset management construct can be found at Appendix B. DND RP assets are organized into two groups: systems and portfolio structure.

- *Systems*. All building elements are classified as per the ASTM UNIFORMAT II Standard[7]. According to the UNIFORMAT website, the UNIFORMAT II classification "enables a seamless link of all phases of a building life cycle - from facilities development through facilities management. The integration of the standard into the design process results in improved communications and coordination among all project participants, an accelerated design, and significantly increased productivity."
- *Portfolio Structure/Asset Type*. The asset portfolio is broken down into categories, based on a Department of Defense (United States of America) standard. See Appendix B for a breakdown and description of said standard.

[7] The classification breakdown can be viewed at http://www.uniformat.com/index.php/classification-of-building-elements, accessed 27 April 2016.

Once the RP assets have been classified and assigned an asset type, the information is transposed into a central RP database[8]. Subsequently, asset planners can link said assets to portfolio elements (or land use zones). As a result, a link is created between asset planning and development planning. Figure 4 shows how systems and asset types work their way into portfolio elements. In turn, each portfolio element can be tracked to Defence capabilities, which ultimately enable the DND/CAF to fulfill its roles and missions set out in the CFDS. Appendix B also shows how portfolio elements make up a Defence Establishment.

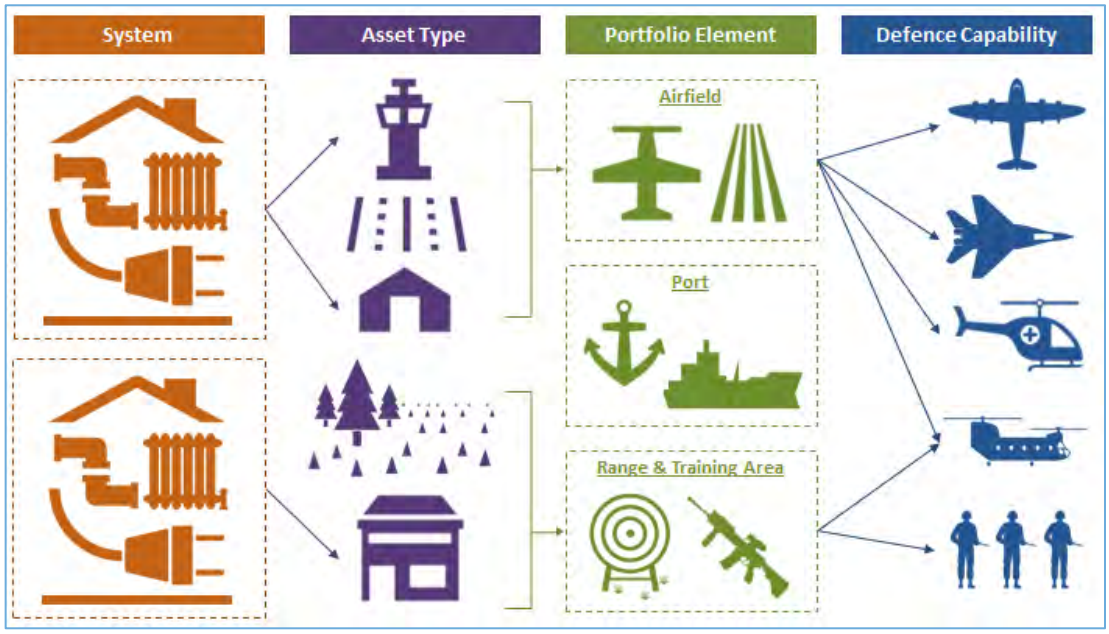

Figure 4 – Portfolio Breakdown Structure (DND, 2015b)

Let's illustrate the link between the five elements that make up the asset management construct (systems, asset types, portfolio elements, Defence Establishments and Defence capabilities) with an example at Canadian Forces Base (CFB) Bagotville; a type 1 DE (full-service establishment) that contains many portfolio elements (airfield, command and control, recreational, accommodation, etc.). One of the Defence capabilities at CFB Bagotville is tactical fighter operations. To enable this capability, the DE must have an airfield (portfolio element) that contains a multitude of asset types such as airfield pavement, liquid fuelling and dispensing, communications, etc. Furthermore, the airfield must have building elements (hangars, control tower, etc.), which can individually be classified into three levels of systems. For instance, a control tower has a substructure (level 1), which contains a foundation (level 2) that may be slab on grade (level 3).

If we transpose all these links into a central software database, it enables RP managers to see how various systems contribute to Defence capabilities. This, in turn, gives DND planners the tools to prioritize operation and maintenance funding, for example, based on a strategic priority system. Figure 5 shows how this information plays into the RP portfolio planning process, which is broken down into analysis, planning and implementation phases.

[8] DND uses VFA software

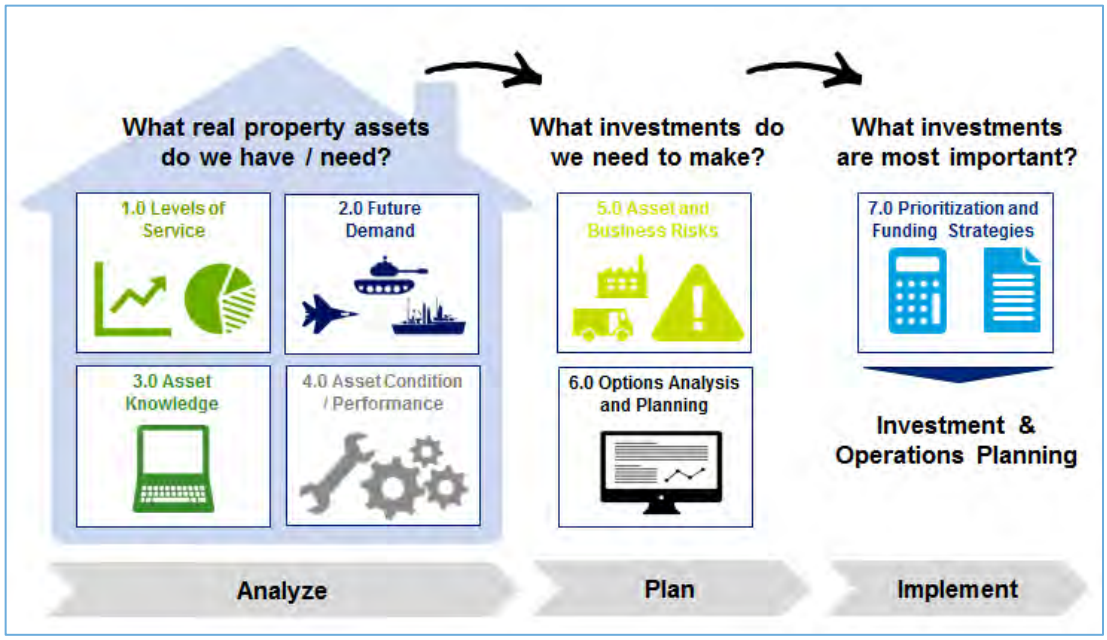

Figure 5 – Portfolio Asset Planning Process (DND, 2015b)

d. Investment Planning

Investment planning is managed through the Capital Construction Program (CCP). The CCP provides a corporate priority-based portfolio approach that ensures that all activities related to the acquisition, maintenance, disposal and reinvestment of RP strive to provide a leaner and more efficient RP portfolio. The CCP, which contains seven core functions (see Figure 6), includes a 10 year capital construction plan for projects over one million dollars and is produced on an annual basis. The projects contained therein include recapitalization, betterment, new construction, new capability and construction in support of equipment.

Figure 6 – Capital Construction Program Functions (Annual Cycle) (DND, 2016b)

2.2. Department of Defence – Australia

The Australian Government has a very transparent and extensive centralized Defence estate management system. It has been elaborated over the past 20 years or so (DoD Aus, 2008) using a multitude of studies, audits and reports (see Figure 7), many strategic reforms and a collective desire to improve at all levels of government and within the Australian Department of Defence (DoD Aus). However, the efforts to consolidate and realign the estate footprint have had limited impact to date (DoD Aus, 2014). The Defence Estate Quality Management System (DEQMS) is accessible via a publicly accessible internet portal that was created by the DoD Aus (DoD Aus, 2016).

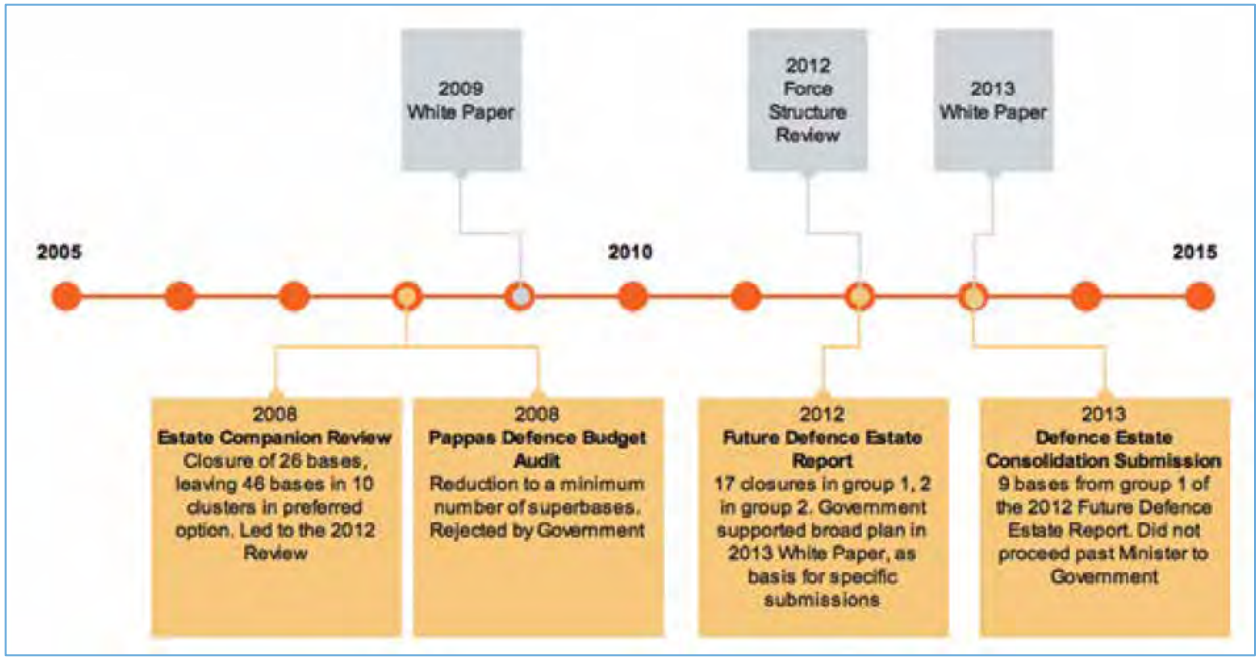

Figure 7 – Australian Defence Estate Reviews 2005-2015 (DoD Aus, 2014)

a. Governance Framework

The Governance Framework is implemented using the DEQMS. The Estate Governance Framework is comprised of three core elements: End to End Lifecycle; Major Elements of the Governance Framework and Compliance Elements. The sub-components of these core elements are represented graphically at Figure 8. The inner circle represents overall governance and the blue boxes surrounding said circle denote the six main elements of lifecycle planning. The outer circles of various colours represent the compliance elements.

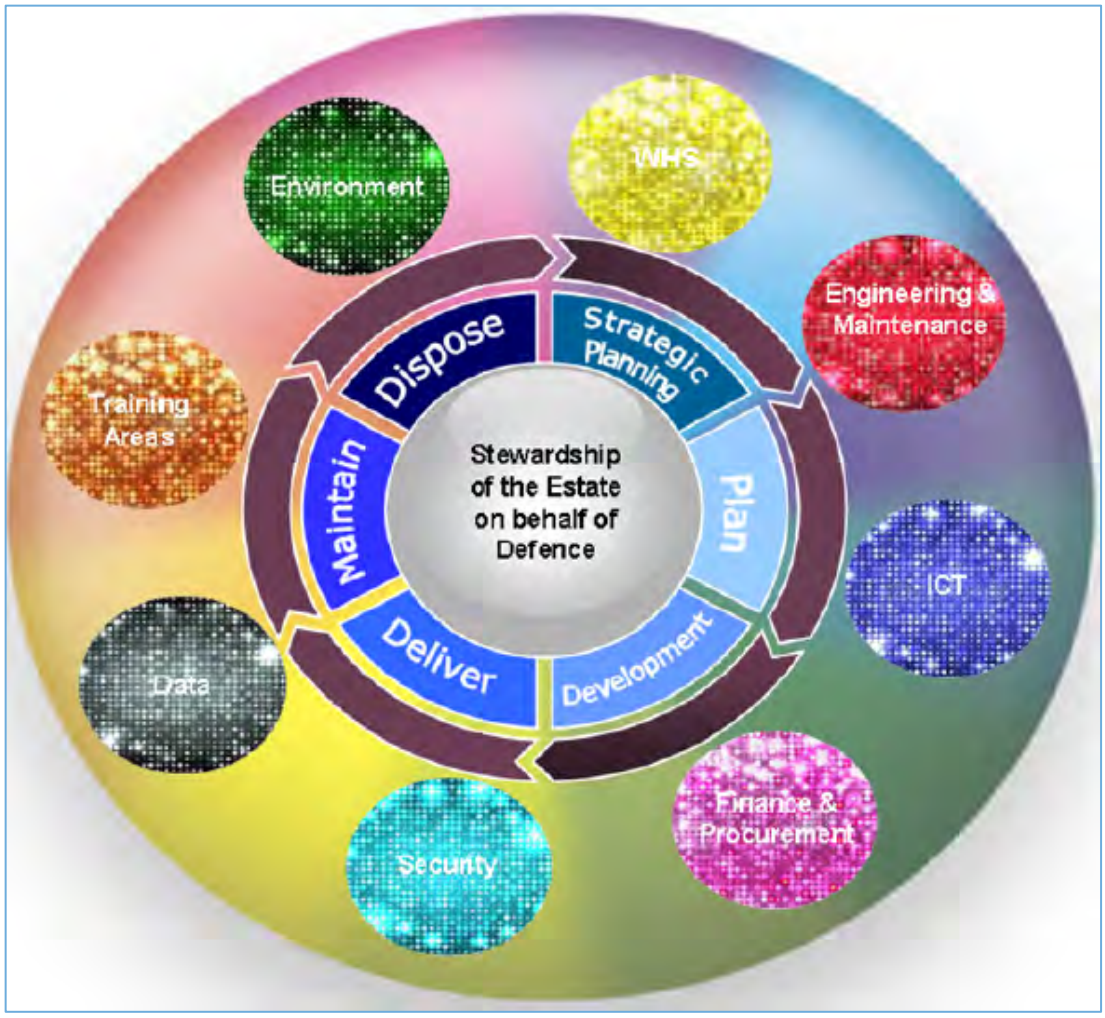

Figure 8 – DoD Aus Defence Estate Governance Framework (DoD Aus, 2016)

The Defence estate is centrally managed and developed by the Infrastructure Division (ID). The ID is responsible for an estate of over three million hectares (1.5 times the size of the DND Defence estate), 75 major bases (i.e. Type 1 DND establishments) and 25,000 assets (gross replacement value of $68 billion) (DoD Aus, 2014) and is also responsible for environment and heritage management, policy development and legislative compliance. The ID is complemented by a three tiered committee structure and an extensive compliance and assurance program ensures that the Defence estate is planned for and developed according to federal legislation (DoD, 2016).

b. Current State

The First Principles Review (DoD Aus, 2014) identified the following key issues regarding the Australian Defence Force's (ADF) estate. You will note that said issues are very similar to those of DND.

- The current footprint does not align with current and future ADF requirements. It has largely evolved over time, is a product of history, much of it now redundant, and in some cases is boarded up to avoid use and minimise maintenance costs.
- There is insufficient funding to maintain the current footprint and the remaining useful life of the estate has reduced from 22 to 16 years since 2001 because of under-investment; despite the recommendation to increase capital funding in the 2009 Strategic Reform Program (DoD, 2009).
- Defence is now caught in an unsustainable cycle of insufficient funding to maintain the current estate footprint. This leads to deterioration in quality, diversion of a growing proportion of funds to non-value adding maintenance and health and safety compliance, which further exacerbates deterioration of the estate. This cycle is progressively increasing risk, adversely impacting capability and preparedness, diverting funding from investment in the future and making future investment initiatives more difficult.
- Improvements in Defence management processes, sourcing and investment prioritisation have proved insufficient to break this cycle.

Despite a supportive ADF leadership for major rationalisation, there has been failure to consolidate due to "political intransigence", even at the Base/local level. Through the 2012 Future Defence Estate Report[9], 17 sites were identified for closure or disposal. These disposals, which would not affect operational capabilities or known future requirements, could potentially save the Australian Government $1.4 billion over a 30 year period (DoD Aus, 2014).

c. Strategic Framework for the Defence Estate

As described at Figure 7, the 2008 Estate Companion Review (ECR) was the first of many official reviews that helped "lay the foundations for a strategically aligned, affordable, sustainable estate that supports capability" (DoD Aus, 2008), based on some of the recommendations and findings from past studies such as the Cooksey Report, the 1987 and 1994 White Papers, the Defence Efficiency Review (1997) and the Force Disposition Review (2003) (DoD Aus, 2008). Although the ECR is dated in some respects, it does provide many recommendations and guidance that are still very pertinent. The ECR recommends a strategic framework to help guide estate investment and management, as described at Figure 9, which advocates three main components: Strategic Basing Guidance; Estate Reinvestment Strategy; and Governance and Business Reform. The overarching recommendations are discussed in this chapter, and specific/precise interventions are discussed in chapter 3 (analysis & discussion).

[9] A copy of the 2012 Future Defence Estate Report could not be obtained because it contains sensitive information and has not yet been declassified.

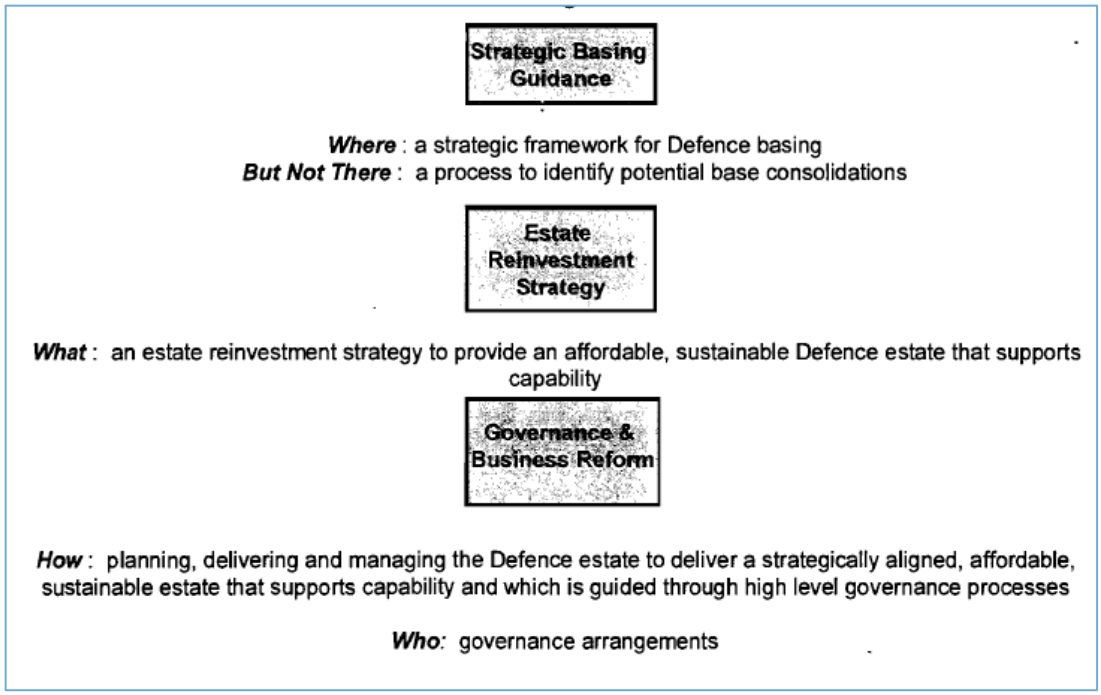

Figure 9 – Strategic Framework for the Defence Estate (DoD Aus, 2008)

(1) Strategic Basing Guidance

The Strategic Basing Guidance component of the Strategic Framework is described graphically at Figures 10 (strategic framework for Defence basing) and 11 (process to identify potential base consolidations).

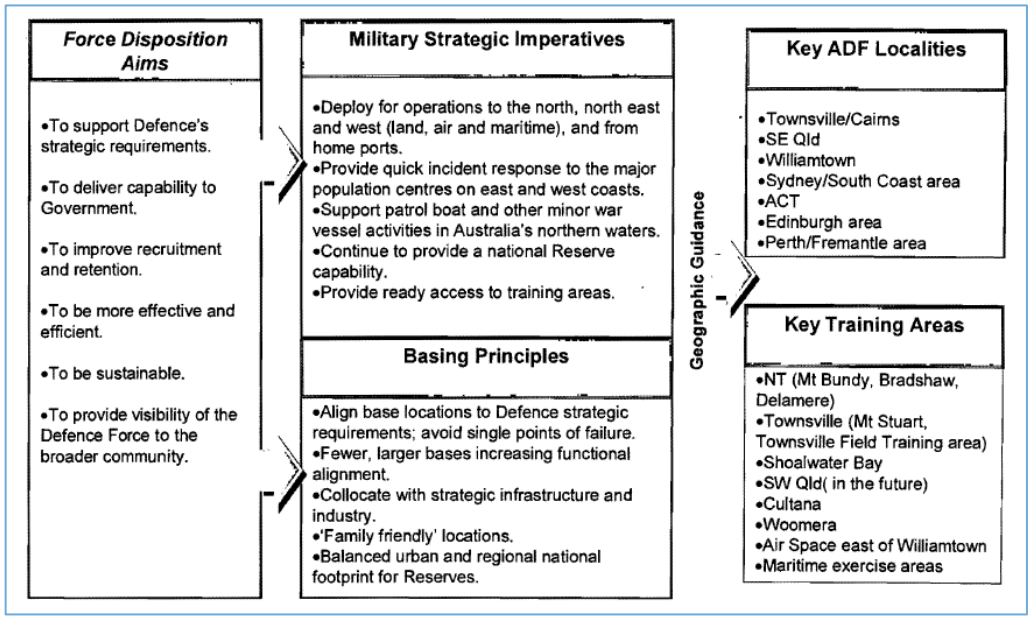

Figure 10 – Strategic Framework for Defence Basing (DoD Aus, 2008)

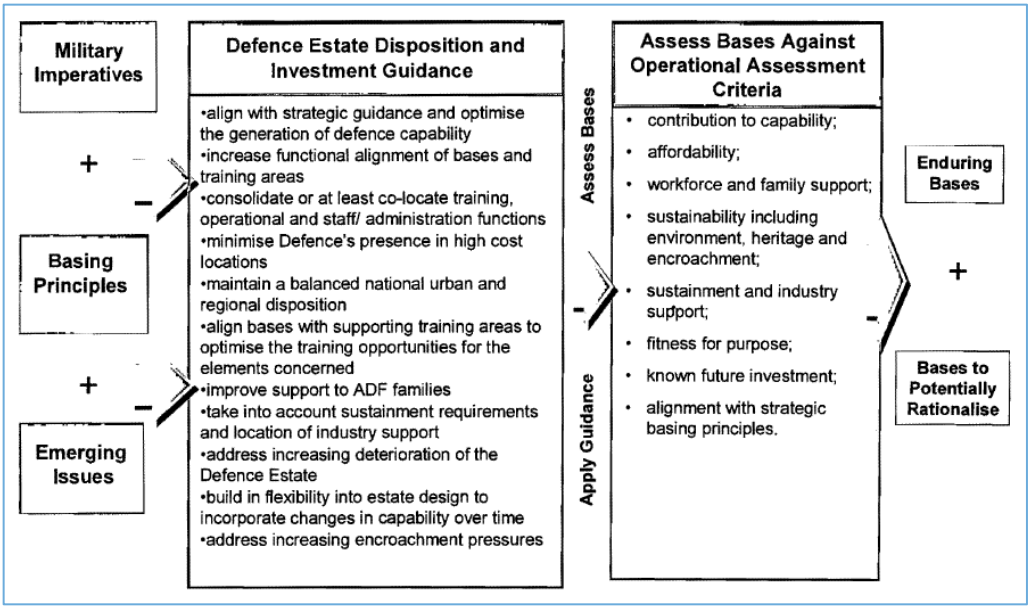

Figure 11 – Process to Identify Potential Base Consolidations (DoD Aus, 2008)

The 2009 Strategic Reform Program (SRP Aus) provides additional recommendations in terms of basing principles, as follows (DoD, 2009):

- Base locations should be aligned with national and Defence strategic requirements.
- Defence should consolidate units into fewer, larger and more sustainable multi-user bases.
- Where possible, bases should be clustered near strategic infrastructure and with industry to promote knowledge sharing and innovation.
- Where possible, bases should be located in 'family friendly' areas; typically near capital cities because they provide better spousal employment opportunities, medical support, educational options for children, and offer the potential to be near extended family (DoD Aus, 2008).
- Base locations should enable the continued provision of Reserve capability into the future.

The ECR Strategic Framework for the Defence Estate elaborates on the following key issues that must be considered in the Strategic Basing Guidance as well as the other two framework components (Estate Reinvestment Strategy and Governance and Business Reform).

(a) *Sustainability*. Defence properties are subject to growing environmental management and mitigation pressures, especially in training areas, where heavy mechanised and motorised forces, as well as other military equipment, can have a devastating effect on the natural environment if not managed properly. Sound environmental stewardship is therefore essential to ensure that military operations respect environmental regulations. Sustainability also encompasses a financial aspect, which is an integral part of the lifecycle management process that "recognises that caring for our bases and training areas prolongs their useful lives and allows us to extract maximum utility from them." (DoD, 2008)

(b) *Encroachment*. Many Defence Bases were originally positioned in rural or semi-rural areas, although the expansion of urban areas and urban sprawl has created issues for Bases that now

face encroachment from residential, industrial, and leisure areas. This situation creates pressures that have the potential to impact operations and training, which may in turn challenge "the very viability of the bas or training area itself." (DoD Aus, 2008) It is recommended that land be acquired to create buffers, where feasible, between Defence lands that face encroachment pressures.

(c) *Heritage*. The Heritage Estate must be managed appropriately and pragmatically. A systematic approach in the process to identify potential Base consolidations (Figure 11) is key to determining which heritage assets are to remain within the Defence Estate as well as those that require significant investment.

(d) *Local Economy*. Some Defence Establishments are important contributors to the local/regional economy. Consequently, base rationalisation processes must consider the socio-economic impact on local communities.

(2) Estate Reinvestment Strategy

The Estate Reinvestment Strategy is represented graphically at Figure 12. One of the key operational assessment criteria is affordability. The ECR states that affordability could be improved in the long term by "reducing the number, diversity and dispersion of infrastructure assets to be maintained" (i.e. rationalisation and consolidation). However, DoD Aus is aware that any rationalisation would incur significant up-front investment to construct new facilities and to remediate the old facilities that merit retention (DoD Aus, 2008).

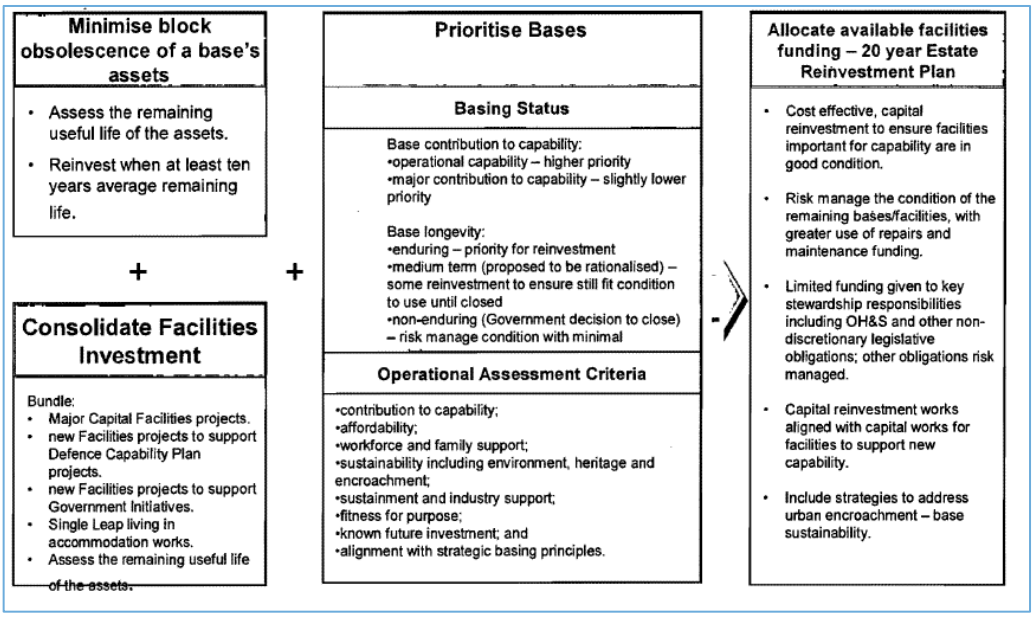

Figure 12 – Estate Reinvestment Strategy (DoD Aus, 2008)

Defence Estate funding is currently divided among various pockets of monies that are allotted to numerous projects, programs and organizations. This fragmented and inflexible approach sometimes leads to a misalignment of Defence priorities and sub-optimal results (DoD, 2008). For example, there is a historic lack of funding to support Defence estate stewardship matters (environmental, heritage and

contamination) because it is dedicated to other larger programs. To rectify this situation, the ECR proposes that all Estate program funding be managed as one integrated Estate Fund, with sub-components which are represented by the individual boxes at Figure 13. This approach would allocate all Defence estate related monies to the organization that manages the Defence estate (Deputy Secretary Estate and Infrastructure), providing the flexibility to logically redistribute estate funding according to strategic priorities.

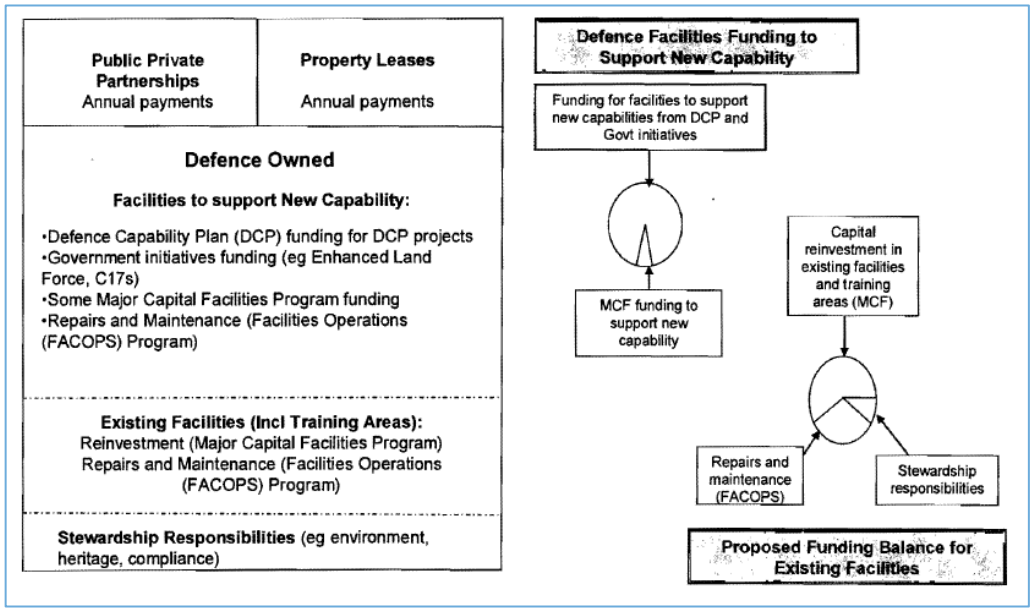

Figure 13 – Integrated Estate Fund (DoD Aus, 2008)

(3) Governance and Business Reform

The 2009 Strategic Reform Program reiterated, in general terms, the 2008 ECR recommendations to implement internal governance and business process reforms. The SRP Aus puts forth the following initiatives to ensure facility requirements are integrated into the capability development process, thus stimulating better value for money in Defence estate spending:

- Strengthening the accountabilities of the Deputy Secretary - Defence Support (DEPSEC DS)[10] in relation to Stewardship of the Estate
- Strengthening senior management involvement
- Improved estate planning, development and management

The ECR proposes a new governance model to address the above-mentioned initiatives. The main deficiency regarding estate governance is that decisions are made at the operational level, with poor oversight from the strategic level (DoD Aus, 2008). Consequently, senior management is occasionally excluded from Defence Estate governance arrangements and business processes. It is therefore recommended that an Estate Investment Committee (EIC), comprised of DoD Aus' most senior leadership, be created to mitigate said deficiency.

[10] Deputy Secretary - Defence Support (DEPSEC DS) has since become the Associate Secretary. DEPSEC DS will be used throughout the document for continuity purposes.

To better align estate planning and priorities with Defence priorities, the ECR recommends that Defence adopt three layers of estate planning[11], as follows:

- *Strategic Level*. Estate vision; strategic basing guidance: an estate reinvestment strategy; and governance and business reforms to maximise estate outcomes in line with the strategic guidance.
- *Operational Level*. Defence Basing Plan; Estate Reinvestment Plan; and Estate Road Map to 2030.
- *Tactical/Functional Base Level*. Individual Base Plans, to include specific sub-plans such as zone and master plans, maintenance plans, and heritage management plans.

Figure 14 shows the relationship between the three layers of estate planning and highlights the main components of each layer. Figure 15[12] highlights the main considerations for managing and delivering a "strategically aligned, affordable, sustainable estate that supports capability." (DoD Aus, 2008)

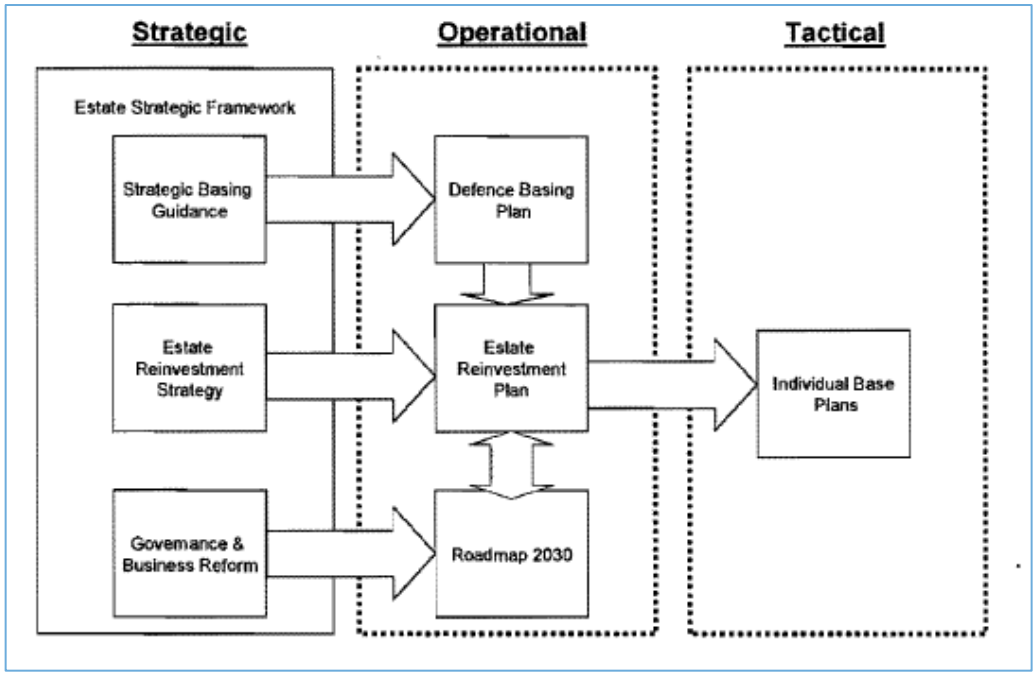

Figure 14 – Estate Planning Layers (DoD Aus, 2008)

[11] This structure is very similar to the Canadian DND model put forward in Defence 2030, which proposes the same type of Defence planning, using different terminology (National/Regional/Local vs Strategic/Operational/Tactical).
[12] The box titles at Figure 15 were inserted manually because the titles were difficult to read in the scanned ECR document.

Planning the Defence Estate	Managing the Defence Estate	Delivering the Defence Estate
•3 levels of planning: strategic, operational and base level •work closely with CDG; •integrate DCP facilities, MCF and FACOPS planning; •provide for future requirements; •address the aggregated impact on infrastructure and services; •maintain base amenity through master planning; •develop a 3-5 year FACOPS program based on asset condition.	•adopt a strong performance management regime to reduce cost of ownership; •balance short term and long term requirements; •balance competing user requirements using whole-of-Defence priorities; •efficiently and effectively manage NPOC; •charge for Government Furnished Facilities; •demolish old, unused facilities; •ensure the benefits of a relocation outweigh the costs (office accommodation is not a free good); •meet Defence's legislative obligations and risk manage Defence's other stewardship responsibilities; •minimise changes to Public Private Partnership provided facilities.	•make best use of delivery options – Defence owned facilities vs leasing vs PPP; •greater use of more generic, less one-off designs; •more adaptable designs to facilitate changing use over time; •consolidate similar functions, activities into 1 facility; •deliver capital works projects to scope, on time and within budget; •streamline FACOPS program delivery; •requests for devolved works to be lodged 18 months in advance; •develop a long term, consolidated leasing program.

Use ICT Systems Enabling Better Decision Making
•an estate information management system •a Defence costing system

Figure 15 – Planning, delivering and managing the Defence Estate (DoD Aus, 2008)

2.3. Ministry of Defence – United Kingdom

The Ministry of Defence (MoD), through the Defence Estates organization, manages real property centrally; which is similar to the DND system post 1 April 2016. The Department owns approximately 240,000 hectares of land and possesses rights of access to an additional 130,000 hectares in the UK as well as an additional 200,000 hectares overseas (total area is approximately 30% of DND's estate). Valued at nearly £20 billion, the Defence estate consists of 4,000 sites of various sizes and costs £2.9 billion to run annually (NAO, 2010). Unlike Canada, the UK has Defence sites across the globe, as shown at Figure 16. This SRP will focus on how the UK manages for its Defence RP in-country.

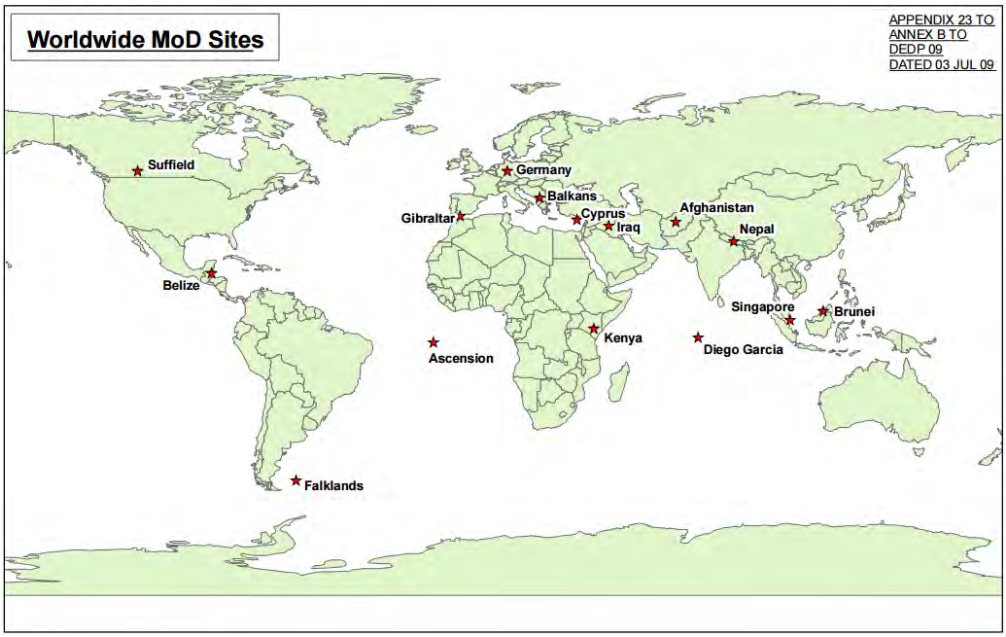

Figure 16 – Worldwide MoD Defence Sites (MoD, 2009)

The Estate Strategy sets out to provide an estate of the right size and quality, which is managed and developed effectively, while being sensitive to social and environmental considerations. It is expected that consolidation of multiple organizations into Super Garrisons will deliver efficiencies, offer more stability to Service personnel and improve integration with local communities. The estate must be able to meet evolving military requirements, while maximizing value for money. The adoption of a full lifecycle management approach, in conjunction with Integrated Estate Management Plans and access to central RP data via the Estate Planning Tool, will enable Defence Estates to develop a modern Estate Performance Measurement System that will give Defence RP planners and managers the tools required to properly manage the Defence estate (MoD, 2009).

a. Estate categorization

The MoD categorizes its establishments into three categories: Core; Retained; and Disposal. The main focus for long term investment rests with Core Sites, although Retained sites are maintained, funding permitting, until they can be re-categorised as Core or Disposal. Each category if described below (MoD, 2009).

(1) *Core Estate*. The Core Estate consists of Core locations that are either large bases or sites which are expected to support Defence outputs for at least 15 years.

(2) *Retained Estate*. These are sites that are not expected to contribute to core Defence functions within the next 10 years. They are subject to review, for reuse within the Department, or disposal.

(3) *Disposal Estate*. Sites that has been identified as being surplus to Defence requirements and is to be put up for disposal.

b. Defence planning challenges

The MoD faces some significant Defence planning challenges, some of which are very similar to Canada; especially in terms of encroachment and sustainable development. The following are some of the challenges that MoD planners face (MoD, 2009).

(1) *Encroachment*. The MoD has been mandated by Government to transfer a significant portion of its Service personnel out of the South and South East regions of the UK, to make way for various non-Defence housing projects; which are already slated to take over parts of the Defence Estate.

(2) *Town & Country Planning*. The MoD faces a very unique situation, in that the Department is subject to regional and local planning regulations, even when occupying federally owned land. Outside the UK, military organizations typically reside on federal lands and are not subject to neighbouring/municipal planning regulations. In Canada, Bases/Wings normally coordinate with neighbouring municipalities to maintain good community relations, although there is no requirement to do so. Being subject to local regulations could cause significant delays due to increased coordination requirements, and may have detrimental impacts on operations and training, because Defence estate requirements are often significantly different than those of its neighbours.

(3) *Sustainable Development*. MoD is monitored on an annual basis and must show a continuous reduction in carbon emissions, energy and water use and waste to landfill.

(4) *Limited Funding*. Defence estate funding is grossly insufficient to maintain Defence RP at a reasonable standard. Although many rationalisation initiatives are being put forward, they require a significant amount of funding up front, which is not forthcoming.

In 2010, the National Audit Office (NAO) completed a high-level review of the last ten years, to determine the progress made by the MoD in optimising its footprint, to assess estate efficiency and to verify cost reduction initiatives. The NAO put forward some interesting findings and recommendations (NAO, 2010).

c. Audit key findings

- *Estate Rationalisation*. The MoD reduced its domestic footprint by 4.3% between 1998 and 2008; generating £3.4 billion from the sale of Defence owned lands.
- *Improved Defence Planning*. The first publication of a Defence Estate Development Plan, in 2008, was a successful undertaking, as it finally provided a long-term focus within the Defence estate management construct. A supporting strategy is currently being developed to fill in some of the gaps that were identified by internal reviews.
- *Categorisation of Sites*. 95% of UK estate land was designated as Core status, while only 3% and 2% were attributed a Retained and Disposal status, respectively. Considering the seemingly small amount of land that could be offloaded, it may be prudent to revisit the classification criteria.
- *Insufficient Central Data*. There is no central database for all RP data. Certain data is held centrally, while some is produced at local levels, often stored in different systems and formats. The NAO argues that the MoD must have central visibility on the five following categories of information to make sound estate decisions and to identify additional areas for rationalisation (see Figure 17).
  - Relative operational importance of sites
  - How heavily a site is used
  - Site market value (generate funds through disposal)
  - Running costs
  - Comprehensive site condition data

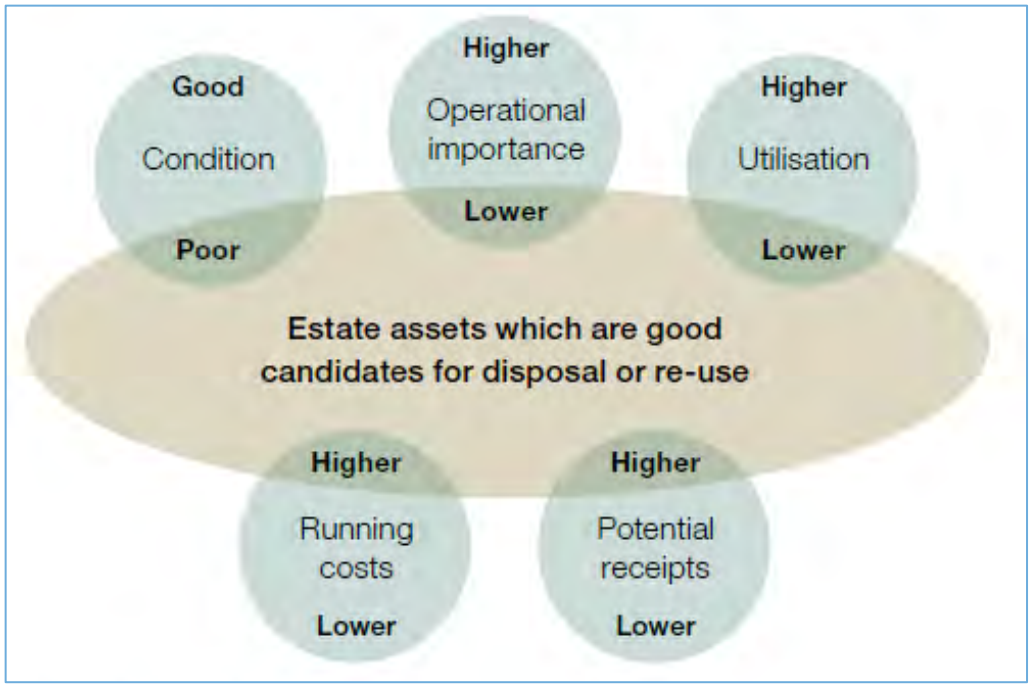

Figure 17 – Asset Information Needed to Drive Cost Reduction (NAO, 2010)

- *Inadequate Governance Framework*. The MoD organisational structure must be improved in order to address:
  - The lack of a clear translation of its strategic goal into quantifiable targets.
  - Limited central challenge of the translation of operational requirements into estate needs.
  - The lack of sound information to support rationalisation decisions and assess competing demands across Budget Holders.

d. Audit Recommendations

- Harness modern working practices such as hot-desking.[13]
- Plan for an estate of fewer, larger sites in Super Garrisons, while increasing integration with local economies and civilian society.

e. Challenges to rationalisation

The MoD identified a number of barriers to identifying and disposing of surplus estate, as follows (NAO, 2010):

- Insufficient funds to carry out rationalisation projects (large upfront investment)
- Lack of incentives to identify sites for disposal (sale of lands often does not benefit the local commander)
- Characteristics of land
  - Heritage and scientific considerations

[13] Similar to DND's Workplace 2.0 concept

- High cost of clean-up (decontamination)
- Inaccessibility of land

2.4. Department of Defense – United States of America

a. General

The Department of Defense (United States of America) (DoD US) manages real property in a decentralized fashion; which is somewhat similar to the DND system prior to 1 April 2016. Of the four countries studied in this SRP, only the US continues to operate in this fashion. This could potentially be attributed to the scale and size of its military, which is relatively larger than its UK, Australian and Canadian allies.

The Deputy Under Secretary of Defense (Installations and Environment) (DUSD(I&E)), under the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)), within the DoD US construct, has two main responsibilities (DoD US, 2005):

- Providing guidance and procedures for the implementation of real property management policies.
- Serving as Senior Real Property Officer for the DoD US.

The DUSD(I&E) provides general guidance through a series of DoD US instructions, manuals and directives, mainly through the 4165 series. Here are a few examples of said documents:

- DoD US Instruction 4165.70 – Real Property Management
- DoD US Directive 4165.06 – Real Property
- DoD US Instruction 4165.71 – Real Property Acquisition
- DoD US Instruction 4165.72 – Real Property Disposal
- DoD US Instruction 4165.14 – Real Property Inventory and Forecasting
- DoD US Instruction 4165.03 – DoD Real Property Categorization
- DoD US Instruction 4165.63 – DoD Housing
- DoD US Manual 4165.63-M – DoD Housing Management
- DoD US Instruction 4165.57 – Air Installations Compatible Use Zones
- DoD US Manual 4165.66-M – Base Redevelopment and Realignment Manual

Of note, DoD US Directive 4165.06 (Real Property) puts forth a set of RP-related guiding policies similar to those of its allies, as follows (DoD US, 2008):

- The acquisition, management, and disposal of real property shall be performed to advance the overall mission of the DoD US.
- DoD US RP shall be managed in the most economical manner to reduce costs to the Department without obstructing or prejudicing current or projected defense requirements.
- DoD US RP that is no longer required for current or projected defense requirements shall be disposed.

- DoD US RP shall be managed to promote the most efficient and economic use of DoD US RP assets and to ensure management accountability for implementing Federal real property reforms.

The bulk of the RP-related work and funding falls upon the DoD US Components[14] (similar to DND Level 1s) and Military Departments[15], who are responsible for the following (DoD US, 2005):

- Identifying RP requirements.
- Maintaining the inventory of its RP.
- Providing RP information.
- Providing funding for maintenance, repair, construction, environmental compliance, environmental restoration, historic and cultural preservation, security, fire protection, utilities, and demolition/disposal of RP.
- Establishing programs and procedures to manage RP.
- Maintaining a program to monitor use of RP.
- Developing Base master plans or comprehensive plans for all of its installations.

b. Defence planning

DoD US Instruction 4165.70 – Real Property Management (DoD US, 2005) states that a master plan or comprehensive plan shall be developed for all installations, in line with the following principles:

- Based on a strategic assessment of the operational mission and expected use of the installation.
- Cover at least a 10-year period and be updated every 5 years (minimum).
- Include a specific, annual listing of all construction, major repair, sustainment and modernization projects.
- Include current and projected RP requirements.

In order to facilitate and direct the development of master plans, the DoD US issued *Unified Facilities Criteria – Installation Master Planning – UFC 2-100-01* (DoD US, 2012) to guide the application of consistent Defence planning processes and the development of consistent planning products across the DoD US that are in line with current approaches to master planning.

In comparison to the Canadian approach, the UFC centres on the Base/Wing and Site Levels. Since this SRP focuses on planning at the national and regional levels, a detailed study of the UFC is not required. Unfortunately, very little information could be found at the national and regional levels.

c. Base Realignments and Closures (BRAC)

The US has over a half century of experience in dealing with Base realignments and closures[16]. Following World War II, the DoD US reduced the size of its military, as happens for most countries after

[14] List of Department of Defense (DoD US) and Office of the Secretary of Defense (OSD) Components - http://www.dtic.mil/whs/directives/collections/files_internal/components.pdf, accessed 15 April 2016.
[15] Organization of the Department of Defense (DoD US) - http://odam.defense.gov/Portals/43/Documents/Functions/Organizational%20Portfolios/Organizations%20and%20Functions%20Guidebook/DoD_Organization_March_2012.pdf, accessed 15 April 2016.

large-scale wars. Consequently, the DoD US was left with an excess of military installations that were costly to operate and maintain. During the 1960s, the Office of the Secretary of Defense developed and implemented a base closure program that saw the closing of more than 60 major bases. However, this program bypassed Congress and a moratorium on base closures and realignments ensued. In the 1980s, said moratorium resurfaced following numerous DoD US budget cuts. Subsequently, the Secretary of Defense chartered the first base realignment and closure (BRAC) commission in 1988, which included very little public and congressional involvement. Following the end of the Cold War, another BRAC commission was sanctioned, but this time, it was constructed using best practices and lessons learned from the two past commissions. "In 1990, Congress passed P.L. 101-510 which created an independent, five year Defense Base Closure and Realignment Commission, with closure rounds in 1991, 1993, and 1995. The act outlined procedures, roles, and time lines for the President, Congress, Department of Defense (DoD), Government Accountability Office (GAO), and the BRAC Commission." (Collins, 2008) A further round of Base realignments and closures was sanctioned in 2005, one is provisionally scheduled for 2015 and "the Pentagon has formally requested at least one additional round after that" (Ashley & Touchton, 2016).

2.5. Regional Effects of Base Closures and Redevelopment

As a responsible land manager, ADM(IE) real property managers must take into account the local and regional effects of its policies and actions on neighbouring communities (DND, 2013). Consequently, when developing RRPDPs and MRPDPs, it is important to consider the regional implications that the implementation of said plans may have. In this section, we examine the local and regional effects that the expansion, redevelopment and closure of Defence establishments may have on its surrounding communities.

Below, we examine the local and regional effects of base closures and redevelopment in the United States, Sweden and Germany over a given time period. The intent is to integrate some of the lessons learned, best practices and successes highlighted in these three countries' rationalisation efforts into DND's regional planning framework. In this case, the term "regional" refers to the area of influence surrounding individual bases. This is consistent with terms used in professional and academic planning circles. DND considers these "regions" as "sub-regions" in its planning construct. The term "regional" will be used throughout this section to concord with the academic literature examined therein.

Some of the effects of Base closures are similar to those of plant closures and closures of other major employment areas such as factories and offices. Authors like Doreen Massey (Spatial Divisions of Labour, 1984) explain how corporations' strategic decisions to reorganize production often have large impacts in communities as plants closed for reasons that have nothing to do with the communities themselves. This SRP focuses mainly on the effects of Base expansion, redevelopment and closures on neighbouring communities, and only provides a cursory overview of plant closure literature because we feel that this type of literature is too general and speaks to many industrial uses that are very different from military installations. Furthermore, military base closures do not necessarily have the same effects

[16] The phrase "Base realignments and closures" encompasses downsizing, consolidation, closure, redevelopment, expansion, mission change and realignment. (Drucker, 2015)

as plant closures, as illustrated by Bradshaw (1999): “Compared to a factory or industrial plant of the same size that quits and locks its gates, military bases that close move most of their personnel to other bases, and civilian employees are eligible to be transferred to other government jobs around the country.”

Lastly, the SRP provides a very brief overview of the parallels between resource community development and the various stages of Base expansion, redevelopment and closures. Said overview considers two articles published by John Bradbury: Some Geographical Implications of the Restructuring of the Iron Ore Industry : 1950-1980 (1982) and The impact of industrial cycles in the mining sector: the case of the Quebec-Labrador region in Canada (1984). In essence, there is very little similarity between resource community and Base development, principally because resource community economies rely very heavily on external factors such as mining trends, ore prices, quantity of extractable minerals and ease of extraction. In contrast, military base operations are internal and only rely on outside resources in support of said operations. In very remote regions (i.e. Canadian Forces Stations Alert and Eureka), military installations can still function without local/regional community support, despite the large cost of flying in resources to support military operations. Another significant difference between resource community wind down and closures and Base redevelopment and closures is that the latter has very little effect on local/regional economies, as opposed to the former, which has typically significant effects on the surrounding communities.

a. General

The macroeconomic effects of military spending as well as the effects of Base closures and downsizing are relatively new academic research topics (20 years or so), despite their contentious and political nature. Bases continue to be seen as catalysts for regional economic development and base closures are still perceived as local economic shocks that can devastate local and regional economies, as opposed to Base expansions which can stimulate local economic activity (Lee, 2016). However, Base closures are not limited to economic effects. Base realignments and closures also affect markets (housing and retail), employment, community involvement and the construction industry, among many other sectors (Ashley & Touchton, 2016; Bradshaw, 1999). Furthermore, a multitude of factors affect a community’s recovery process following a base closure, including the size of the community, its economic diversity, the type of town (rural vs urban) and the availability of federal funding, to cite but a few examples (Lee, 2016; Drucker, 2015; Ashley & Touchton, 2016; Bradshaw, 1999). We will expand on both the economic and non-economic effects of Base realignments and closures as well as recovery/mitigating factors in the following sub-sections, using examples in the US, Sweden and Germany.

b. Local and Regional Effects of Base Realignments and Closures in the US

In 1999, Ted K. Bradshaw published a paper entitled *Communities Not Fazed - Why Military Base Closures May Not Be Catastrophic*. As the title suggests, Bradshaw suggests that Base closures are not necessarily catastrophic. This counterintuitive theory is supported, in whole or in part, by all the academic literature that could be found in preparation of this SRP. For example, Drucker (2015) says that “in comparison to other economic shocks, military base realignments tend to be predictable, large relative to the communities they inhabit or adjoin, and transpire in stages” and that studies conducted prior to Base closures typically overestimate associated negative impacts, though often for political

reasons (Drucker, 2015; Collins, 2008). Bradshaw's research does not suggest that "base closures are benign or positive for every community; rather, the consequences are unevenly borne by both individuals and communities; [especially those with] severe conversion problems." The literature generally states that Base closures are often an opportunity of economic rejuvenation and public benefit. Bradshaw's paper uses several examples to support this. For example, the region surrounding Fort Ord saw no change local unemployment rates and increased retail sales, despite severe forecasts, following the Base's closure in 1994. In Sacramento, an Army Depot saw the replacement of 3000 military jobs with 5000 manufacturing jobs, with very little conversion and downtime. In Michigan, Chippewa County goes as far as crediting its industrial revival to the closure of the Kincheloe Air Force Base. However, it is important to consider, as Collins (2008) suggests, that "there is no silver bullet to conquer […] the initial impact of BRAC." Let us now look at Bradshaw's case study of Castle Air Force Base (AFB) near the town of Atwater, Merced County, California, which was closed in 1995, to see how projections often differ from facts. It is understood that the case of Castle AFB will not be the same as every other Base closure, although it does give a good starting point to understand both the positive and the negative effects of Base realignments and closures.

In 1994, a report published by the California Military Base Reuse Task Force put forth the following post Castle AFB closure projections: increase in unemployment from 14.4% to 21.7%; loss of 3,694 civilian jobs (5.8% of the employed labour force); population loss of 18,000; and loss of $105 million in retail sales (Bradshaw, 1999). Let us summarize Bradshaw's comparison of these projections with actual numbers by examining the impact on markets (retail and housing), employment, population and community response.

(1) Impact on markets

US Bases have relatively isolated retail economies. They generally produce little economic activity in the surrounding community, because they tend to rely on national sources of supplies and personnel (Cowan & Webel, 2005; Bradshaw, 1999). Bradshaw argues that Bases can even have negative economic impacts on the local economy because of said isolation. In terms of retail sales, the Base Exchange and the on-base retail commissary, which are only accessible to military personnel, their families and retirees, typically sell their goods, which very little are obtained locally, at cost plus 5%. Consequently, the Base retail outlets have a quasi-monopoly on sales to military personnel, their families and retirees, and even though they produce large sales volumes, contribute very little to the local economy and nothing to the local government revenues because they do not collect sales tax. When a Base closes, the military personnel and their families typically leave the area, but the retirees often stay behind. The latter accounts for approximately 50% of on-base retail sales, therefore all retiree spending reverts to the local economy after Base closure (this is also true for health care spending). The combination of the afore-mentioned factors attenuates the loss in local retail sales. A conservative estimate shows that the closing of Castle AFB induced the loss of $12 million per year, which is less than 1% of the County's total retail activity. As with retail, the isolated base economy purchases very few supplies and services from local businesses, especially in small counties such as Merced. Of the 3,866 providers that supplied Castle AFB, less than 10% were found in Merced County. This is typical for US Bases.

Declining housing values and increased vacancies in rental units are often associated with Base closures. In Atwater, 30% of the town's residential units were occupied by military families. Housing prices dropped approximately 10% following the announcement of the Base closure in 1991 and Atwater city planners estimate housing value reduction up to 25% and an increase in vacancies as high

as 25% following Base closure. However, in the year following the closure of the Base, housing sales actually increased by 3% because of seven new subdivisions. Had Merced County not had a growing economy at the time, the effects of the Base closure would have been more severe.

When we consider the minor retails sales losses, increases in health care spending by retirees and the light upswing in the housing market, the loss of local and regional sales were actually around $8 million instead of the projected $105 million.

(2) Impact on employment

Base expansion tends to stimulate local employment, particularly the hiring of contractors, but Base downsizing does not seem to meaningfully reduce local economic activity (Lee, 2016). In the case of Castle AFB, initial employment projections showed that unemployment would be at an all-time high in Merced County. However, there are many factors that were not considered when these projections were made. One of them is that civilian employment losses would be balanced by job vacancies left by military spouses. Approximately 2,050 spouses were employed in the region surrounding Castle AFB and most of those jobs were vacated following Base closure. However, many of those jobs were filled by displaced Base employees and others in the community who suffered base-caused layoffs. In general, the county unemployment rate went up slightly in the year following the closure of Castle AFB, but that value may have been skewed by the regional growth that was already occurring, much like the housing market rise discussed above. Although the unemployment did rise, it did so a much lower rate than projected. The initial projection was 21% and the actual rate was 15.5%, only 1.4% higher than the previous year.

(3) Impact on population

The Castle AFB closure saw the emigration of 11,000 military personnel and their families from Merced County. However, in the year following Base closure, the population increased by 600 (0.3%). Bradshaw attributes this increase to a high birth rate and a wave of new immigrants. Although rapid local growth is a factor, the state population grew only 1% in the same timeframe, therefore there were other influencing factors. All things considered, the initial projections predicted a total county population loss of 18,000 and the actual numbers show an increase of 600.

(4) Impact on communities

The military is often involved with neighbouring communities, sometimes as a resource and partner in many programs, as a contributor of volunteers and in many other facets of the community in general. In the US, an organisation called the Office of Economic Adjustment (OEA) was established by the DoD US to succeed the broken link with communities. The OEA's mandate is to assist communities with base redevelopment, award planning grants and provide technical & planning assistance. In Atwater, the presence of a good OEA team, strong local leadership and early pre-closure planning led to a relatively smooth transition following Base closure.

c. Regional Effects of Military Base Closures in Sweden

A study conducted at Umeå University investigated the regional effects of military base closures in Sweden from 1983-1998, based on a regional growth model that targets average income growth rate

and net migration rate. All information contained in this sub-section is taken from the L. Andersson et al. (2007) study.

The study examines "31 Swedish municipalities (localities) which have either been the host of one or more military bases during the whole period 1983–1998 and/or have been affected by either a pure base closure or the base has been closed and relocated to some other locality". The most significant base closures, a total of 13, were experienced in 1992 and 1994, following the end of the Cold War.

The authors chose average income growth and net migration as evaluation factors because they are directly linked to personal income, thus affecting the local tax base and the state's ability to provide public services. Although military base locations were historically selected for strategic reasons, they have typically stimulated regional economic growth and in-migration in the areas surrounding the bases. Since a typical Swedish military base employs several hundred people, a base closure can potentially have detrimental effects on the regional and local economies, especially in weak labour markets.

Using a complex set of equations that account for a multitude of factors and externalities, the authors found that "closing down a military base does not have any significant effect on the average income growth rate" and that there is a "non-significant correlation between net migration and the closure of a military base". The authors offer two potential explanations for these results. The first is that personnel previously employed at military installations were able to find new employment within the surrounding region due to a "latent excess demand in the local labour market". The second is that some of the personnel that lost their jobs may have been offered retirement or retraining opportunities, and chose to remain in the region. A subsequent paper is planned to examine more recent base closures, which will allow for a more comprehensive analysis.

d. The Regional Economic Effects of Military Base Realignments and Closures in Germany

A study conducted at Ruhr University of Bochum investigated the regional effects of military base realignments and closures in Germany from 2003-2007, targeting socioeconomic indicators such as household income, output, unemployment, and tax revenue in 298 communities within peripheries of military bases. Unlike the Swedish study above, the German study predefined its area of influence with a 12 kilometer buffer, with minor corrections for site-specific variables. All information contained in this sub-section is taken from the A.R. Paloyo et al. (2010) study.

Germany began a comprehensive program of base closures and conversions following the end of the Cold War, much like its allies and neighbours (UK, France, Sweden, Canada, etc.). This study aims to evaluate if the closure of German bases had a significant effect on the civilian economy of regions surrounding military bases. As eluded to in the previous sub-sections, Bases generate demand for local goods, contribute to tax-revenue generation and stimulate local employment; especially in locations that are "somewhat isolated, [where] the base may be the only major source of employment." There are therefore numerous direct and indirect effects from base closures such as loss of employment and industry realignment, respectively.

This study provides results that will be useful for guiding policymakers in countries that are experiencing base realignment and closures (BRACs) and who have a similar scope and footprint as Germany. We feel that Canada falls within this category. Furthermore, the study builds upon BRAC studies already conducted in the US, while adapting them to the German context. For example, the German BRAC program was met with little resistance whereas the US program was controversial and

hindered with political issues. Consequently, German decisions on which bases to realign or close were entirely based on military considerations, as opposed to socioeconomic ones. Of its 298 bases, the German BRAC program saw the closure of 105 bases, a reduction in military personnel within 79 of its bases and a status quo for the remaining 114 bases.

Overall, the study results indicate that the German BRAC program had no significant impact on the regional economic development of areas surrounding military bases, "as measured by household income, regional output, the unemployment rate, and revenues from the value-added tax (VAT) and income tax." However, the study highlights that this is not the case in the US, where base closures had a significant negative impact on the local and regional economies. The authors pose the three following key questions in the conclusion to begin tackling this dissimilarity.

- What type of bases can be closed with the least negative impact to the community (and how should it be closed and possibly converted for civilian purposes)?
- Should policy instruments be used to compensate for the effects of any closure?
- How quickly does the community adjust to such an exogenous shock?

One significant factor why German base closures had much less effects that US base closures is because of the substantial size differences between these countries' bases. It could be assumed that larger bases have a more significant impact on local economies, especially in cases where they neighbour small civilian communities. Another reason why German base closures had little or no impact is because most German bases are self-sufficient and not as integrated into the local economy as US bases. The final reason put forward is because Germany has had success in converting bases to civilian purposes. For example, one base was transformed into a historic train ride, another into a hospital complex and another into a major tourist attraction; thus generating new employment and creating a new tax revenue stream.

e. Defence establishment redevelopment

Former military bases offer a unique set of redevelopment opportunities, which stem from former military infrastructure such as airstrips, buildings, roads, water, electrical service, medical facilities and many others. In the case of Castle AFB, the Base landing strip was converted into a commercial airport, a prison was built, a space-education program for children was established and some of the buildings now house university programs.

However, redevelopment of divested Defence real property presents distinct challenges, especially in terms of land remediation (Ashley & Touchton, 2016). In simple terms, Ashley & Touchton (2016) suggest that positive ingredients for a successful redevelopment project are governmental support, collaboration between the public, private and non-profit sectors, former military site functions that are easily converted (i.e. military airstrip becomes civilian airstrip), high community per capita GDP, healthy regional growth, proximity to urban areas and large land parcels.

Potential redevelopment alternatives include industrial buildings, piers and cargo handling structures, power plants, residential complexes, shopping centers, airports, educational institutions, hospitals, prisons, aquariums, golf courses, parks and open-space preserves (Warf, 1997). However, not all conversions are created equal. For example, converting military airstrips to commercial airports and converting military medical facilities to civilian use are relatively simple and inexpensive (Ashley &

Touchton, 2016). This is supported by Cowan and Webel (2005), who state that "Bases closed in earlier BRAC rounds have been successfully redeveloped into manufacturing facilities, airports, and research laboratories." Conversely, converting land uses is especially difficult, especially when significant environmental clean-up is a factor. For example, it would very costly and time consuming to convert a munitions testing range into parks, libraries, and schools (Ashley & Touchton, 2016).

Finally, Collins (2008) states that "there is no single template for redeveloping a closed military base." However, there is a general consensus that planning must begin as soon as possible after the expected closure is known and that the sooner economic redevelopment can begin after the base closure, the better the results will be for local communities (Collins, 2008; Cowan & Webel, 2005; Bradshaw, 1999). "Were the net, long-term costs and benefits of military conversion widely known, many communities might express more enthusiasm for base closures than has hitherto been the case." (Warf, 1997)

f. Plant Closures

As mentioned at the beginning of this section, there are important differences between Base closures and plant closures, especially in terms of labour redistribution (job loss, reemployment, income generation). This is mainly due to the fact that following Base closures, military personnel, their families and public service employees are transferred to other existing jobs outside the region. In terms of job loss and reemployment, Bradshaw (1999) highlights two similarities between Base and plant closures that relate to who is reemployed following redevelopment and what the effects are on incomes. In the first case, the employees who lose their jobs are not typically the ones that benefit from redevelopment. This is due to the time lag between job loss and the creation of new opportunities as a result of Base reuse, which entices workers to seek employment elsewhere because they cannot wait for said opportunities. Furthermore, new industries are sometimes quite different following Base redevelopment and require different or specialized skillsets. As for income generation, laid-off workers that find other work typically do so for lower pay, especially in areas where there is little or no economic diversity and growth. This is supported by Tomaney et al. (2000), who examined the effects of the closure of the Swan Hunter shipyard in Tyneside, United Kingdom; a major employer in the region. "Employment opportunities were limited at North Tyneside's existing large employers […] and the type and nature of jobs created by firms […] in the electronic sectors were often unsuited to the skills of redundant shipyard workers." Said workers went on to be employed by lesser paying maritime engineering employers and in the service sector.

Previous studies of labour market impacts of plant closures show that many redundant workers cease to be unemployed within one year either with new employment, training or education, retirement or simply by leaving the workforce. Those who remain unemployed past the one year mark often remain in that situation for a very long time, especially those who do not want to relocate. Furthermore, unskilled and older workers experience difficulties in finding work and the majority of workers accept less skilled work for lower pay, often in temporary forms of employment (Tomaney et al., 2000). Bailey et al. (2012) expand on labour market impacts and point out that three factors need to be considered when predicting reemployment outcomes: personal attributes associated with workers' employability and reabsorption in the labour market; local demand and geographical mobility shaping transition back to employment; and effectiveness of the policy interventions, their uptake and how they were perceived by the workers. The policy aspect of these factors is especially interesting, because it suggests that early policy interventions could prove useful in shaping the future of the "redundant" workforce and in mitigating the negative impacts on the local economy, not only in terms of finding new employment, but

also for retail and housing markets and impacts on population and communities (Bailey et al., 2012; Stengard et al., 2015).

Most of the literature concerning plant closures focuses on labour markets. However, Bailey et al. (2012) present a brief section on other issues in their work. They speak of a Regional Development Agency Task Force that was stood up following the April 2005 closure of MG Rover in the city of Birmingham, United Kingdom. This proactive task force, in co-operation with municipal authorities, companies, and local knowledge institutions in the city was effective in mitigating economic shocks. The experiences learned by the task force were used four years later when another Birmingham major employer closed its doors. Bailey et al. (2012) also explain how economic diversification played an important role in reemployment of redundant workers, saving as many as 10,000-12,000 jobs. In general, Birmingham did not suffer greatly from the MG Rover closure.

g. Resource Community Development

There is perceived similarity between the evolution of resource communities and military bases. More specifically, various stages of resource community development, such as planning, start-up, expansion, operation, wind-down and closure, seemingly mirror those of Base expansion, redevelopment and closures. John Bradbury wrote about resource community development in the 1980s, in terms of the impact of industrial cycles in the mining sector in the Québec-Labrador region and concerning the worldwide implications of the restructuring of the iron or industry from 1950-1980. At the time of writing, there was very limited time to research these global issues, although this SRP does provide a cursory overview of the main findings.

Mining regions are typically located in semi-remote or remote areas and are subject to strong cycles of prosperity and demand, which often have dramatic and traumatic impacts of mining communities and economies. Job availability is cyclical and indefinite, based on business cycles, pressures and fluctuations. Historical evidence shows that the closure of mining communities has detrimental effects on local economies, mostly because there is little alternative employment available and few possibilities for diversification of the economic base, and that the prosperity to closure cycle has long been "regarded as the norm". Bradbury concludes that "crises in mining regions occur whenever there are breaks in production, fluctuations in commodity prices, disinvestment of productive capital, or class conflict derived from labour and capital differences." Furthermore, he states that most crises are prompted by extra-regional forces such as parent company decisions, bankruptcy and seasonal effects, to cite but a few examples. (Bradbury, 1984)

In terms of the geographical implications of the restructuring of the post World War II iron ore industry, Bradshaw looks at the relocations and dependencies linked to large multinational companies' aspirations to gain access to secure supplies of minerals and to control mining and production processes. Said firms began moving towards Third World countries, where "higher quality ore was available, where labour is cheaper, where governments are more pliant, and where 'captive' mines can be created as alternative, or 'second', sources of ore." Consequently, pre-war iron ore rich areas such as Scandanavia, the US, Europe and the Soviet Union saw a steep decline in mineral exploitation during the post-war period. (Bradshaw, 1982)

CHAPTER 3 – ANALYSIS AND DISCUSSION

Despite significant differences in terms of scale, geography and Defence operational priorities and capabilities, there are numerous commonalities between Canadian, US, UK and Australian Defence estate Planning objectives and aspirations. For instance, all four countries have experienced at least one RP management/planning reform, renewal or transformation process within the last 10 years. Furthermore, many modern planning principles/issues such as sustainable development, mixed uses, community/urban integration, heritage/cultural conservation, climate change, encroachment, insufficient funding and socio-economic considerations can be found in each country's strategic Defence planning guidance in some shape or form. Each country presents its own set of best practices and successes, as well as strengths and weaknesses (see Figure 18).

Country	Strengths	Weaknesses
Canada	- Most recent strategic framework; seemingly based on all studied countries, especially Australia - Holistic approach to Defence RP planning and management	- Unproven framework - Framework still requires considerable work in all three management streams (development, asset, investment) - Absence of force disposition aims and basing principles
Australia	- Reforms based on a multitude of studies, audits and reports (internal and external) - Extensive Defence planning and cooperation at the senior levels - Defined set of force disposition aims and basing principles	- Inefficient RP disposal process - Poor governance and business processes - Ineffective Estate funding model - Improvements have been occurring over a 20-year period, although they have had limited impact - No regional planning approach
UK	- Successes in estate rationalisation thus far - Good long-term focus (DEDP)	- Dispersed (costly) RP portfolio - Insufficient central data - Inefficient categorization criterion - Subject to local planning regulations - No regional planning approach - Absence of force disposition aims and basing principles
US	- Clear lines of responsibility - Economy of scale (i.e. access to more specialized professionals such as urban planners, possibility of TOD/LID, mixed uses) - Already planning long-term using key trends - Comprehensive guidance for the development of local plans (UFC)	- No regional planning approach - Absence of force disposition aims and basing principles

Figure 18 – Summary of Findings (strengths and weaknesses)

Let us examine some of the successes, best practices and strengths from Australia, the US and the UK that could potentially be implemented into Canada's Defence governance and planning at the national and regional levels. We also study the issue of base rationalization in more detail by further analysing the information brought to light in the US, Swedish and German studies of the local and regional effects of base closures and redevelopment.

3.1. Strategic Framework for Defence Basing (Australia)

Of the countries examined in this SRP, only Australia seems to have a strategic framework for Defence Basing. Figure 10 provides a good overview of said framework, linking force disposition aims, military strategic imperatives, basing principles, key defence localities and key training areas. Unfortunately, without a defined set of force disposition aims and basing principles, this same link cannot be established for DND. From personal experience, I have found that Base locations were not always decided based on a defined set of criterion such as emergency response, quality of life of personnel and their families, community relations and environmental considerations, to state but a few factors. The locations were often decided based on operational requirements (for some), politics and the cost/size of land. DND should consider developing a strategic framework for Defence Basing, which would help DND planners manage DND RP in the long term.

3.2. Master Planning (US)

As discussed briefly in section 2.4 of this SRP, DoD US mandates that all Defence installations have a master plan[17]. The UFC serves as a guide to complete this process; thus ensuring that master plans are in accordance with DoD US regulations and standards. The UFC lists many components that are required in order to create a successful master plan. Some of those items need to be in considered in DND planning at the regional and local levels. An effective plan should therefore provide timely and correct planning information and RP support to better inform high-level decision-making (i.e. good reliable data). It should also promote cooperative and interactive intra- and inter-service and inter-governmental relationships. The incorporation of environmental planning is also essential in order to identify environmental impacts and protect and enhance natural, cultural, and environmental resources while supporting mission requirements.

RRPDPs and MRPDPs need to support and encourage sustainable and energy-efficient development, while providing appropriate direction for all programs involving real property acquisition, design, and construction; real property management and operation; real property facility utilization and accounting; real property sustainment (maintenance and repair); and disposal of land and facilities. Other suggestions put forward by the UFC include maintaining an accurate audit trail of master planning and real property decisions, ensuring efficient and compatible land use, maximizing facility utilization, identifying resource requirements directly and indirectly associated with real property sustainment and development and protecting an installation's long-term viability by providing capability for growth,

[17] The DoD US uses the term 'master planning', which has now been replaced by 'strategic planning and development' in planning circles. The term 'master planning' will continue to be used throughout this document.

expansion of requirements, and flexible facility and land-use decisions that can accommodate changes to mission and/or users.

Finally, DND plans should also encourage policies and interaction with the local community to avoid encroachment, and maximizes opportunities for joint use, while preserving mission capability and growth potential. It should also promote governmental energy mandates and helps installations create more connected and visually pleasing environments by coordinating development, removing clutter, enforcing consistent architectural themes, creating appropriate pedestrian and vehicle circulation patterns, and focusing attention to installation appearance, which can enhance quality of life and contribute to the overall mission (i.e. good urban planning principles).

3.3. Independent Estate Realignment and Investment Commission (Australia)

The 2008 ECR recommends that the Government establish an independent Estate Realignment and Investment Commission (ERIC). Its purpose would be to review current base disposition and subsequently recommend a strategic vision for Defence basing and a program of base consolidations to achieve that aspiration over time. The Commission would report to the Government through the Minister for Defence and, once approved, would oversee implementation of the base consolidations. The independence of the commission is key, as shown in the Australian and the US BRAC commissions, because they provide a 3rd party arms length evaluation to assist the Government of Canada and DND in making major Defence RP-related decisions. Having a broader view of the issues at hand can help minimize the socioeconomic impacts of potential Base realignments and closures.

ADM(IE) should examine the possibility of creating an independent commission to oversee and examine base consolidation and rationalisation initiatives. Given that ADM(IE) is still working out the kinks so soon after full operational capability (FOC), it might be prudent to dedicate key personnel to this very important rationalization effort.

3.4. Balance between strategic/operational/functional needs and the personal needs of the workforce (Australia)

Morale and welfare of Defence personnel is an important factor to enhance productivity and personnel retention, among many other benefits. Even though strategic, operational and function needs have the highest priority, balance must be established with the personal and professional needs of its workforce. The DoD Aus is aware of these important issues, which can be seen in the 11 recommendations put forward in the 2008 ECR for Defence Estate disposition and investment planning. Most of said recommendations propose workflow efficiencies that go a long way in improving business processes and personnel satisfaction.

DND should ensure that its real property portfolio planning strategy and management practices aim to align with strategic guidance and optimise the generation of Defence capabilities, while increasing function and alignment of Bases and training areas to provide greater efficiencies and economies. The latter could be done by co-locating training, operational and staff/administration

functions into Defence posting localities in order to reduce posting turbulence, and improve recruitment and retention. Bases should also be aligned with supporting training areas to optimise the training opportunities for the elements concerned and strive to improve support to military families and incorporate family amenity as a principle of provision and Base design in order to mitigate many of the location issues by placing functions in locations which present good opportunities for partner employment, education, specialist medical and family support, and recreation. In terms of Base locations, DND must balance national urban and regional disposition to ensure continuing broad exposure to the people of Canada, while minimising presence in high cost locations, take into account sustainment requirements and location of industry support, and address increasing encroachment pressures either through the relocation of activities of potential concern or the development a proactive management and estate assurance strategy. Finally, DND should address increasing deterioration of the Defence RP portfolio by shaping re-investment opportunities to enable new, more adaptable and more economic facilities to be provided thereby improving support to capability and reducing repair and maintenance costs and the estate unfunded liability.

3.5. Base Decision Support Tool (Australia)

In order to better prioritise future investment and guide the development of potential base rationalisation proposals, the ECR proposes the use of a Base Decision Support Tool which identifies a range of qualitative and quantitative parameters which assist in forming an assessment of the base's relative importance, current performance, workforce related issues, long term sustainability and alignment with the strategic basing principles. The top level priority setting parameters include contribution to capability, affordability, workforce/local population, environmental (encroachment, heritage, contamination), condition of facilities, known future investment and alignment with the strategic basing principles. This list should serve as a starting point to develop a Base Decision Support Tool for DND real property rationalisation processes.

3.6. Property Asset Management Maturity Matrix (Australia & UK)

The Department of Finance and Deregulation (DOFD) is encouraging Commonwealth agencies to adopt a property benchmarking and performance management framework called the Property Asset Management Maturity Matrix to review their estate management performance. An international consulting firm (GHD) benchmarked DoD Aus against this benchmarking framework and also compared Defence's performance under the framework with that of MoD (UK) and the New South Wales (NSW) Department of Education and Training (DET). DND, as a Commonwealth member, should examine the possibility of adopting the Property Asset Management Maturity Matrix, in order to improve interoperability and information sharing with our UK and Australian allies.

3.7. Operations & Maintenance Program Reform (Australia)

The 2008 ECR proposes a risk managed approach to allocating the limited funding available for the O&M[18] program and developing an infrastructure asset appraisal process to prioritise maintenance requirements on the basis of asset contribution to capability and asset condition. These recommendations need to be considered in the Investment Planning component of Defence 2030. Consequently, DND should examine the possibility of bundling maintenance works up into base capital reinvestment projects wherever possible and moving to a rolling three to five year program with the majority of the program determined by infrastructure asset appraisal and asset condition reports and a small portion of the program addressing user minor works. Furthermore, DND should require L1s to provide requests for devolved works 18 months in advance so that they can be programmed without displacing other planned works or incurring cost premiums. Finally, a consistent working arrangement with local contractors need be developed, with a partnership focus, and paperwork be streamlined for O&M projects.

3.8. Regional Effects of Base Closures and Redevelopment (US, Sweden and Germany)

It is important to note that BRAC programs are not all created equal, as described in great detail in the US and German studies of regional economic effects of base realignments and closures. In general terms, Base closures in the US, Sweden and Germany had relatively little or no impact on local and regional economies. That there are varying impacts implies that we cannot simply set aside these case studies for lack of generalizability." (A.R. Paloyo et al., 2010) The Swedish BRAC program had little or no impact because the Bases were relatively small compared to its surrounding civilian community. The German BRAC program had little or no resistance from the civilian population, therefore Defence planning was able to go forward based solely on military considerations; the socioeconomic impacts were inconsequential following plan implementation. The A.R. Paloyo et al. (2010) study also touched on community adaptability within the US BRAC program. The authors state that "perhaps those bases that were successfully closed belong precisely to those communities that could quickly adapt to such a change in the local political and economic landscape." Figure 19 below shows some of the factors that typically impact US Base closures.

[18] DoD Aus' large scale O&M program is called the Facility Operations (FACOPS) program

Impact	Mitigating factors
Retail sales remain more or less stable.	• Military personnel shop at the Commissary and Exchange on base, minimizing benefit to local retail stores before base closure. • Military retirees in region shift spending to private stores after Base Commissary and Exchange close. • Big-box retailers and warehouse stores take sales from small retailers near a base regardless of base closure.
Base expenditures have small impact on local businesses.	• Bases purchase few items from local suppliers in any case. • Base construction expenditures are replaced by those for toxic cleanup after closure.
Housing markets rebound after initial decline.	• New housing construction is not affected by base closure in growing regions. • Base housing needs rehabilitation, delaying its entry into the local housing market.
Health care privatized off base.	• Medical services to retirees shift to local doctors and hospitals. • Base hospitals and clinics become available to serve community needs.
Employment remains stable.	• Many civilian employees from the closed base take advantage of government worker relocation opportunities. • Local jobs held by military spouses who are relocated become available to dislocated and unemployed workers, or to persons not previously in the local labor force. • Unemployment rates do not escalate because the overall economy does not decline and military base workers have left the area.
Civilian population remains stable.	• County in-migration patterns continue. • Current residents do not relocate because the economy remains strong.
Multipliers are lower than feared.	• Income and employment multipliers are low for military bases because of few local purchases. • Local income multipliers are low in small economies and regions.
Community organizations are strengthened.	• Department of Defense planning assists local base closure processes and strengthens community organizations.

Figure 19 – Factors mitigating the impacts of US Base closures (Bradshaw, 1999)

When dealing with Base realignment and closures, one must consider many more factors that those discussed at Figure 19. Using the information studied at section 2.5 of this SRP, as well as other reference material concerning the effects of Base expansion, redevelopment and closures, we have developed the following matrix (Figure 20) that can be used by DND planners as a starting point to develop a more elaborate template when considering Base redevelopment and closures. The factors are presented in no particular order.

Factor	Effect on Recovery Process	
	Positive	**Negative**
Base size	Small	Large
Community size	Large	Small
Economic diversity	High	Low
Type of town	Urban	Rural
Environmental rehabilitation	Less/simple	More/complex
Land use conversion for non-residential areas	Industrial Commercial Warehousing Manufacturing	Residential Institutional
Availability of federal funding	More	Less
Amount of military and government retirees in the region	More	Less
Base integration within community	Less	More
Early pre-closure planning	Yes	No
Strong local leadership (Base and community)	Yes	No
Ratio of civilian to military personnel[19]	Low	High
Existing local growth (population and economy)	High	Low
Amount of locally supplied goods and services	Low	High
Per capita GDP of regional and local population	High	Low

Figure 20 – Factors influencing the community recovery process following BRAC

[19] This factor was not discussed in section 2.5 of the SRP. "Communities where bases employ large numbers and/or proportions of civilians, especially in industrial or repair facilities, will suffer more serious consequences than those where bases use mostly military personnel because civilian workers are not routinely relocated and they are not easily reemployed by private industry." (Bradshaw, 1999)

CHAPTER 4 – RECOMMENDATIONS AND IMPLEMENTATION STRATEGY

Using the information and analyses gathered in chapter 2 (documentation review) and chapter 3 (analysis and discussion), we have put together recommendations and an implementation strategy, which can be used by DND planners to improve its national RP portfolio management strategies and processes. The recommendations focus mainly on the analysis of the best practices and successes found above, more specifically in terms of the development of a strategic framework for Defence Basing (Australia), master planning (US), the independent Estate Realignment and Investment Commission (ERIC) (Australia), the balance between strategic/operational/functional needs and the personal needs of the workforce (Australia), the Base decision support tool (Australia), the property asset management maturity matrix (Australia & UK), the operations & maintenance program reform (Australia) and the regional effects of Base closures and redevelopment (US, Sweden and Germany) .

The recommendations and implementation strategy are presented in the table below. The table columns represent the following information.

- **#** - Recommendation number. The recommendations are presented in no particular order.
- **Recommendation** – The title given to the recommendation.
- **Details** – Gives the section number in the SRP for quick reference to more detailed information.
- **Implement** – Gives the expected implementation timeline: short term (0-3 years), medium term (3-10 years), long term (10+ years)
- **Comments** – Explains the recommendation in more detail.

#	Recommendation	Details	Implement	Comments
1	Develop a strategic framework for Defence Basing	3.1.	Short	DND should develop a strategic framework for Defence Basing, which links force disposition aims, military strategic imperatives, basing principles, key defence localities and key training areas.
2	Implement DoD US master planning efficiency guidelines in the DND regional planning construct	3.2.	Short	Section 3.2. puts forward 15 recommendations for an effective master plan. Said recommendations need to be studied for applicability at the RRPDP and MRPDP levels, and subsequently implemented.

3	Establish an independent committee similar to the Australian Estate Realignment and Investment Commission (ERIC)	3.3.	Medium	The committee's purpose would be to review current base disposition and subsequently recommend a strategic vision for Defence basing and a program of base consolidations to achieve that aspiration over time. The committee would therefore be involved in all base consolidation, base rationalisation and BRAC efforts.
4	Identify key principles to be used when considering DND RP disposition and rationalisation	3.4.	Short	The DoD Aus ECR puts forward 11 principles that should be considered when assessing Estate disposition and investment planning. They aim to balance strategic/operational/functional needs and the personal needs of the workforce. DND should strive to develop a similar list.
5	Develop a DND Base Decision Support Tool	3.5.	Medium	Similarly to the DoD Aus Base Decision Support Tool, DND's would help better prioritise future investment and guide the development of potential base rationalisation proposals, by using a range qualitative and quantitative parameters which assist in forming an assessment of the base's relative importance, current performance, workforce related issues, long term sustainability and alignment with the strategic basing principles.
6	Adopt Commonwealth Property Asset Management Maturity Matrix	3.6.	Medium	DND, as a Commonwealth member, should examine the possibility of adopting the Property Asset Management Maturity Matrix, in order to improve interoperability and information sharing with our UK and Australian allies.
7	Operations and maintenance program reform	3.7.	Long	Similarly to the DoD Aus reform, DND should adopt a risk managed approach to allocating the limited funding available for the O&M program and developing an infrastructure asset appraisal process to prioritise maintenance requirements on the basis of asset contribution to capability and asset condition.

8	Develop BRAC planning construct	3.8.	Medium	The BRAC planning construct would serve as a tool, in conjunction with the proposed Base Decision Support Tool, to optimize the base closure and redevelopment selection process. The DND BRAC program would build upon lessons learned, best practices and successes experienced in other countries' BRAC programs, such as Germany, Sweden and the US, for example. This construct will be especially important for DND in terms of credibility and validation when discussing with politicians, civil servants and the public about possible points of friction that BRAC initiatives may generate. DND should also consider the preparation of BRAC studies for all of its major (type 1) bases.
8a	Establish official liaison with US BRAC representatives within DoD US	3.8.	Short	DND should build upon US lessons learned, best practices, successes and existing policy and processes to develop a Canadian construct. Liaison will also be advantageous when DND in both the planning and implementation phases of rationalisation.
8b	Create an independent BRAC commission	3.8.	Medium	The BRAC commission would review the Base expansion, redevelopment and closure recommendations put forward by the Minister of National Defence and ADM(IE).
8c	Create an entity similar to the US Office of Economic Adjustment	3.8.	Medium	This new entity would serve to assist communities with base redevelopment, award planning grants and provide technical & planning assistance. DND should also consider developing a Base Reuse Implementation Manual in conjunction with the newly formed BRAC liaison.
9	Develop a BRAC evaluation template	3.8.	Short	Using the information provided at Figure 20 and the data outlined in section 2.5 of the SRP, DND planners should develop a Canada specific BRAC evaluation template.

CHAPTER 5 – CONCLUSION

Following recommendations from the Office of the Auditor General regarding major concerns about how the Department of National Defence manages its real property portfolio, DND initiated a transformation process to centralize all RP management under the Assistant Deputy Minister (Infrastructure and Environment). In early 2016, ADM(IE) promulgated its long-term national real property management strategy (Defence Portfolio 2030: A Sustainable Defence Footprint for the Future). This SRP looked at how DND could improve said strategy as well as its Defence planning and governance processes to effectively and efficiently address and align national, regional and local requirements, while adequately attending to the effects of Defence establishment expansion, redevelopment and closures on local and regional communities. This was done by studying the DND real property portfolio management strategy in detail, while comparing with the Defence portfolio management strategies of the United Kingdom, United States of America and Australia. Furthermore, a framework was proposed to assist DND when considering the impacts of its portfolio decisions on local and regional communities. The four main objectives included the identification of best practices and successes from the above-mentioned allied nations' national and regional RP management strategies; the examination of local and regional effects of military base expansion, redevelopment and closures on surrounding communities; recommendations on how to enhance national and regional RP polices and processes; and the provision of framework to be used by DND planners when developing regional plans. The research was conducted using three main information sources: national DND policy; real property governance and planning policies from three DND allies (US, UK, Australia); and academic literature concerning the local and regional effects of Base expansion, redevelopment and closures in the US, Sweden and Germany.

The detailed examination of the Canadian, UK, US and Australian national and regional RP management strategies demonstrated that despite significant differences in terms of scale, geography and Defence operational priorities and capabilities, there are numerous commonalities between Canadian, US, UK and Australian Defence real property management. All four countries have experienced at least one RP management reform, renewal or transformation process within the last 10 years and many modern planning issues such as sustainable development, mixed uses, community integration, heritage/cultural conservation, climate change, encroachment, insufficient funding and socio-economic considerations can be found in each country's strategic Defence planning guidance in some shape or form. Potential improvements to DND's RP portfolio strategy were identified from each allied country's documentation. For instance, Australia has a strategic framework that assists planner in determining the best location for Defence RP, which could be adopted by DND once force disposition aims and basing principles are established. The US has a comprehensive guiding document for the development of master plans, which could be tailored for DND regional and local plan development. The UK uses a property benchmarking and performance management framework to review their estate management performance, which could be incorporated into DND's management construct to improve interoperability and information sharing with other Commonwealth allies. Finally, Australia was the largest contributor of suggestions for DND improvements such as the establishment of an Independent Estate Realignment and Investment Commission to review current base disposition and recommend changes; a set of recommendations to strike a balance between institutional needs and the personal

needs of the workforce; the implementation of a Base Decision Support Tool to better prioritise future investment and guide the development of potential base rationalisation proposals; and an operations and maintenance program reform.

The SRP also looked at the potential local and regional effects of military base expansion, redevelopment and closures on surrounding communities by studying academic literature. In general terms, Base closures in the US, Sweden and Germany had relatively little or no impact on local and regional economies. This counterintuitive result is supported, in whole or in part, by all the academic literature that could be found in preparation of this SRP. Base closures are often an opportunity of economic rejuvenation and public benefit, but the results are not necessarily positive for every community. Using the literature examining the various base realignments and closures, we were able to develop a matrix that gives an indication of the positive and negative effects of a community's ability to recover by examining base size, community size, economic diversity, type of town (urban vs rural), environmental rehabilitation, land use conversion for non-residential areas, availability of federal funding, amount of military and government retirees in the region, base integration within community, early pre-closure planning, strong local leadership (base and community), ratio of civilian to military personnel, existing local growth (population and economy), amount of locally supplied goods and services, and per capita GDP of regional and local population. This information can be used by DND planners to develop a Canada specific BRAC evaluation template as part of its proposed BRAC planning construct.

The SRP encountered many research limitations, including information paucity from allies, a lack of Defence regional planning models and the inability to interview personnel outside DND. Finding key stakeholders proved much more difficult than initially predicted and, although at least one point of contact was identified in each allied country, all of them were reticent to provide documentation and be interviewed. Consequently, it was not possible to confirm if the information gathered via the internet and DND internal resources were comprehensive and up to date and if any of the allied Defence organisations planned at the regional level. Any future research should establish links with key stakeholders outside DND through official national level channels to fill these information gaps. Furthermore, the SRP did not examine the effects of plant closures and resource community development to great detail because the associated literature seemed too general and spoke to many industrial uses that are very different from military installations. However, it would be interesting to see if any pertinent plant closure and resource community development effects on local and regional communities could be added to the proposed DND BRAC assessment matrix.

LIST OF ACRONYMS

ADF – Australian Defence Force

ADM(IE) – Assistant Deputy Minister (Infrastructure and Environment)

ADM(IM) – Assistant Deputy Minister (Information Management)

ADM(Mat) – Assistant Deputy Minister (Materiel)

ADM(S&T) – Assistant Deputy Minister (Science and Technology)

AFB – Air Force Base

BRAC – Base realignment and closures

CA – Canadian Army

CAF – Canadian Armed Forces

CANSOFCOM – Canadian Special Operations Forces Command

CCP – Capital Construction Program

CDF – Chief of the Defence Force

CFB – Canadian Forces Base

CFHA – Canadian Forces Housing Agency

CFINTCOM – Canadian Forces Intelligence Command

CFO – Chief Finance Officer

CJOC – Canadian Joint Operations Command

CIPPR – Capital Investment Program Plan Review

CMP – Chief of Military Personnel

DEDP – Defence Estate Development Plan

DEPSEC DS – Deputy Secretary - Defence Support

DGPR – Director General Portfolio Requirements

DISC – Defence Infrastructure Sub-Committee

DND – Department of National Defence

DoD Aus – Department of Defense (Australia)

DoD US – Department of Defense (United States of America)

DOFD – Department of Finance and Deregulation

DPI – Director Portfolio Innovation

DPP – Director Portfolio Planning

DRMIS – Defence Resource Management Information System

EIC – Estate Investment Committe

ECR – Estate Companion Review

FACOPS – Facility Operations (i.e. O&M)

FHBRO – Federal Heritage Buildings Review Office

HI – Head Infrastructure

ICT – Information Communication Technology

ID – Infrastructure Division

MAF – Management Accountability Framework

MCF – Major Capital Facilities

MoD – Ministry of Defence

MRPDP – Master Real Property Development Plan

NAO – National Audit Office

OAG – Office of the Auditor General

OEA – Office of Economic Adjustment

OGD – Other Government Department

PAA – Program Activity Architecture

PMB – Programme Management Board

RCAF – Royal Canadian Air Force

RCN – Royal Canadian Navy

RP – Real Property

RRPDP – Regional Real Property Development Plan

SDP – Site Development Plan

SEC – Secretary (of Defence)

SJS – Strategic Joint Staff

SRP – Supervised Research Project

SRP (Aus) – Strategic Reform Program

UFC – United Facilities Criteria

UK – United Kingdom

US – United States of America

VCDS – Vice Chief of Defence Staff

WHS – Work Health and Safety

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APPENDIX A – STRATEGIC FRAMEWORK FOR THE DEVELOPMENT OF REGIONAL REAL PROPERTY DEVELOPMENT PLANS (RRPDP)

The Strategic Framework for the Development of Regional Real Property Development Plans (The Framework) was developed using five main references, as follows:

- Defence Portfolio 2030: A Sustainable Real Property Footprint for the Future (DND, 2016a) (Defence 2030)
- Standard for the Preparation of a Master Real Property Development Plan (DND, 2016c) (MRPDP Standard)
- Regional Real Property Development Plan for the North (DND, 2015c) (RRPDP North)
- Guide La prise de décision en urbanisme (Québec, 2016) (Guide QC)
- Unified Facilities Criteria – Installation Master Planning – UFC 2-100-01 (DoD US, 2012) (UFC)

The Framework fills the Defence planning gap between national strategic direction for future RP development (Defence 2030) and local development guidance (MRPDP Standard); thereby focusing on the regional level. The DND process of planning at the federal-regional-local levels is very similar to the civilian process of planning at the provincial-regional[20]-local levels. Consequently, The Framework was inspired by the Guide QC, whose main purpose is to direct Regional County Municipality and Metropolitan Community planners in designing (regional) Development Plans[21]. Guide QC also puts forth modern urban planning principles (mixed uses, densification, etc.) and implementation strategies. The DoD US UFC provides inspiration in terms of master planning strategies, general requirements, processes and products. Although the UFC is designed to guide DoD US planning at the local level, it must be noted that some DoD US Bases are as large and as complex as small municipalities, which infers that some UFC planning concepts can be applied to the DND regional level. For example, Fort Bragg, located west of Fayetteville in North Carolina, has a population of over 238 thousand people and covers an area of 66,000 hectares[22]; which is approximately the same land area as the Lower-tier municipality of Clarington and the City of Toronto in Ontario[23]. Finally, the RRPDP North was used to provide a base structure for The Framework.

The Framework is presented as a single document containing the steps to follow as well as the final document structure. Section 1 sets out the steps in the development process and the other sections represent individual units that make up the structure of the RRPDP. Many of the steps mentioned in Section 1 are expanded upon in the other sections. Furthermore, the information gathered at Section 1 is essential in developing the actual RRPDP. Section 1 is largely inspired by the development process put forward in the MRPDP Standard. The Framework is structured as follows.

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[20] The term "regional" is used loosely, as it bundles together Upper Tier Municipalities (Ontario), Greater Cities (Ontario) Regional County Municipalities (Québec) and Metropolitan Communities (Québec), to name but a few examples that can be found across Canadian provinces.

[21] In Québec, Development Plan is "schéma d'aménagement".

[22] http://www.army-technology.com/features/feature-largest-military-bases-world-united-states/, accessed 3 May 2016

[23] https://en.wikipedia.org/wiki/List_of_municipalities_in_Ontario, accessed 3 May 2016

Section 1 – Development Process

a. Initiate process
b. Collect and analyze data
c. Establish vision, objectives and Defence planning approach
d. Develop and select rationalisation options
e. Prepare implementation strategy
f. Prepare RRPDP document
g. Seek approval
h. Communicate
i. Monitor and amend

Section 2 – Introduction

a. Introduction
b. Vision
c. Objectives and Outcomes
d. Context
e. Defence Planning Approach

Section 3 – Strategic Context

Section 4 – Current Portfolio

a. Current Real Property Portfolio
b. DND/CAF/OGD organisations supported by the DE
c. Supported operations

Section 5 – Defence Planning Factors and Considerations

a. Regional factors
b. Partnerships with other government departments
c. Sustainable planning
    (1) Compact development
    (2) Infill development
    (3) Mixed uses
    (4) Sustainable landscape elements
    (5) Low impact development
    (6) Energy conservation
d. Form-based planning
e. Healthy community planning

Section 6 – Options and Implementation

Section 7 – Conclusion

Each section and subsection is described further below. The remainder of this Appendix makes up The Framework, which could be published as a separate document.

Section 1 – Development Process

a. Initiate process

- Identify lead Defence planner and lead planning organization
- Identify project stakeholders
- Create a working group
- Hold initial working group meeting and include working group throughout the development process

b. Collect and analyze data

- National and policy context
- Current and forecasted requirements
- Suitability of RP to support mission
- Environmental considerations
- Defence establishment typologies
- Asset data
- Comprehensive Real Property and Site Data
  - Geospatial data
  - Relative operational importance of sites
  - How heavily a site is used
  - Site market value (potential to generate funds through disposal)
  - Running costs
  - Site condition data

c. Establish vision, objectives and Defence planning approach

- See section 2

d. Develop and select rationalisation options

- Identify rationalisation options (consolidation and expansion of RP assets to meet current and future requirements)
- Define evaluation matrix and assess options
- Select preferred options

e. Prepare implementation strategy

- Identify development/rationalisation priorities
- Outline phasing plan
- Identify which sites require a MRPDP
- Identify site specific considerations for MRPDP development

f. Prepare RRPDP document

- See sections below

g. Seek approval

- Approval is required from both the Director General Portfolio Requirements and the Real Property Operations Commander

h. Communicate

- Develop visual communication tools
- Communicate RRPDP to ADM(IE) and to units within the affected Region

i. Monitor and amend

- Comprehensive update every five years or after a major change in RP direction, whichever comes first
- Seek approval anew

Section 2 – Introduction

The introduction should give a broad overview of the RRPDP that answers: what, why, when, where, who and how, in general terms. As a minimum, it should include the following subsections.

a. Introduction

The introduction contains the opening paragraphs that frame the four following sections and situate the reader. It is similar to a short executive summary.

b. Vision

The vision must be aimed at the regional level and should mention how the application of a RRPDP will translate national direction into a coherent document that will guide the development of local plans. It should answer the four following questions (Québec, 2016):

- Where are we now?
- Where are we going?
- Where do we want to go?
- How will we achieve our objectives?

c. Objectives and Outcomes

This section should highlight the main objectives and desired outcomes. For example, a Region's objectives may include rationalization/consolidation goals, sustainable development initiatives, climate change action, densification strategies, consultation approaches, etc. It should also establish outcomes and how they fit into the larger picture.

d. Context

This section should give the reader a sense of the main regional issues and concerns, while conveying pertinent geospatial (location of facilities, training areas, land use, etc.), environmental, social, economic, residential, commercial, industrial and recreational data (Québec, 2016).

e. Defence Planning Approach

This part of the introduction should explain how the RRPDP was developed (consultation process, literature review, organizations involved, etc.). It should also state any limitations (not enough data, lack of cooperation, questionable sources, etc.) and areas that require further study prior to the development of local plans.

Section 3 – Strategic Context

This section is important to situate the reader in terms of strategic context; at or above the CDS/DM level. For example, the RRPDP North speaks to the Canada Northern Strategy, Canada First Defence Strategy, CDS/DM Directive for the North (2011), Defence Renewal Plan, Defence Real Property Strategy (2013) and CJOC Plan for the North. The information gathered at section 1, section b. (National and policy context) is essential for the development of section 3.

Section 4 – Current Portfolio

a. Current Real Property Portfolio

This section expands on the information promulgated at section 2, section d. (context). As a minimum, there should be a map showing the location of all Defence establishments in the Region, and possibly a subset of maps to show specific areas (i.e. close-up on the island of Montréal to show the location of the armouries, etc.). A table should accompany the map, indicating the name of each Defence establishment (DE) as well as its main land use zones (i.e. port, airfield, etc.). A more extensive table should be included in an appendix for each DE, with the following headers, as a minimum (use data gathered at section 1.b.).

- Name
- Typology
- Main land use zones
- Site market value
- Running costs
- Operational importance[24]
- How heavily a site is used
- Site condition
- Operational capabilities that are enabled by DE
- Organisations (DND, CAF and OGDs) located within the DE

[24] A standard set of indicators will need to be developed by Director General Portfolio Requirements to ensure all Regions use the same values for operational importance, site use and site condition.

- Organisations supported by the DE (if not located within the DE)
- Heritage assets, including Federal Heritage Buildings Review Office (FHBRO) classified/recognized heritage buildings

b. DND/CAF/OGD organisations supported by the DE

- This subsection should list all organizations operating within and supported by the DE; as well as a description of what that support entails and how it contributes to the organisation's mission.

c. Supported operations

- This subsection should list all named operations that are enabled by the DE; as well as a description of said operations and how it contributes to the DND/CAF's mission.

Section 5 – Defence Planning Factors and Considerations

a. Regional factors

Each Region has its own set of distinct factors. These factors should be listed and explained in this subsection. For example, the RRPDP North spoke to the Northern Legislative Framework, Nunavut Devolution, Key Federal Partners and Heritage, Economic, Social and Environmental Considerations.

b. Partnerships with other government departments

This subsection should identify the locations of municipal, provincial and federal RP that are in proximity to Defence establishments or that could potentially be shared with Defence organizations. DGPR personnel should be included in discussions with non-DND custodians regarding potential RP-sharing.

c. Sustainable planning

The items discussed in this subsection are largely inspired by US Unified Facilities Criteria (UFC)[25], unless otherwise stated. Sustainable planning aims to make the most effective use of limited resources, and to create a more compact and sustainable footprint that meets operational, security and safety requirements. Regional planners should consider the following principles of sustainable development; keeping in mind that said principles apply to the regional and local levels to varying degrees.

(1) Compact development

Compact development supports mixed uses, encourages walking and alternative modes of transportation, prompts increased residential and commercial densities and incorporates an integrated grid network of streets and sidewalks. Some examples include multi-storey structures, multi-family dwellings, minimal spacing between buildings and the applications of walkable streets principles.

[25] A set of selected best practices from the DoD US can be found at Appendix C. Said appendix is an exact replication of the UFC Appendix B.

(2) Infill development

Infill development results in greater density within the existing Defence establishment and supports more integrated land use. For instance, this could include placing buildings or designated open spaces in gaps between existing developed areas and buildings. Removal/replacement of aging low-density development with higher density development may also be appropriate.

(3) Mixed uses

While incompatible uses must be appropriately segregated (e.g. industrial areas should be separate from housing), most uses on a Defence establishment are largely compatible; such as community support (retail, recreation, schools, etc.), housing, medical, administrative, and classroom training. The integration of compatible uses, both horizontally and vertically, provides a town-like atmosphere that encourages walking/cycling, lowers overall energy consumption and increases security/presence during both working and non-working periods. It also creates synergies, and reduces land use and construction costs.

(4) Sustainable landscape elements

An appropriate use of trees, shrubs and ground cover can control soil erosion, reduce heat island effects, absorb storm water, improve air quality, provide comfortable places for recreation, and support force protection measures. For example, regularly spaced trees on roadways can improve pedestrian safety by slowing vehicle traffic; provide shade for paving, vehicles, and pedestrians; and shade buildings, which can reduce energy consumption. Other initiatives could include painting roofs white and incorporating green roofs.

(5) Low impact development

(a) *Minimize impervious surfaces*. The amount of impervious surface area can be reduced by implementing the following strategies:

- Pervious pavements
- On-street parking
- Compact alignment including infill, mixed-use, and multi-storey solutions
- Minimize street widths while maintaining adequate fire protection access
- Structured or underground parking

(b) *Integrated management practices*. Use of bioretention and bioswales, for example.

(c) *Reduction and reuse of construction waste*. These items are typically addressed in building standards such as Leadership in Energy and Environmental Design (LEED) and Living Building Challenge (LBC).

(6) Energy conservation

Regional expertise and recommendations are required to reduce demand, provide a sustainable supply of energy and increase resiliency (energy security). Relatively simple strategies such as education, building orientation/configuration and building automation can have a significantly beneficial effect on energy conservation. In addition, some DEs may have opportunities to produce renewable energy through use of wind, solar, geothermal, biomass, and other sources; thus reducing dependence on outside providers and increasing resiliency.

d. Form-based planning

The items discussed in this subsection are entirely inspired by US Unified Facilities Criteria (UFC). Form-based planning guides construction by identifying the form for installation development (building types, height, set-backs, circulation patterns, landscaping, land use, etc.) and translating that form into a set of specific planning directives. The directives use products such as illustrative plans, land-use plans, and street, building, and landscape standards to flexibly guide development. Form-based planning promotes horizontal and vertical mixed-uses, compact, and walkable development patterns, and emphasizes spatial principles that support sustainable development.

e. Healthy community planning

The items discussed in this subsection are largely inspired by US Unified Facilities Criteria (UFC), unless otherwise stated. Effective planning can create conditions that encourage physical activity, connect land uses and facilities, and provide safe, continuous and protected pathways for physical fitness training. High connectivity, mixed land uses, and well-designed pedestrian/bicycle infrastructure decrease motor vehicle dependence and increase levels of walking, running and cycling. Community gardens could also be considered in the residential areas to encourage better community health.

Section 6 – Options and Implementation

This section gives a brief overview of each option that was considered in section 1.d. (develop and select rationalisation options) and sets out the implementation strategy (information gathered at section 1.e. – prepare implementation strategy). Each preferred option should be presented in order of priority and included in a phased (horizon 1, 2 or 3) timeline. Lastly, any site specific considerations for MRPDP development should be included in this section.

Section 7 – Conclusion

- Reiteration of the issues, objectives, planning approach and major factors and considerations
- Summary of the planning actions
- Closing remarks
- Additional recommendations, as required

APPENDIX B – DND ASSET MANAGEMENT CONSTRUCT

Systems (ASTM Uniformat II Classification)	Portfolio Structure	Portfolio Element / Land Use Zones	Defence Establishment Typologies
A Substructure B Shell C Interiors D Services E Equipment & Furnishings F Special Construction & Demolition	Ops & Training Facilities (100) Maintenance & Production Facilities (200) Research & Development Facilities (300) Supply Facilities (400) Medical Facilities (500) Administrative Facilities (600) Housing & Accommodations (700) Utilities & Ground Improvements (800) Land (900) Morale & Welfare Facilities (1000)	1. Major Capability Element – Port *Port at CFB Esquimalt* 2. Major Capability Element – Airfield *Airfield at CFB Trenton* 3. Major Capability Element – Regimental Lines *Regimental lines at CFB Gagetown* 4. Command and Control 5. Range and Training Areas *RTA at CFB Gagetown* 6. Education and Training 7. Industrial *Graving dock at CFB Esquimalt* 8. Medical 9. Administration 10. Recreational *Recreation facility at CFB Kingston* 11. Community 12. Accommodation 12.1 Residential, 12.2 Hoteling *Housing at CFB Kingston* 13. Undeveloped	**Type 1 – Full-Service Bases and Wings** **Serve as regional hubs, providing the greatest range of services and house the greatest number and range of military functions** o Large mission critical and direct support infrastructure related to many program activities, in good physical condition o Large indirect support and corporate infrastructure, in good physical condition o Good access to transportation o Good access to industry and education/research o Good housing options for CAF and members of their families o Wide access to services related to quality of life for CAF and members of their families o Have developable land to provide flexible growth options, with access to municipal infrastructure suitable for increased usage, limited encroachment of surrounding municipalities, and limited natural resource and economic development conflict o Affordable (minimizing O&M and PILT) *Potential Tier 1 Establishment: CFB Esquimalt* **Type 2 – Secondary or Specialized Bases/Wings** **Deliver specialized or unique capability** o Mission critical and direct support infrastructure related to single or limited number of program activities, in good physical condition o Indirect support and corporate infrastructure appropriate to support mission critical and direct support infrastructure, in good physical condition o Unique environment necessary for mission critical and direct support infrastructure, may include access to industry, educational facilities, and physical/ geographical features o Reasonable housing options for CAF and members of their families o Reasonable access to services related to quality of life for CAF and members of their families o Have developable land to provide flexible growth options, with access to municipal infrastructure suitable for increased usage, limited encroachment of surrounding municipalities, and limited natural resource and economic development conflict o Affordable (minimizing O&M and PILT) *Potential Tier 2 Establishment: CFB Nanoose* **Type 3 – Tertiary or Satellite Locations** **Serve a single purpose – mission critical or direct support** o Mission critical and direct support infrastructure, in acceptable physical condition o Limited indirect support or corporate infrastructure, in acceptable physical condition o Unique geographical or physical environmental characteristic necessary for activity o Limited housing options for CAF and members of their families o Limited provision of access to services related to quality of life for CAF and members of their families o No undeveloped land; land is adequate for provision of activity and is only held for duration of activity unless risk assessment deems otherwise o Affordable (minimizing O&M and PILT) *Potential Tier 3 Establishment: Fell Armoury, North Vancouver*
BASE	REGION	PORTFOLIO	

Portfolio Structure		
100 – Ops & Training	110 – Airfield Pavement 120 – Liquid Fueling and Dispensing 130 – Communications 140 – Tracking Stations 150 – Waterfront Operational Facilities 160 – Harbour and Coastal Facilities 170 – Training Facilities 180 – Miscellaneous Op Facilities 190 – Armouries	All runways and roadways used for take-off, landing and transport. Direct fueling of aircraft or aircraft fuel tanker trucks. Facilities that contain communication equipment. Facilities used in data acquisition and tracking of aircraft. Facilities for docking, fueling and other operational operations. Protection and mooring facilities on the coast. Classroom and other facilities to give instruction and simulation. Operational facilities that do not fall under any other 100 category. Building assigned to reserve units to carry out training and admin.
200 – Maint. & Production	210 – Maintenance 220 – Fabrication & Assembly	Facilities used for maintenance of all equipment. Facilities used to fabricate and assemble materials and equipment.
300 – R&D	310 – Science Laboratories 320 – Misc. 330 – Wind Tunnels 390 – Launch Facilities	Buildings used directly in research, development and testing. Facilities used in research, development and test operations. Facilities used in simulation of piloting problems. Facilities used in test operations such as test tracks, wind tunnels etc
400 - Supply	410 – Liquid Fuel Storage 420 – Ammunition Storage 430 – Cold Storage Facilities 440 – Storage - Covered 450 – Storage - Open 460 – Sprung Shelter	A facility that stores operating and reserve supply of fuels. Storage of ammunition, battery and other hazardous storage. Freeze and chill plants and cold and refrigerated warehouses. Storage of materials that require protection from the elements. Paved surface for depot-level storage. Shed facility made out of an aluminum membrane.
500 - Medical	510 – Hospital Buildings 540 – Dental Clinics 550 – Dispensary/Clinic	Include all separate facilities used for medical care. Facilities for dental care. Facilities to provide emergency treatment and ambulatory services.
600 - Admin	610 – Administrative Buildings 630 – Manufactured End Items 640 690 – Misc. Administrative Structures	Office buildings used for general administration purposes. Moveable structures such as trailers. Gatehouses, guard towers, gates, fencing etc.
700 – Housing & Accom.	710 – Family Housing 720 – Residential Housing	A dwelling unit for a gov civilian and their authorized dependents. Unaccompanied personnel housing.
800 – Utilities & Ground Improvements	810 – Personnel Facilities 820 – Indoor Recreational 830 – Outdoor Recreational 840 – Museums and Memorials	Facilities for support of the personnel and community. Any recreational facilities housed indoors. Any recreational facilities that are outdoors. Museums buildings, monuments, memorials and cemeteries.
900 – Utilities & Ground Improvements	910 – Electricity 920 – Heat and Air Conditioning 930 – Sewage and Waste 940 – Water 950 – Roads and Streets 960 – Railroad Facilities 970 – Ground Improvement Structures 980 – Fire and Other Alarm Systems 990 – Misc. Facilities and Systems	Electricity source and distribution plants. Heat and cooling source and distribution plants. Sewage and waste storage and treatment. Supply and treatment of water. Paved surfaces for streets and sidewalks. All tracks and railroad facilities. Improvements to sustain and maintain the land. Reporting alarms for any sort of emergency. Any equipment, functions or systems not previously mentioned.
1000 – Land	1010 – Land 1020 – Other Rights 1030 – Improvements	Any land held or acquired National Defence. All easements in force and under the control of DND. Any form of improvement done to the land.

Portfolio Element		
1	Major Capability Element – Port	Assets, works, and lands that support ports, including jetties, cargo loading capacity, utility servicing, emergency services, security and perimeter defence
2	Major Capability Element – Airfield	Assets, works, and lands that support airfields, including pavements, aircraft arresting, lighting, markings, drainage, control towers, first and second-line storage and maintenance facilities, aircraft wash facilities, aircraft parking and grounding points, radar/navigation/antennae facilities, emergency services, security and perimeter defence
3	Major Capability Element – Regimental Lines	Assets, works, and lands that support regimental lines, including mission simulation, firing simulation, armouries, emergency services, security and perimeter defence
4	Command and Control	Assets, works, and lands that support C4ISR (specialized command / control / computer / communications)
5	Range and Training Areas	Assets, works, and lands that support range and training areas, including small arms ranges and manoeuvre and test areas
6	Education and Training	Assets, works, and lands that support education and training uses, including education centres, fleet schools, school houses, flight simulation, band buildings
7	Industrial	Assets, works, and lands that support industrial uses, including third and fourth-line maintenance and storage facilities, production facilities, research/development/test facilities, gas service stations, electric power plants, generators, HVAC plants, waste treatment plants, water storage and pumps
8	Medical	Assets, works, and lands that support medical uses, including hospitals, dispensaries, dentistry and clinics
9	Administration	Assets, works, and lands that support administration uses, including offices, mail handling facilities
10	Recreational	Assets, works, and lands that support recreational uses, including recreation centres, bowling alleys, playing courts and fields, recreation storage and maintenance facilities
11	Community	Assets, works, and lands that support community uses, including CANEX, messes, cafeterias and restaurants, nursery and child care facilities, libraries, chapels, banks and credit unions, places for entertainment, theatres, hobby and craft centres, golf courses, marinas, museums and memorials
12	Accommodation	
12.1	Residential	Assets, works, and lands that support residential uses, including CFHA personnel housing and RHUs
12.2	Hoteling	Assets, works, and lands that support hoteling, including barracks and other short-term accommodations
13	Undeveloped	Vacant land