

ON THIN ICE: IS THE NEW ZEALAND DEFENCE FORCE READY  
FOR THE ANTARCTICA OF THE FUTURE?

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MASTER OF MILITARY ART AND SCIENCE  
General Studies

by

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The opinions and conclusions expressed herein are those of the student author and do not necessarily represent the views of the U.S. Army Command and General Staff College or any other governmental agency. (References to this study should include the foregoing statement.)

## ABSTRACT

ON THIN ICE: IS THE NEW ZEALAND DEFENCE FORCE READY FOR THE ANTARCTICA OF THE FUTURE? by Major Rodney Masters, 111 pages.

New Zealand claims 15 percent of the Antarctic continent, known as the Ross Dependency. New Zealand has enjoyed a benign security environment in the region since inheriting the claim from Britain in 1923. Despite the strategic tranquility, the New Zealand Defence Force (NZDF) has played a significant role in supporting New Zealand's civilian presence in Antarctica for many years. However, the relative harmony enjoyed in Antarctica during the twentieth-century is increasingly challenged due to a range of factors as diverse as climate change and great power competition. This thesis will contain an analysis of New Zealand's interests on the continent, examine the emerging security threats in the region, and the implications for the NZDF. "On Thin Ice" focuses on drawing recommendations for the strategic direction of the NZDF to be prepared for the Antarctica of the future.

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## ACRONYMS

A2AD	Anti Access/Area Denial
ANZ	Antarctica New Zealand
ANZUS	Australia New Zealand United States Security Treaty
ATS	Antarctic Treaty System
ATCM	Antarctic Treaty Consultative Meeting
ATCP	Antarctic Treaty Consultative Parties
CCAMLR	Commission for the Conservation of Marine Living Resources
EEZ	Economic Exclusion Zone
GDP	Gross Domestic Product
MFAT	Ministry of Foreign Affairs and Trade
MPI	Ministry for Primary Industry
NZDF	New Zealand Defence Force
RNZAF	Royal New Zealand Air Force
RNZN	Royal New Zealand Navy
SRQ	Supporting Research Questions

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# CHAPTER 1

## INTRODUCTION

No other country of comparable size and political and economic standing has at a minimum to be able to deploy defence equipment and personnel from the equator to Antarctica. This is a low-threat environment but a vast space.

—2010 New Zealand Defence White Paper

### The Problem

The New Zealand Defence Force (NZDF) is small, yet it has a broad range of roles in contributing to New Zealand's national security objectives. The NZDF role in Antarctica reinforces this assertion. The NZDF is critical to the maintenance of New Zealand's strategic Antarctic interests, specifically its Ross Dependency claim. Consequently, the NZDF has operated in Antarctica for many years in support of New Zealand's civilian presence. However, the security that New Zealand enjoyed in Antarctica during the twentieth-century is challenged as a result of changing international norms, complex disruptors, and challenges to the international rules-based order. In the future, the NZDF is going to find it increasingly difficult to meet its Antarctic responsibilities, given its small size, vast area of responsibility, and extensive breadth of outputs.

### Thesis Question

The primary investigator in this study will examine the following research question:

Primary Research Question: Considering New Zealand's military size and unique geography, what are the challenges facing the NZDF in maintaining New Zealand's security interests in Antarctica?

There are three secondary research questions (SRQs) that will address the primary research question.

SRQ1: What are the emerging security challenges to New Zealand's Antarctic interests?

SRQ2: What are the challenges related to the size of the NZDF in operating in Antarctica?

SRQ3: How does the geographic isolation of New Zealand influence the NZDF's ability to operate in Antarctica.

### Background

New Zealand is a geographically isolated liberal democracy with a unique geopolitical environment. The country is a geographically isolated landmass in the Pacific Ocean, bounded by Australia to its west, Antarctica to the south, and various Pacific nations to its north. New Zealand is a reasonably influential Western Democracy on the edge of Asia; however, it has a small population of only five million people.<sup>1</sup> Consequently, New Zealand's prosperity is underpinned by a stable rules based global order, its economic relationship with China and paradoxical security relationship with Australia and the United States. Pivotaly, New Zealand has a landmass that is only twice the size of North Carolina (268,838 sq. km) yet it has one of the world's largest Economic Exclusion Zones (EEZ) covering 1.7 million square kilometers of ocean.<sup>2</sup> Furthermore, New Zealand has responsibility for the

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<sup>1</sup> Stats, "Population," New Zealand Government, 2020, accessed April 17, 2020, <https://www.stats.govt.nz/topics/population>.

<sup>2</sup> Royal New Zealand Navy, NZBR 48, *RNZN PLAN 2017 – 2025* (Wellington: New Zealand Navy, October 2017), 9, accessed September 29, 2019, <http://navy.mil.nz/downloads/pdf/public-docs/rnzn-plan-2017-2025.pdf>.

security and defense of the Pacific territories of Tokelau, Niue, and Cook Islands, as well as a 15 percent claim to Antarctica known as the Ross Dependency.<sup>3</sup>

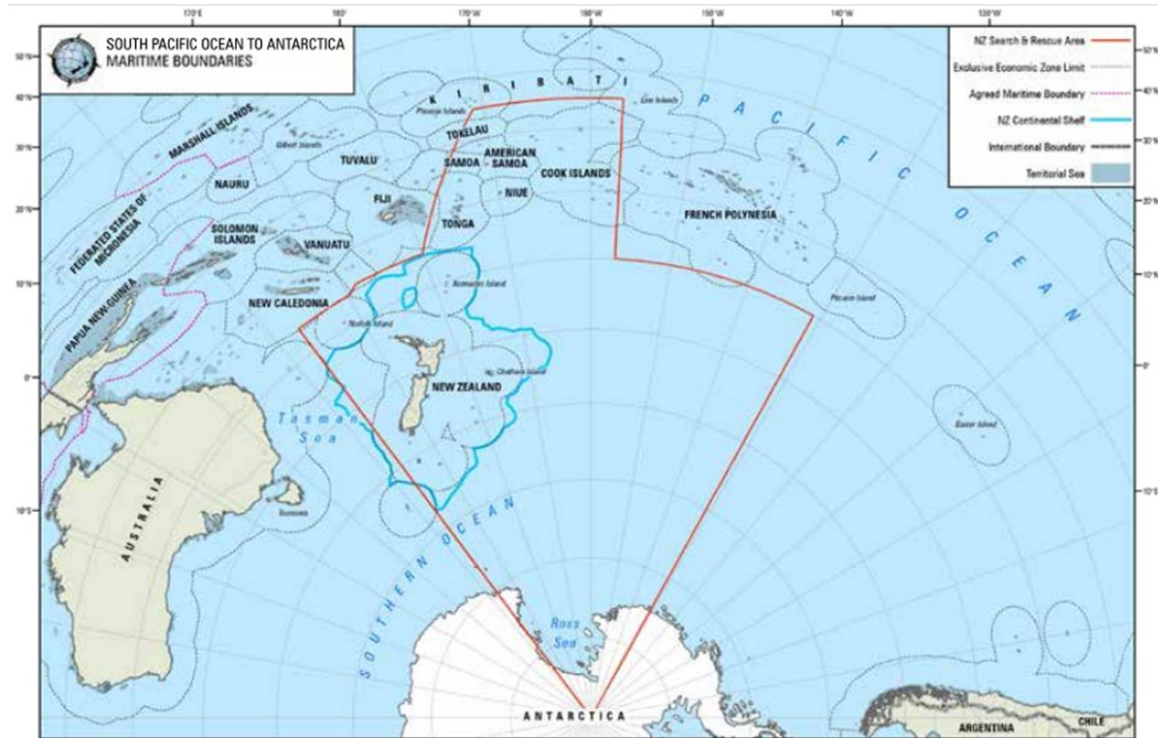


Figure 1. New Zealand Maritime Boundaries

Source: Ministry of Defence, *Defence White Paper 2016*, 2016, 28, accessed September 7, 2019, <http://www.army.mil.nz/about-us/our-key-documents/defence-white-paper-2016.htm>.

New Zealand has a long and close connection with Antarctica and the Ross Dependency. New Zealand assumed responsibility for the Ross Dependency from Britain in 1923.<sup>4</sup> The Ross Dependency is located within the wider Antarctica

<sup>3</sup> Office of the Governor-General, “New Zealand’s Constitution,” 2019, accessed September 30, 2019, <https://gg.govt.nz/office-governor-general/roles-and-functions-governor-general/constitutional-role/constitution/constitution>.

<sup>4</sup> Anne-Marie Brady, “New Zealand’s Antarctica,” in *The Emerging Politics of Antarctica*, ed. Anne-Marie Brady (London: Routledge, 2013), 148.

landmass defined as south of 60° South Latitude.<sup>5</sup> New Zealand maintains its Antarctic interests through its foundation membership in the Antarctic Treaty System (ATS).

The ATS was established in 1959 during the height of the cold-war to avoid militarization and to provide a form of governance south of 60° South latitude. The ATS was established by twelve signatories in 1959 and has increased in size to fifty-four states today.<sup>6</sup> The ATS is founded on two fundamental principles: First, Antarctica will be used exclusively for peaceful purposes; and second, the ATS promotes the conduct of scientific research of benefit to all nations.<sup>7</sup> The Antarctic Treaty Consultative Meeting (ATCM) is the primary decision-making body within the ATS which regulates activities in Antarctica. The meeting is attended by Antarctic Treaty Consultative Parties (ATCP) which are the states that hold decision making rights. States gain consultative party status and thus decision-making rights, by demonstrating to the existing consultative parties that the nominee has made significant contributions to scientific research on the continent.<sup>8</sup> Nations that do not meet the threshold to be designated a “consultative party” attend the ATCM as “non-consultative parties” and have no decision-making rights. Twenty-nine members have consultative party status and meet annually with the other twenty-five non-

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<sup>5</sup> Secretariat of the Antarctica Treaty, “The Antarctic Treaty,” October 16, 1959, accessed September 9, 2019, <https://www.ats.aq/e/antarctictreaty.html>.

<sup>6</sup> Secretariat of the Antarctic Treaty, “Parties,” 2019, accessed November 3, 2019, <https://www.ats.aq/devAS/Parties?lang=e>.

<sup>7</sup> Marcus Haward, “The Antarctic Treaty System: Challenges, Coordination, and Congruity,” in *The Emerging Politics of Antarctica*, ed. Anne-Marie Brady (London: Routledge, 2013), 16.

<sup>8</sup> *Ibid.*, 17.

consultative parties.<sup>9</sup> Critics of the ATS suggest Antarctica should be run through the UN; however, any attempts to change the status quo have remained stonewalled by ATCP member states.<sup>10</sup>

The ATS has successfully promoted New Zealand's strategic interests in the region for over sixty years; however, the ATS and New Zealand's interests are increasingly threatened. Today, the ATS balances the divergent views of the founding members: New Zealand, Australia, France, United Kingdom, Argentina, Chile, and Norway while also promoting the interests of non-ATS members such as the United States, China and Russia who all have the organic resources to maintain a peaceful presence in Antarctica.<sup>11</sup> Critics of the ATS argue the ATS is increasingly irrelevant because it does not "assert, support or deny a claim to sovereignty."<sup>12</sup> The ATS highlights that "measures of a military nature"(excluding in support of scientific missions) are outlawed but there is no definition of what "measures of a military nature" actually are and dual-use civil-military technologies which could not have been foreseen in 1959 are increasingly common creating dangerous precedents which undermine region stability and could lead to spiraling Antarctic arms races.<sup>13</sup> In short, critics argue the ATS is an outdated cold-war era treaty ill-equipped to deal with

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<sup>9</sup> Secretariat of the Antarctic Treaty, "Parties."

<sup>10</sup> Anne-Marie Brady, *China as a Great Polar Power* (Washington, DC: Woodrow Wilson Center, 2017), 30.

<sup>11</sup> Haward, "The Antarctic Treaty System," 25.

<sup>12</sup> Secretariat of the Antarctica Treaty, "The Antarctic Treaty."

<sup>13</sup> Sam Bateman, "Strategic Competition and Emerging Security Risks: Will Antarctica Remain Demilitarised," in *Antarctic Security in the Twenty-First Century: Legal and Policy Perspective*, ed. Alan D. Hemmings, Donald R. Rothwell, and Karen N. Scott (London: Routledge, 2012), 125.

modern pressures.<sup>14</sup> Unfortunately for New Zealand, the ATS is not alone in this regard.

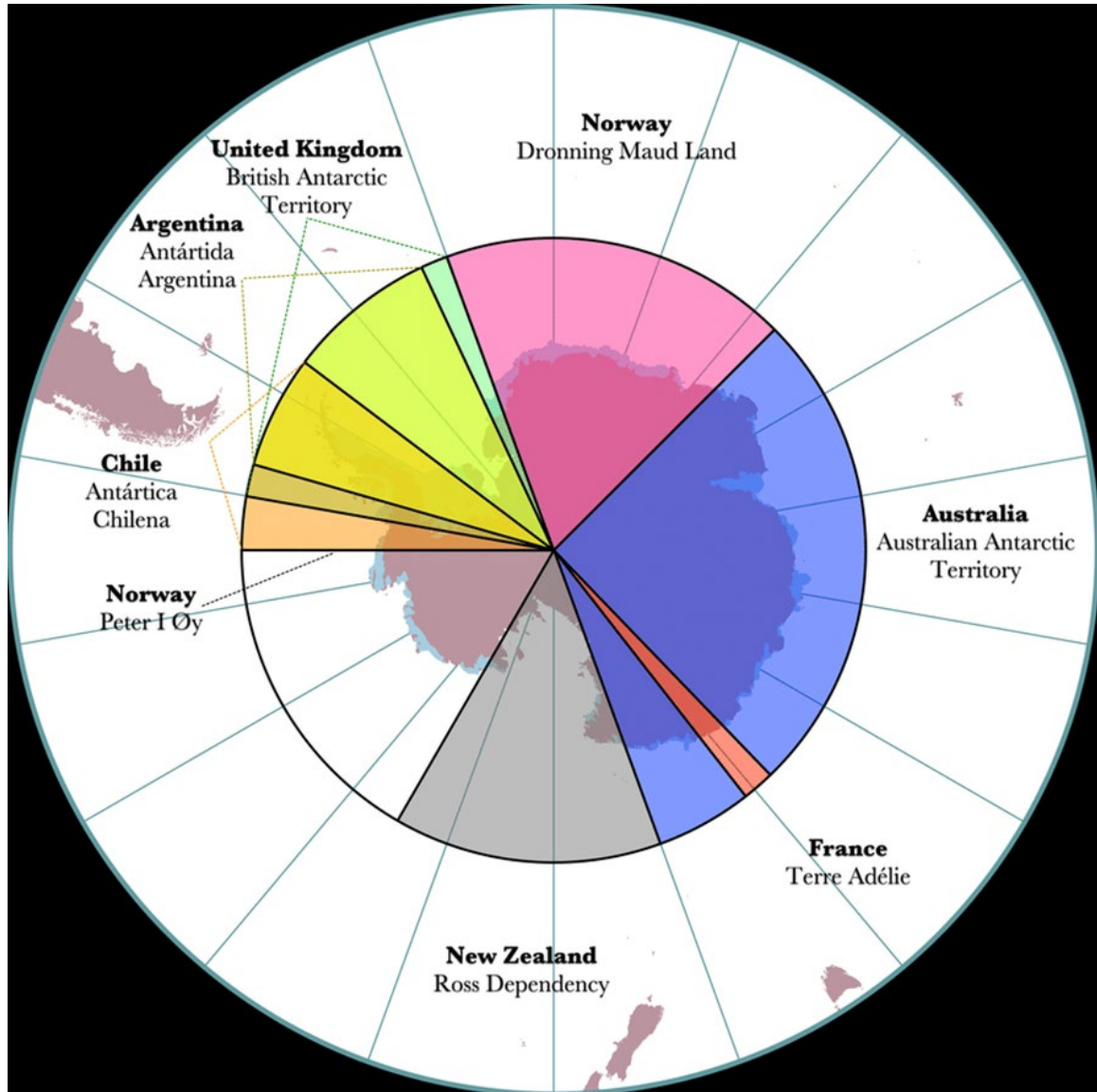


Figure 2. Antarctic Claims and Treaty Boundaries

Source: Jason Ryan Thompson, “Polar Theatre: The Evolution of Acts of Sovereignty in the Norwegian Antarctic” (MA thesis, University of Tsukuba, Tsukuba, Japan, 2017), 5, accessed 28 March 2020, <http://antarctica.earth/ThompsonPolarTheatre.pdf>.

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<sup>14</sup> Brady, *China as a Great Polar Power*, 31.

The Convention on the Regulation of Antarctic Mineral Resources or Madrid Protocol was established in 1998. The Madrid Protocol bans any activity related to mineral extraction. This restriction suits New Zealand who does not support mining in Antarctica and wants to maintain a security architecture which limits competition. However, the status quo will be challenged in 2048 when any ATCP party can request a review to seek a modification or amendment to the protocol. Fortunately, New Zealand's interests will again be protected if amendment is proposed, because modification of amendment to the Madrid Protocol will require a three-quarters of the ACTP nations to vote for the amendment before any change is to be accepted. Furthermore, unless there is "in force a binding legal regime on Antarctic mineral resource activities" the current prohibition of mineral extraction will continue.<sup>15</sup> Unfortunately, the aforementioned situation may also lead ATS nations to withdraw from the Madrid Protocol, the outdated ATS may not be legally robust enough to survive mineral extraction related legal challenges and indications suggest by 2048 a majority of states will favor a relaxation of the existing resource extraction prohibitions.<sup>16</sup> Consequently, New Zealand's strategic interests in Antarctica may be challenged in 2048 and, as a minimum, New Zealand will likely be involved in "political tension and speculation" as 2048 nears.<sup>17</sup>

New Zealand's strategic interests in Antarctica will likely be challenged beyond 2048. The circumstance is without precedence. New Zealand strategic

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<sup>15</sup> Committee for Environmental Protection, "Protocol on Environmental Protection to the Antarctic Treaty," October 4, 1991, Article 25.5.

<sup>16</sup> Brady, *China as a Great Polar Power*, 202.

<sup>17</sup> Donald R. Rothwell, "The Antarctic Treaty as a Security Construct," in *Antarctic Security in the Twenty-First Century: A Legal and Policy Perspective*, ed. Alan D. Hemmings, Donald R. Rothwell, and Karen N. Scott (London: Routledge, 2012), 48.

interests have not been seriously challenged in Antarctica since it inherited the Ross Dependency from Britain in 1923. Today, New Zealand enjoys significant strategic benefits associated with its relationship with Antarctica. New Zealand is a founding member of the ATS, it is an ATS member with close proximity to Antarctica which provides economic and diplomatic benefits gained through New Zealand's use as an Antarctic logistics hub, New Zealand promotes the United States peaceful interests in Antarctica with consequential benefit for New Zealand's defense, New Zealand sponsors scientific research in Antarctica, and New Zealand's Southern flank is secured through good will and international treaties.<sup>18</sup>

The New Zealand government recognizes Antarctica's strategic importance is increasing. The emergence of a multi-polar world, increasing demands on resource security, climatic changes, and erosion of the rules-based system are all factors that are impacting on Antarctica's security environment. Consequently, New Zealand's 2018 Strategic Defence Policy Statement highlights the importance of "ensuring peace and stability on its [New Zealand's] southern flank."<sup>19</sup> Nonetheless, New Zealand maintains a positive relationship with the United States and Australia, Antarctica and New Zealand are geographically isolated, and New Zealand has good relationship with neighboring Pacific Island countries. This leads apathetic security pundits to suggest New Zealand has a "benign security environment"<sup>20</sup> free from any

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<sup>18</sup> Alan D. Hemmings, Donald R. Rothwell, and Karen N. Scott, "Antarctic Security in a Global Context," in *Antarctic Security in the Twenty-First Century: Legal and Policy Perspectives* (London: Routledge, 2012), 336.

<sup>19</sup> New Zealand Ministry of Defence, *Strategic Defence Policy Statement 2018* (Wellington: New Zealand Government, July 2018), 26, accessed August 19, 2019, [www.defence.govt.nz](http://www.defence.govt.nz).

<sup>20</sup> Robert Patman, *Globalisation, Sovereignty and the Transformation of New Zealand's Foreign Policy*, Working Paper No. 21/05 (Centre for Strategic Studies,

direct threats to its sovereignty. Consequently, defense has not been a “significant component of [New Zealand] government policy”, many see national defense as a “choice,” not a necessity, and the military has rarely had “a budget adequate to meet stated policy outcomes.”<sup>21</sup>

Despite the public’s apathy towards Defence, New Zealand’s leaders are obviously conscious the country relies on the global economy, the international rules-based system, and a wide array of international institutions to export its numerous commodities and promote its prosperity.<sup>22</sup> This is why New Zealand’s history records the country is committed to proactively working with like-minded nations to ensure possible threats are challenged before they arise.<sup>23</sup>

The aforementioned strategic imperatives, and New Zealand’s expulsion from ANZUS by the United States in 1987 for adopting a nuclear-free policy, have shaped New Zealand’s national security and defence policy. New Zealand’s civilian-military presence in Antarctica is an example New Zealand’s “whole of government” strategy designed to meet designated national security objectives.

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Victoria University of New Zealand, 2005), 12, accessed September 8, 2019, <https://www.victoria.ac.nz/strategic-studies/documents/working-papers/wp-21.pdf>.

<sup>21</sup> James Rolfe, *The Armed Forces of New Zealand* (St. Leonards, New Zealand: Allen and Unwin Pty Ltd, 1999), 20; Jim Rolfe, *Cutting Their Cloth: New Zealand’s Defence Strategy* (Canberra: Australian Strategic Policy Institute, April 2007), 11, accessed November 21, 2019, [https://s3-ap-southeast-2.amazonaws.com/ad-aspi/import/cutting\\_cloth\\_NZ.pdf?RmROKjyAjfMqyWGQR1WQ03RlnQIs315x](https://s3-ap-southeast-2.amazonaws.com/ad-aspi/import/cutting_cloth_NZ.pdf?RmROKjyAjfMqyWGQR1WQ03RlnQIs315x).

<sup>22</sup> New Zealand Ministry of Foreign Affairs and Trade, *Strategic Intentions 2018-2022* (Wellington: Government of New Zealand, 2018), September 16, 2019, accessed September 16, 2019, <https://www.mfat.govt.nz/assets/MFAT-Corporate-publications/MFAT-Strategic-Intentions-2018-2022.pdf>.

<sup>23</sup> Rolfe, *The Armed Forces of New Zealand*, 13.

The NZDF is a significant component of New Zealand’s whole-of-government strategy. Consequently, the NZDF is being pulled in several diametrically opposed directions.<sup>24</sup> First, the NZDF must continue to provide niche capabilities capable of supporting alliance and coalition operations underpinning the stability of the global world order. Second, the NZDF must invest in a “Pacific Reset” initiative which seeks to promote partnerships with South-West Pacific island nations. Finally, the NZDF is required to meet “community and environmental” outputs domestically in response to increasing frequency of natural hazard events and climate concerns.<sup>25</sup> Unfortunately, while noting some efficiency can be gained through use of generic non-specialist platforms, these missions require the NZDF to develop and maintain a diverse range of specialist equipment and skills. The challenge is significant. To reinforce the assertion, the latest New Zealand Defence Strategy, demands the NZDF is combat-capable, expeditionary, interoperable, agile, and information-led.<sup>26</sup>

The NZDF will need to overcome two significant challenges in meeting the aforementioned strategic expectations and security challenges: the small size of the military relative to its outputs, and New Zealand’s geographic isolation. To elaborate: It is clear New Zealand has a wide range of strategic ambitions; New Zealand and the NZDF have a massive EEZ which requires protection; the NZDF is expected to

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<sup>24</sup> B. K. Greener, “Useful Ambiguity? New Zealand’s Strategic Defence Policy Statement,” Australian Strategic Policy Institute, July 9, 2018, accessed September 11, 2019, <https://www.aspistrategist.org.au/useful-ambiguity-new-zealands-strategic-defence-policy-statement/>.

<sup>25</sup> New Zealand Ministry of Defence, *Strategic Defence Policy Statement 2018*, 8.

<sup>26</sup> New Zealand Ministry of Defence, *Defence White Paper 2016*, 2016, 49, accessed September 7, 2019, <http://nzdf.mil.nz/downloads/pdf/public-docs/2016/Defence-White-Paper-2016.pdf>.

operate in austere arctic and tropical environments; the small population limits recruitment and there are financial limitations are likely in a country that regards national security as “secondary to domestic interests.”<sup>27</sup>

The NZDF mission in Antarctica is one of the complexities facing the NZDF. Consequently, this qualitative literature review will examine the challenges associated with the Antarctic mission noting the small size of the NZDF and the effects of New Zealand’s geographic isolation as they relate to New Zealand’s ambitions in Antarctica.

### Assumptions

The following assumptions have been made to focus research, constrain the resultant findings and drive practical recommendations for future security and defence policy. First, existing NZDF funding projections will remain unchanged. The NZDF is currently funded to 1.2 percent of the gross domestic product (GDP) with a commitment to meet current projects and historical defence expenditures.<sup>28</sup> This projection is unlikely to change; however, spending up to 2 percent of the GDP is assumed to be feasible based on partner nation expectations and a potentially more complex security environment. Such an assumption is of importance because increased NZDF funding would permit greater choice, specialization, and external assistance – such as external recruitment. Notwithstanding, money will not ostensibly change geography, money cannot solve all of New Zealand’s problems and a dramatic

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<sup>27</sup> Dale Elvy, “Defence: Exploring the Silent Consensus,” *New Zealand International Review* 33, no. 3 (June 2008): 25.

<sup>28</sup> World Bank, “Military Expenditure (% of GDP) – New Zealand 1960-2018,” accessed April 17, 2019, <https://data.worldbank.org/indicator/MS.MIL.XPND.GD.ZS?locations=NZ>.

increase in funding projections is unlikely because of global and domestic financial limitations.

Second, the NZDF will continue to support current missions aligned with the protection or promotion of the international rules-based order. Traditionally, a company-sized group has been permanently deployed to the Middle East with maritime aircraft and one frigate also intermittently supporting coalition operations. This assumption is of importance because these historical deployments decrease the NZDF capability available for tasking in the Antarctic.

### Limitations

This unclassified study will be limited as follows: First, the study will only contain descriptions or analysis from unclassified resources; Second, this study will only include information as it pertains to the strategic military challenges facing New Zealand while avoiding tactical or operational level challenges other than those that have relevance at the strategic level; and Finally, this study will focus on the security aspect of New Zealand's Antarctic interests and will avoid the diplomatic, economic and information elements of national power.

### Significance of Study

New Zealand's Ross Dependency claim of a largely unrecognized, isolated, inhospitable, unpopulated piece of the globe that draws on the small resources of New Zealand initially appears futile. It has been suggested in the past that New Zealand could even give up its claim.<sup>29</sup> However that suggestion was never seriously considered as there is wide recognition that the Ross Dependency is critical in New

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<sup>29</sup> Brady, "New Zealand's Antarctica," 149.

Zealand protecting its “southern flank.”<sup>30</sup> Furthermore Antarctica provides New Zealand with a platform from which it can engage more broadly internationally than it otherwise would be able to do given its small size and geographic isolation. The status-quo that New Zealand has enjoyed in Antarctica during the twentieth-century is now challenged, and the New Zealand government has strongly indicated it will seek to maintain its interests in Antarctica.

The NZDF has been given a specific role in supporting those interests but is challenged with a broad range of other outputs in supporting New Zealand’s ambitious security and foreign policy objectives. Given the importance of the Ross Dependency, the challenges facing the NZDF in Antarctica need to be well understood.

New Zealand’s statesmen, civil leaders and military commanders must understand the unique challenges associated with New Zealand’s Ross Dependency claim so educated assessments can lead to defensible and logical decisions. This is particularly important given New Zealand’s small size, limited resources, and diverse ambitions for the nation and the NZDF.

New Zealand, benefiting from a relatively stable security environment and strong strategic partnership with Australia and the United States, currently has the luxury of discretion. It must protect New Zealand’s borders and national interests close to home, but it can choose whether to deploy its forces on expeditionary operations far from home. This environment may not continue. Consequently, it is prudent to consider how the NZDF will seek to meet the challenge of conducting

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<sup>30</sup> C. E. Foster, “Antarctic Resources and Human Security,” in *Antarctic Security in the Twenty-First Century Legal and Policy Perspectives*, ed. Alan D. Hemmings, Donald R. Rothwell, and Karen N. Scott (London: Routledge, 2012), 156.

operations both at home and further afield. It would be dangerous to continue to believe New Zealand can continue to operate unchallenged in Antarctica beyond 2048.

## CHAPTER 2

### LITERATURE REVIEW

Chapter 1 contained analysis of New Zealand's strategic circumstance, New Zealand's standing in the international rules-based order, New Zealand's history and relationship with Antarctica and introduced the role of the NZDF and the NZDF role in Antarctica. The information contained within Chapter 1 demonstrated New Zealand would be wise to analyze the ramifications of New Zealand's strategic ambitions in Antarctica beyond 2048 given the country's size, geographic isolation and associated implications. This chapter will contain descriptions that endeavor to synthesize the key documents and literature that relate to New Zealand's interests, the security challenges in Antarctica, the implications arising from New Zealand's size and geographic isolation, and the role of the NZDF in supporting those interests or mitigating these effects.

This literature review provides perspectives that exceed the definitions of security, which have traditionally been constrained to the military domain. Today, such a definition is constraining and does not support the increasing prevalence of interest in Antarctic security. Throughout the twentieth-century, there has been a notable absence of significant academic research pertaining to Antarctic security. This scarcity suggests Antarctica would not be a point of international competition.<sup>31</sup> However, more recently, dialogue and research on the matter of Antarctic security has increased. The New Zealand governments most recent strategic documents reinforce this assertion. New Zealand is increasingly articulating its perspectives on the nation's

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<sup>31</sup> Hemmings, Rothwell, and Scott, "Antarctic Security in a Global Context," 330.

interests in Antarctica and the role “whole of government” and NZDF agencies would play in this intent. New Zealand’s increasing interest in national and Antarctic security is evident noting New Zealand has had three defense white papers since 2010 reversing an alarming trend noting the previous white paper was published in 1997.<sup>32</sup>

The literature review will be structured as follows: First, the prevailing perspectives on the political and security history of Antarctica will be examined. This analysis is designed to highlight the historical factors, international interests and New Zealand interests which shape New Zealand involvement and actions in Antarctica. Second, literature on New Zealand’s security policies will be analyzed in order to provide perspectives on New Zealand’s current security policies, the resultant missions and structures of the NZDF and the challenges and risks faced by a small military with limited means. Finally, literature on the emerging security challenges facing Antarctica will be examined to identified prior to linking these challenges to resultant recommendations as they affect New Zealand and the NZDF. The literature review, through peer reviewed papers and academic research, will reinforce the importance of the problem statement, the primary and secondary research questions, and validity of this important analysis.

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<sup>32</sup> Ministry of Defence, “Defence White Paper 2010.,” 4.

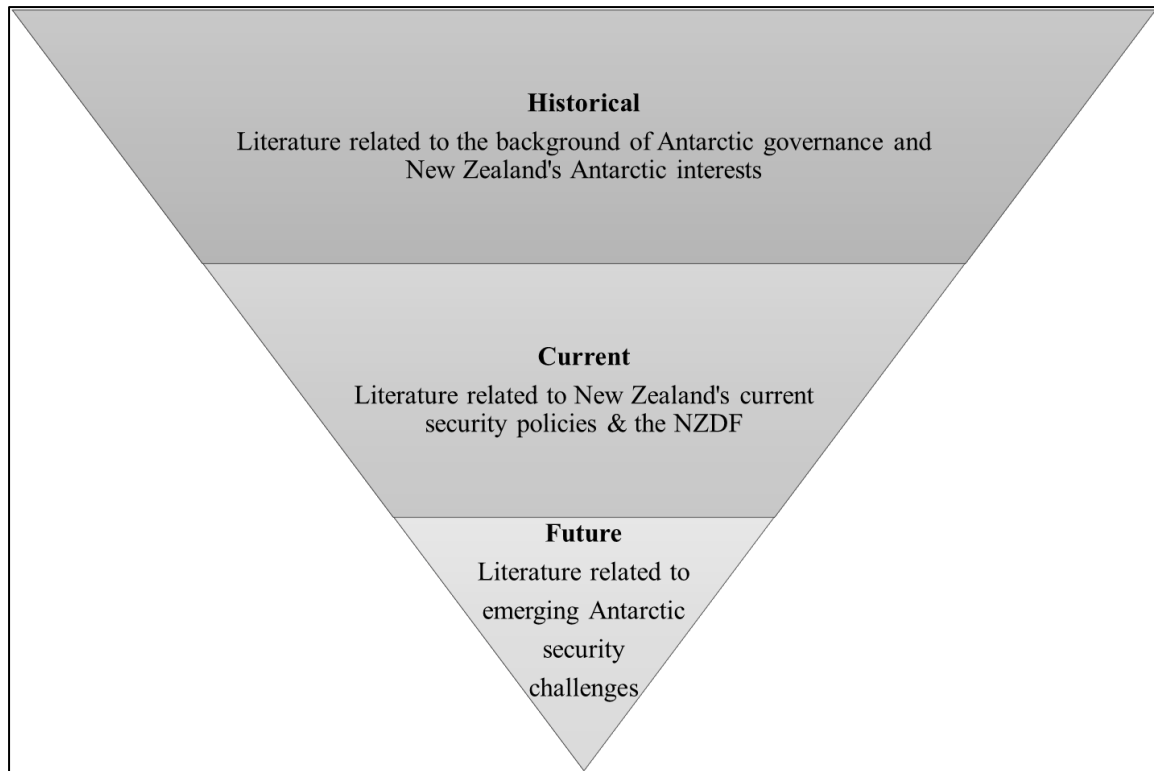


Figure 3. Structure of Literature Review

*Source:* Created by author.

### Historical Sources

*Antarctic Security in the Twenty-First Century* is a peer reviewed book which contains a wide range of opinions from experts in the field of Antarctica governance and security. The book has several sub-sections of relevance to this study. *The Search for Antarctic Security* by Rothwell, Scott, and Hemmings describes the history of the ATS and how the ATS has supported security on the continent. The authors highlight Antarctic security is predicated on environmental, resource, and human security. The authors assertion, and the expanding concept of security, demonstrates New Zealand's interests and the "whole of government" forces including the NZDF who may need to

operate in Antarctica will be increasingly challenged due to the “expansion of the security dimension in the region.”<sup>33</sup>

The section entitled, “The Antarctic Treaty as a Security Construct,” provides a platform for Rothwell to argue the ATS has successfully underpinned stability in Antarctica since its inception but importantly the treaty can continue to be successful with modification. Nonetheless, Rothwell does not see the ATS as a panacea. He questions the ability of the ATS to deal with challenges that would threaten the convention, the risks associated with member states withdrawing from the treaty and reinforces non-signatory third parties are largely unrestricted in Antarctica. Furthermore, Rothwell argues 2048 is a key timeline which may result in the reformation of the ATS and the amendment of mineral extraction protocols. Rothwell’s conclusions demonstrate that the ATS has been successful to date but is at risk without amendment as 2048 nears.<sup>34</sup> This evidence reinforces the assertion New Zealand’s interests in Antarctica are likely to be challenged prior to and post 2048.

The section “New Zealand’s Antarctica” is a conduit for A. Brady to outline New Zealand’s connection to Antarctica, its national interests in Antarctica, and New Zealand’s interests in the Ross Dependency claim. Brady argues New Zealand’s proximity to Antarctica; coupled with the nation’s historical, economic, environmental and political interests, are the basis for New Zealand’s sustainment of the Ross Dependency. Brady further asserts New Zealand will maintain its interests in

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<sup>33</sup> Donald R. Rothwell, Karen N. Scott, and Alan D. Hemmings, “The Search for ‘Antarctic Security,’” in *Antarctic Security in the Twenty-First Century* (London: Routledge, 2012), 17.

<sup>34</sup> Rothwell, “The Antarctic Treaty as a Security Construct,” 48.

Antarctica at almost any cost, providing an enlightening perspective of the importance of the Ross Dependency to New Zealand.<sup>35</sup>

The assertions presented in *Antarctic Security in the Twenty-First Century* are reinforced by New Zealand's historical stance on Antarctica and the Ross Dependency. For example, documents from the Ministry of Foreign Affairs and Trade (MFAT) and Antarctic New Zealand (ANZ) provide an official perspective on New Zealand's Antarctic interests. Specifically, MFAT's Statement of Commitment to Antarctica and the Southern Ocean reinforce the importance of the region to New Zealand.<sup>36</sup> The MFAT perspective is subsequently complimented by the ANZ 2016-2020 Statement of Intent which describes New Zealand's specific goals for its Antarctic presence.<sup>37</sup> These documents are relevant to this study as they demonstrate the level of importance that the New Zealand government places on its interests in Antarctica.

The three aforementioned sources illustrate the context of Antarctic governance and security, and the basis of New Zealand's interests in Antarctica. The first, "Antarctic Security in the Twenty-First Century" demonstrates the ATS has been successful but that the conditions which underpin the ATS's historical success are beginning to change. The MFAT and ANZ positions reinforce Zealand's interests are broad and rooted in New Zealand's relatively short history. These sources support the

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<sup>35</sup> Brady, "New Zealand's Antarctica," 160.

<sup>36</sup> New Zealand Ministry of Foreign Affairs and Trade, "New Zealand's Statement of Commitment to Antarctica and the Southern Ocean," 2019, accessed September 28, 2019, <https://www.mfat.govt.nz/assets/Environment/Antarctica-and-the-Southern-Ocean/Statement-of-Commitment-to-Antarctica-and-the-Southern-Ocean-2019.pdf>.

<sup>37</sup> Antarctica New Zealand, *Antarctica New Zealand Statement of Intent 2016-2020* (Wellington: International Antarctic Centre, June 2016), 6, accessed November 4, 2019, <https://www.antarcticanz.govt.nz/uploads/images/2016-2020-SOI.pdf>.

examination of the problem statement by identifying New Zealand's broad interests and some of the challenges which may compromise security within the region.

### Current Sources

There are a wide variety of strategic documents or analysis which outline why New Zealand is interested in Antarctica and how these force structure determinants have shaped the NZDF. The 2018 Strategic Defence Policy Statement (DPS) identifies a range of security challenges to New Zealand.<sup>38</sup> The DPS asserts the “international rules-based order is fundamental to national security” and the NZDF has important role in contributing to New Zealand’s “whole of government” actions to maintain the international system. The DPS also describes the challenges which led to the expansion of the role the NZDF had already adopted to support domestic outputs. The DPS is of relevance to this study because it reinforces New Zealand’s commitment to the Ross Dependency and discusses how the government expects to employ nation resources like the NZDF to meet community, national, and international objectives. Similarly, The 2019 Defence Capability Plan (DCP) records the government’s plan to close the capability gaps identified on the 2018 DPS.<sup>39</sup> The DCP sets capability development goals which will enable the NZDF to be employed across an increasing range of domestic and international outputs. The DCP is relevant to this study because it outlines what the NZDF needs and how it should be structured

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<sup>38</sup> New Zealand Ministry of Defence, *Strategic Defence Policy Statement 2018*, 16-22.

<sup>39</sup> New Zealand Ministry of Defence, “Defence Capability Plan 2019,” Ministry of Defence, June 11, 2019, 5, accessed September 2, 2019, <https://defence.govt.nz/publications/publication/defence-capability-plan-2019>.

to operate effectively in Antarctica and meet domestic and expeditionary outputs outside of Antarctica.

The government's perspectives are also reinforced by contemporary civil research. Vernon Bennett wrote his thesis, "Military Force Structures in Small States: Providing For Relevant And Credible Military Capability," in 2019. This work is a comparative analysis of four small state militaries including the NZDF. Bennett's analysis examines the NZDF and concludes that the NZDF faces the challenge of lack of scale – the NZDF is small – and critical mass – the NZDF does not have a sufficient quantity of critical enablers to permit concurrent operations. Bennett's conclusions are relevant to this study because he reinforces the NZDF will experience problems in meeting national objectives because of its small size and limited capacity.<sup>40</sup> These are two significant constraints which are amplified by New Zealand's unique security circumstance and geographic isolation. Bennett's assertions are directly applicable to NZDF operations in Antarctica and further abroad.

The former New Zealand Army Officer and Regional Security expert, Dr. Jim Rolfe's 2007 study of New Zealand's defense posture, its capabilities, commitments, and defense relationships are illuminating and provides perspectives relevant to this thesis. The study, despite being written in 2007, accurately defines the strategic context underpinning NZDF operations, how the NZDF employs its limited capabilities, and how the NZDF mitigates risk.<sup>41</sup> The study provides perspectives on

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<sup>40</sup> Vernon Noel Bennett, "Military Force Structures in Small States: Providing for Relevant and Credible Military Capability" (PdD diss., Victoria University of Wellington, New Zealand, 2018), 125, accessed July 10, 2019, [https://researcharchive.vuw.ac.nz/xmlui/bitstream/handle/10063/7033/thesis\\_access.pdf?sequence=1](https://researcharchive.vuw.ac.nz/xmlui/bitstream/handle/10063/7033/thesis_access.pdf?sequence=1).

<sup>41</sup> Rolfe, *Cutting Their Cloth: New Zealand's Defence Strategy*, 2.

the challenges and limitations the NZDF faces and is directly applicable to NZDF operations in Antarctica.

Finally, the LTCM. Cavanaugh, a senior fellow at the Modern War Institute at West Point wrote the article, “New Zealand’s Dangerous Strategic Apathy in an Uncertain Age,” which provides a critique of New Zealand’s reliance on the rules-based system. Cavanaugh argues New Zealand lacks both the military capability and alliances to defend its interests and the rules based international order is a “faith-based theory” for national defence.<sup>42</sup> Cavanaugh’s perspective is relevant to this study because it highlights the limitations New Zealand will face when dealing with changes in New Zealand’s strategic security environment inclusive of Antarctica.

The aforementioned sources inform that the New Zealand maintains a small military with broad capabilities, employed to contribute to New Zealand’s foreign policy objectives rather than for the purposes of defending New Zealand from direct attack. Maintaining a credible military that can contribute to international security efforts is challenged by a lack of public and political interest in security matters, and a belief in the safety of the international rules-based system. The challenges inherent in these factors are all relevant to the Antarctic context.

#### Future Sources

The final component of the literature review captures the contemporary and predictive analysis of the emerging security challenges in Antarctica. The NZDF exploratory report, “Deep South, Exploring Change in Antarctica, Southern Ocean,

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<sup>42</sup> M. L. Cavanaugh, “New Zealand’s Dangerous Strategic Apathy in an Uncertain Age,” *The Strategist*, February 12, 2020, accessed March 16, 2020, <https://www.aspistrategist.org.au/new-zealands-dangerous-strategic-apaty-in-an-uncertain-age/>.

Sub-Antarctic Islands and Space above 60° Latitude Southwards,” analyses emerging challenges in the Antarctic region and the implications for the NZDF.<sup>43</sup> This document also records the historical and current literature shaping New Zealand’s response in Antarctica; however, specifically focuses on recording or predicting emerging security challenges. The NZDF report encapsulates perspectives from a wide range of government sources and has a logical focus on support to New Zealand’s civilian presence in Antarctica. The report annotates greater demands for NZDF logistical support to facilitate a growing scientific presence and increasing human presence in Antarctica as drivers changing the way New Zealand and the NZDF operate in Antarctica. The unclassified document avoids meaningful discussion on militarization but recommends the NZDF explore the development of a Cold Weather capability within the NZDF to meet the “challenges of operating in the Deep South.”<sup>44</sup> Importantly, recommendations for greater NZDF capabilities appear to be based on a benign military environment and the sustainment of the rules-based system.

In “Strategic Competition and Emerging Security Risks: Will Antarctica Remain Demilitarized?” Sam Bateman examines the Antarctic Treaty System (ATS) prohibition on “measures of a military nature” which underpins the lack of militarization on the continent. Bateman asserts the shift of global power from the West to the East is contributing to international interest in Antarctica. Bateman highlights Antarctica contains significant natural resources and energy reserves which

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<sup>43</sup> Sheryll Boxall, *Foresight Report: Deep South Exploring Change in Antarctica, Southern Ocean, Sub-Antarctic Islands and Space above 60° Latitude Southwards* (Wellington: New Zealand Defence Strategy Management, 2019).

<sup>44</sup> *Ibid.*, 53.

are motivating the development of dual-use technologies in Antarctica which blur the current ATS interpretations of actions of a “military nature.”<sup>45</sup> Bateman identifies many of the challenges that will need to be overcome by the NZDF operating in Antarctica.

Anne-Marie Brady’s book, *China as a Great Polar Power*, discusses the importance of the polar regions in geo-politics, and how China is seeking to further their national interests in both regions. Brady is a New Zealand-based political scientist who specializes in Antarctica and China studies, and concludes Antarctica is of strategic interest to China because it provides for military, trade, scientific and resource security. Brady asserts China has no intention of challenging the status-quo; however, such intentions are likely to change as China’s global dominance increases.<sup>46</sup> Brady’s analysis demonstrates that China, and other emerging powers, have strategic interests that are linked to their global ambitions, and that New Zealand’s interests will become increasingly challenged as the norms enjoyed by New Zealand in the twentieth-century erode.

C. E. Foster, in the section “Antarctic resources and human security,” provides a perspective on human security challenges in Antarctica and the issue of resource extraction. Furthermore, Foster discusses the strategic significance of Antarctica and presents different views on resource extraction for energy security, and fishery access for food/ human security.<sup>47</sup> Foster’s conclusions demonstrate how energy and human security needs will become a legitimate motivation for states to commence extractions in Antarctica. Such interests will contradict New Zealand’s perspectives on

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<sup>45</sup> Bateman, “Strategic Competition and Emerging Security Risks,” 116.

<sup>46</sup> Brady, *China as a Great Polar Power*, 248.

<sup>47</sup> Foster, “Antarctic Resources and Human Security,” 171.

Antarctica's environmental importance and add to the complexity of the challenge the NZDF will face in supporting New Zealand's interests in the region.

Another source, *The Emerging Politics of Antarctica*, examines the post-cold war challenges facing Antarctica governance. In "Titanic Part II? Tourism, Uncertainty, and Insecurity in Antarctica," Jane Verbitsky identifies the growth in Antarctic tourism and describes several areas of risk related to the 50,000 visitors annually to the continent. These risks include environmental and bio-diversity damage, effects on wildlife, and challenges to policy and regulation. Significantly for New Zealand, Verbitsky discusses how Antarctic seas remain largely unsurveyed, and combined with the risk posed by icebergs, severe weather, and isolation, provided the conditions for a significant incident involving a tourist ship.<sup>48</sup> Verbitsky's conclusions address a specific area of a potential challenge the NZDF faces in its operations in Antarctica. New Zealand is responsible for the co-ordination of search & rescue within the dependency, and the NZDF would provide the bulk of any New Zealand response. Verbitsky further expands that such any major incident involving a tourist ship would be likely to reawaken the debate on Antarctic governance by those states seeking a change to the status quo.

The broad range of sources provide perspectives that validate the problem statement. The conclusions demonstrate a broad range of security challenges, many of which are not in the traditional military realm, but that all pose a risk to the long stability that has been enjoyed in the region.

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<sup>48</sup> Jane Verbitsky, "Titanic Part Two? Tourism, Uncertainty," in *The Emerging Politics of Antarctica*, ed. Anne-Marie Brady (London: Routledge, 2013), 230.

### Conclusion of Literature Review

Table 1 contains a summary of the literature review sources and how they will inform the respective supporting research questions. The table will be populated further in chapter 4 to assist the reader in interpreting the analysis of the literature review.

Current literature sources provided perspectives on the evolution of New Zealand's security and defense policy and give an overview of the NZDF, and the unique challenges it faces from geographic isolation and limited size and capacity. Findings from this literature inform both the second and third research question.

Finally, various sources provide insights as to the many factors from within, but mainly from outside of Antarctica that are challenging the status-quo that has been enjoyed by many of the traditional Antarctic players. Significantly 2048 will be a critical year for Antarctica as states seek to take the opportunity to amend the mineral extraction protocols which risk changing both Antarctica's political and security environment.

Table 1. Thesis Analysis: Literature Review		
<b>Problem Statement</b> How does the NZDF as a small military that is geographically isolated support New Zealand's security interests in Antarctica		
	<b>Sources</b>	<b>Findings</b>
<b>SRQ1 (Part 1) – Antarctica Security Challenges</b>	Antarctic Security Strategic competition and emerging security risks: Will Antarctica remain demilitarized? The Antarctic Treaty as a Security Construct Antarctic Resources and Human Security Titanic Part II? Tourism, uncertainty, and insecurity in Antarctica China as a Great Polar Power Foresight Report: Deep South Exploring Change in Antarctica	
<b>SRQ1 (Part 2) – New Zealand's Antarctic Interests</b>	New Zealand's Antarctica 2018 Strategic Defence Policy Statement Antarctic New Zealand 2016-2020 Statement of Intent New Zealand Foreign Affairs and Trade—Statement of Commitment to Antarctica Foresight Report: Deep South Exploring Change in Antarctica	
<b>SRQ2 – Effects of Small Size of the NZDF</b>	2018 Strategic Defence Policy Statement 2019 Defence Capability Plan Military Force Structures in Small states: Providing for Relevant and Credible Military Capability Cutting Their Cloth: New Zealand's Defence Strategy New Zealand's Dangerous 'Strategic Apathy in an Uncertain Age' Foresight Report: Deep South Exploring Change in Antarctica	
<b>SRQ3 – Effects of Geographic Isolation</b>	Same as above	

*Source:* Created by author.

The next chapter will explain the methodology that will structure the analysis of the perspectives, facts, and assumptions gained from the literature review, and seek to provide the framework to answer the thesis question.

## CHAPTER 3

### RESEARCH METHODOLOGY

A qualitative method will be used in this study to address the problem statement by capturing qualitative themes extracted from the literature review. There are three significant variables in this study that draw from the problem statement and the three supporting research questions. The variables are summarized as: New Zealand's Antarctic interests, the emerging security challenges in Antarctic, and the challenges for the NZDF operating in Antarctica. Figure 4 is a Venn diagram designed by the author to understand and demonstrate the relationship between the three variables.

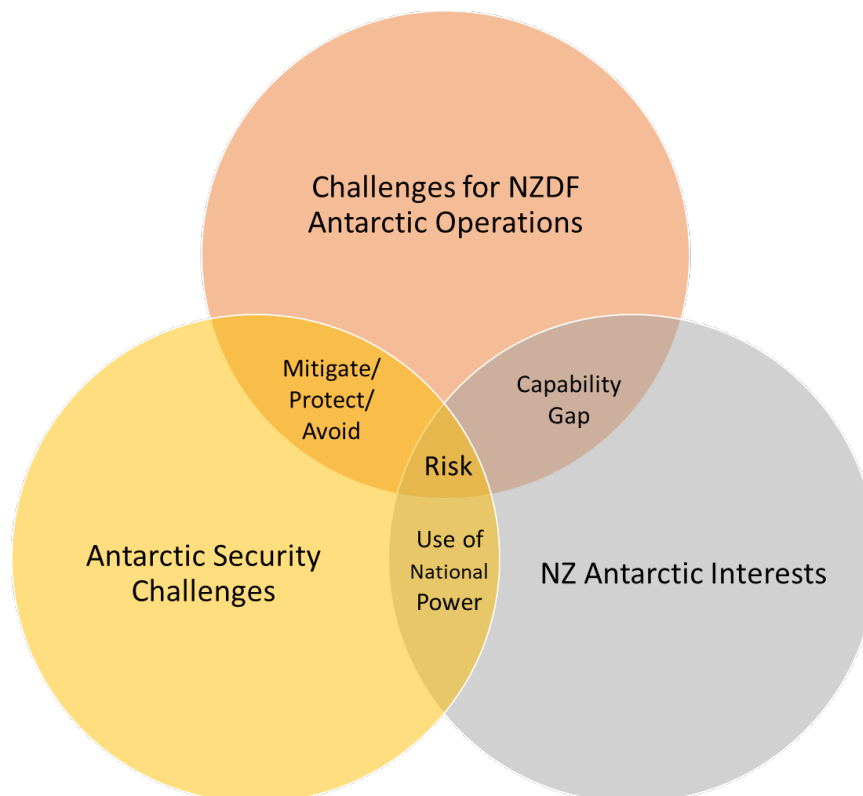


Figure 4. . NZDF Antarctic Challenges Model

*Source:* Created by author.

The model is a depiction of the factors that influence the NZDF's in its Antarctic responsibilities. As one portion of the model expands it has a direct effect on the other two variables. The findings from the literature show that the security challenges in Antarctica during the twentieth-century have been minor and have required only minimal national power from New Zealand to contain. Furthermore, they have not posed a significant challenge that has required any major mitigation by the NZDF.

The findings from the current literature review informed the challenges faced by the NZDF, precisely its small size, and geographic isolation which are at the core of the thesis question. The literature findings establish that the NZDF has traditionally operated with a capability gap, being the void between what the government requires of it and the resources it is provided.

The second variable is Antarctic security challenges. The model demonstrates that as security challenges increase, they will impede on New Zealand's interests, further expose the challenges of the NZDF and increase risk. In order to contain such expansion, either New Zealand needs to apply national power, or concede on its interests.

The third variable is New Zealand's Antarctic interests which due to there being no significant opposition have been able to be broad for such a small state. Furthermore, any challenges to New Zealand's interests have been within New Zealand's national power, mainly diplomatic, to contain or influence. Moreover, the model visualizes that although New Zealand's interests may create a capability gap for the NZDF, such a gap is acceptable given the benign nature of the Antarctic security challenges variable.

The areas of overlap are the focus of this study. Specifically, between the “Challenges for NZDF Antarctic Operations” and “Antarctic Security Challenges.” It is in this space that conclusions will be made on how the NZDF can seek to address those security challenges. Furthermore, deductions will be made on the origin of risk, where all three factors intersect. Risk in this methodology is defined as the failure of the NZDF to meet New Zealand’s security objectives in Antarctica.

An addition has also had to be made to this model. Other factors are indicated from the literature review that exist that contain those Antarctic security factors more so than New Zealand’s influence. These factors will be discussed in the next chapter and will be added to the model to show their effects, on New Zealand’s Antarctic interests and NZDF challenges.

Ultimately this methodology will enable the components of the problem statement and supporting research questions to be visually represented and demonstrate the influences on the NZDF’s challenges in the Antarctic context. The conclusions of the primary investigator’s analysis in the next chapter will seek to provide insight as to how the NZDF meets the challenges in the Antarctic from emerging security challenges to maintain New Zealand’s Antarctic interests.

## CHAPTER 4

### ANALYSIS

Chapter 4 contains analysis on the perspectives drawn from the literature review and employs the model explained in the previous chapter to explore the problem and answer the thesis question. The findings from chapter 4 are presented (see figure 5) up front to aid understanding. The key themes for each of the three variables are presented in table 2, and each variable is provided a section in chapter 4 to detail the analysis of the relationship between the variables.

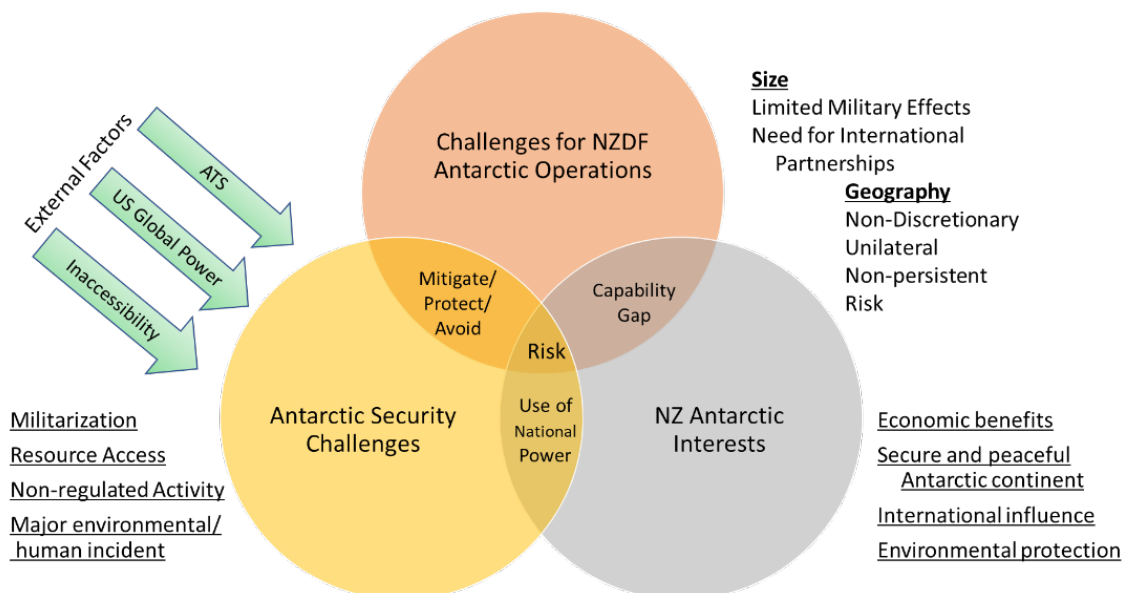


Figure 5. Challenges for NZDF Antarctic Operations Analysis

Source: Created by author.

#### Emerging Antarctic Security Challenges

In this section the emerging security challenges in Antarctica will be analyzed to identify the extent of the external challenges described in the problem statement. Such security challenges must be viewed through the lens of New Zealand's Antarctic

interests to be able to analyze their relevance to the NZDF. Table 2 displays the key themes drawn from the literature review that will be used in this section. The greyed areas are provided in the table to assist the reader in the relationship between the themes and will be discussed in subsequent sections.

Table 2. Thesis Analysis: Antarctic Challenges		
<b>Problem Statement</b> How does the NZDF as a small military that is geographically isolated support New Zealand's security interests in Antarctica		
	<b>Sources</b>	<b>Findings</b>
<b>SRQ1 (Part 1) – Antarctica Security Challenges</b>	Antarctic Security Strategic competition and emerging security risks: Will Antarctica remain demilitarized? The Antarctic Treaty as a Security Construct Antarctic Resources and Human Security Titanic Part II? Tourism, uncertainty, and insecurity in Antarctica China as a Great Polar Power Foresight Report: Deep South Exploring Change in Antarctica	Militarization Resource access Illegal and unregulated activity Major environmental or human incident  Current security environment likely to be challenged in anticipation of possible 2048 Madrid Protocol amendment
<b>SRQ1 (Part 2) – New Zealand's Antarctic Interests</b>	New Zealand's Antarctica 2018 Strategic Defence Policy Statement Antarctic New Zealand 2016-2020 Statement of Intent New Zealand Foreign Affairs and Trade—Statement of Commitment to Antarctica Foresight Report: Deep South Exploring Change in Antarctica	Modest economic benefits, environmental protection of region and fishery stocks. Deter militarization to New Zealand's south and use of Antarctic presence for diplomatic influence. Interests have never been significantly challenged.
<b>SRQ2 – Effects of Small Size of the NZDF</b>	2018 Strategic Defence Policy Statement 2019 Defence Capability Plan Military Force Structures in Small states: Providing for Relevant and Credible Military Capability Cutting Their Cloth: New Zealand's Defence Strategy Foresight Report: Deep South Exploring Change in Antarctica New Zealand's Dangerous 'Strategic Apathy in an Uncertain Age'	
<b>SRQ3 – Effects of Geographic Isolation</b>	Same as above	

*Source:* Created by author.

### New Zealand's Antarctic Interests

The first variable to be analyzed in chapter 4 is that of New Zealand's interests. Defining those interests first is essential in validating the assertion made in

the problem statement and informing the secondary research question on what are the emerging security challenges to New Zealand’s Antarctic interests. Figure 6 visually demonstrates the focus of this section and the key findings upfront. Furthermore, it seeks to demonstrate that New Zealand interests is key variable in that it drives the relationship with the other variables. Were New Zealand to concede its Antarctic interests, the challenges faced by the NZDF would largely disappear. Likewise, if New Zealand were to expand its interests it would require an increase in national power to overcome the Antarctic security challenges.

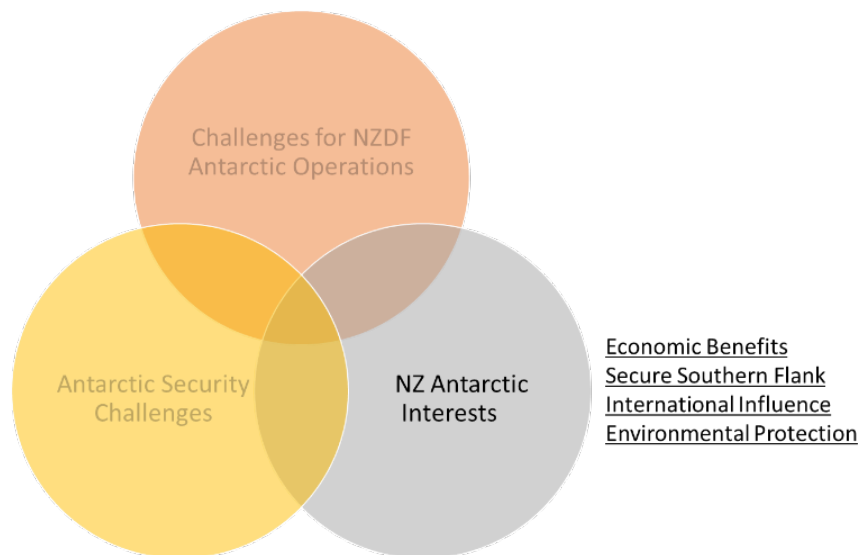


Figure 6. New Zealand’s Antarctic Interests

*Source:* Created by author.

The background of New Zealand’s claim is essential to understand its relationship with Antarctica. New Zealand assumed the Ross Dependency claim from

Britain in 1923.<sup>49</sup> The territory, however, is more than a remnant of the British empire. It is much more profound for many New Zealanders.

During the heroic period of polar exploration in the late nineteenth and early twentieth-century, New Zealand was the point of departure for numerous expeditions to Antarctica, including Robert Falcon Scott's ill-fated 1910-13 Antarctic expedition. Many memorials remain in the South Island to commemorate the courageous, yet tragic failure. Furthermore, in 1958 New Zealand's most famous adventurer, Sir Edmund Hillary, epitomized the popular image of the time as New Zealander's being tough and resourceful by his use of modified farm tractors to reach the South Pole, before the British expedition he was there to support. Although his success was controversial, it built on New Zealand's self-identity, reinforced Sir Edmund's national hero status, and further developed New Zealand's connection to Antarctica.<sup>50</sup>

Unfortunately, only two decades later, on 28th November 1979, Antarctica became the scene of New Zealand's worst aviation disaster. Air New Zealand Flight 901, a scenic charter aircraft flown from Auckland, crashed into Mount Erebus, killing all 257 people on board, most of whom were New Zealanders.<sup>51</sup> The disaster had a significant effect on the small country and has, over time added to the depth of the association with Antarctica.

The Erebus disaster and the expedition history are relevant in the sense that they provide a meaningful emotional connection for the New Zealand population to

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<sup>49</sup> Brady, "New Zealand's Antarctica," 148.

<sup>50</sup> New Zealand History, "Edmund Hillary in Antarctica," July 22, 2014, accessed September 30, 2019, <https://nzhistory.govt.nz/media/photo/edmund-hillary-antarctica>.

<sup>51</sup> Erebus, "The Story," New Zealand Air Line Pilots' Association, 2019, accessed September 7, 2019, <http://www.erebus.co.nz/background/thestory.aspx>.

Antarctica. It can be argued that New Zealand's Antarctic history provides the basis of the support the government silently receives from New Zealanders for the maintenance of an Antarctic presence.

In a more tangible sense, Antarctica provides a range of economic benefits. The City of Christchurch is the greatest benefactor of Antarctic activities being one of five "gateways" to Antarctica.<sup>52</sup> The city's international airport, seaport, university, and other institutions are involved in support of Antarctic operations in various capacities. In addition to New Zealand, the USA, Italy, the Republic of Korea, and Germany use Christchurch as their primary hub for their Antarctic operations, with over 2,600 scientists and staff transiting on their way to and from Antarctica annually.<sup>53</sup>

Additionally, the Ross Dependency includes 1.55 million square kilometers of some of the most undisturbed maritime environments on the globe.<sup>54</sup> Despite the significant fishery resource New Zealand is a strong supporter of the Conservation of Antarctic Marine Living Resources (CCAMLR), the organization that manages fish stocks in Antarctica.<sup>55</sup> As a consequence, commercial fishing in the Ross Sea is restricted to approximately NZ \$20 million per annum.<sup>56</sup> Therefore it appears New

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<sup>52</sup> Christchurch Antarctica Office, "Christchurch's Antarctic Connections," 2019, accessed September 7, 2019, <https://www.christchurchnz.com/christchurch-the-gateway-to-antarctica/christchurchs-antarctic-connections>.

<sup>53</sup> Ibid.

<sup>54</sup> Antarctic and Southern Ocean Coalition, "Ross Sea," 2019, accessed November 7, 2019, <https://www.asoc.org/advocacy/marine-protected-areas/ross-sea-preservation>.

<sup>55</sup> Brady, "New Zealand's Antarctica," 156.

<sup>56</sup> Ibid., 156.

Zealand places much more significance on the protection of the fishery and marine environment than any current economic benefit from the marine resource.

Annually Antarctic activities contribute NZ \$432 million to the domestic economy.<sup>57</sup> It is not an unsubstantial amount, considering the relatively low investment of NZ \$20 million annually into Antarctica New Zealand (ANZ),<sup>58</sup> the lead agency for New Zealand's presence. The New Zealand government is keen to develop the economic benefits of Antarctica and has provided ANZ the target of above-average GDP growth in the domestic Antarctic economy.<sup>59</sup> It appears that the economic benefits of Antarctica will remain a strong motivator of New Zealand's interests there, albeit balanced with environmental protection.

Those environmental interests, including the effects of climate change, are becoming a more significant area of concern for New Zealanders.<sup>60</sup> Although little can be done to prevent climate change in Antarctica itself, scientific research provides the ability to detect, monitor, and attribute environmental changes.<sup>61</sup> Furthermore, over-fishing or damage to the Antarctic maritime environment is likely to affect the New Zealand economic exclusion zone fisheries. Both these issues, linked to New

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<sup>57</sup> Christchurch Antarctica Office, "Christchurch's Antarctic Connections," 7.

<sup>58</sup> New Zealand Government, "Vote Foreign Affairs and Trade," 27, accessed November 7, 2019, <https://www.budget.govt.nz/budget/pdfs/estimates/v4/est19-v4-foraff.pdf>.

<sup>59</sup> Antarctica New Zealand, *Antarctica New Zealand Statement of Intent 2016-2020*, 15.

<sup>60</sup> Colmar Brunton, "Better Futures," 2019, accessed November 8, 2019, <https://static.colmarbrunton.co.nz/wp-content/uploads/2019/05/Colmar-Brunton-Better-Futures-2019-MASTER-FINAL-REPORT.pdf>.

<sup>61</sup> Antarctic New Zealand, *2017-2018 Antarctica New Zealand Annual Report*, Christchurch: Antarctica New Zealand, October 2018, accessed September 30, 2019, [https://www.antarcticanz.govt.nz/uploads/images/ANZ\\_annual\\_report\\_landscape\\_FINAL.pdf](https://www.antarcticanz.govt.nz/uploads/images/ANZ_annual_report_landscape_FINAL.pdf).

Zealand's sense of obligation to protect the Antarctic environment, are a significant component of New Zealand's interests on the continent.

Closely linked to the environmental and economic interests are scientific research benefits. Science is the "currency" of Antarctica,<sup>62</sup> and for a country to have decision-making rights within the Antarctic Treaty System (ATS), they must demonstrate "substantial research activity, such as the establishment of a scientific station or the dispatch of a scientific expedition."<sup>63</sup> As a consequence, New Zealand's scientific research is fundamental to its Antarctic claim and presence. The scientific study conducted is well regarded with citation rates that have historically been ahead of China, Japan, and Russia.<sup>64</sup> Not only is the research significant for developing New Zealand's intellectual knowledge, but it also creates a level of international credibility that is greater than what a country of New Zealand's means could usually create.

As a consequence of its claim and its proximity, New Zealand is also responsible for Search and Rescue (SAR) coordination, the enforcement of the CCAMLR, and hydro and meteorological monitoring and survey.<sup>65</sup> The immense size of the SAR area and the challenges of monitoring the CCALMR are significant for a small country, but they demonstrate New Zealand's contribution as an international participant and reinforces its Antarctic claim.

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<sup>62</sup> Brady, *China as a Great Polar Power*.

<sup>63</sup> Secretariat of the Antarctica Treaty, "The Antarctic Treaty."

<sup>64</sup> Brady, "New Zealand's Antarctica," 155.

<sup>65</sup> Antarctica New Zealand, *Antarctica New Zealand Statement of Intent 2016-2020*, 4.

This diplomatic credibility and international profile are a significant driver for New Zealand's interests in Antarctica. New Zealanders have traditionally held many critical positions within the ATS. Combined with its geographical proximity to Antarctica, it has enabled New Zealand a certain amount of access, leverage, and ability to demonstrate international leadership when dealing with other nations that might otherwise ignore a small nation like New Zealand.<sup>66</sup>

This aspect of New Zealand's Antarctic interests appears to be the most significant. As a small, isolated country that relies on relationships, trade, and international rules, being able to participate meaningfully internationally is a substantial part of ensuring national security. It is well-positioned to exploit the historical, geographic and scientific advantages in Antarctica to gain international credibility. So much so that Professor Brady argues that "New Zealand is fully committed to maintaining its strategic interests there [Antarctica] at almost any cost."<sup>67</sup>

However, the realities are that New Zealand has no native inhabitants in Antarctica, and despite a strong historical connection for the average New Zealander there would be little noticeable change if New Zealand were to concede its interests. The government enjoys a good return on its investment, and a platform to engage internationally. Although these benefits are important they are not critical, and their attrition would not necessarily pose an existential threat. However, the presence of a hostile adversary on New Zealand's southern flank would significantly challenge the

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<sup>66</sup> Brady, "New Zealand's Antarctica," 158.

<sup>67</sup> Ibid., 160.

national assumption of security. Therefore, it is difficult to predict how far New Zealand would be willing to go to maintain those interests if they are challenged.

### The Emerging Security Challenges in Antarctica

The problem statement in chapter 1 made the assertion that the benign Antarctic security environment is beginning to change. A range of sources in the literature review validate that assertion. In this section of chapter 4 an analysis seeks to define those security challenges as they relate to New Zealand interests. Furthermore, this analysis will provide context in which to analyze the subsequent secondary research questions on the challenges facing the NZDF operating in Antarctica. Figure 7 outlines the key themes of this section.

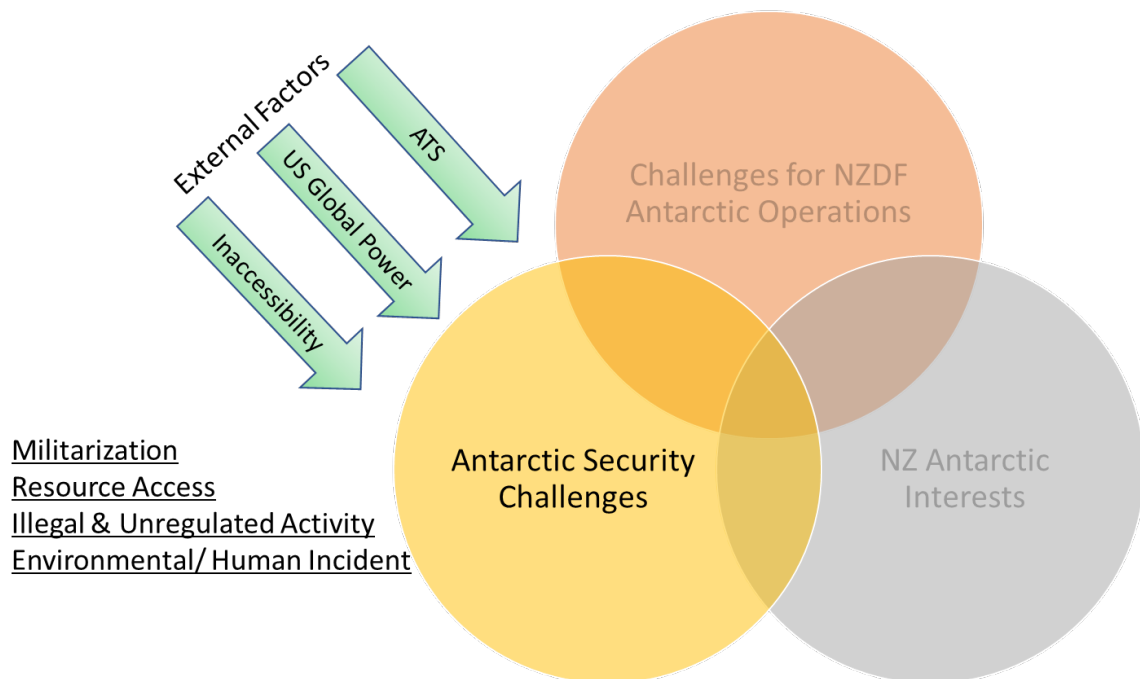


Figure 7. Antarctic Security Challenges

Source: Created by author.

The 2018 Strategic Defence Policy Statement attributes three forces that are placing pressure on the rules-based order, the maintenance of which is fundamental to New Zealand's security. They are:

1. The increasing importance of spheres of influence.
2. Challenges to open societies and western liberalism.
3. A collection of complex disruptors.<sup>68</sup>

Concerning the first factor China is identified as one, but not the only country that is seeking to increase their spheres of influence, both regionally and globally.<sup>69</sup> States that have traditionally had little or no Antarctic presence are becoming more predominant and are investing more in the continent than traditional Antarctic countries.<sup>70</sup> C.E Foster argues that the growing level of involvement in Antarctica is “tied to their interest in building and maintaining their global status, but also an overt interest in Antarctic resources.”<sup>71</sup>

The increasing interests in Antarctica highlights the “imperial-colonial era” legacy of the ATS. Sanjay Chaturvedi, a Political Scientist, states that there is a contradiction between the ATS ambition of being in the “best interests of all mankind” and with the fact that the ATS has been dominated by nations that make

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<sup>68</sup> New Zealand Ministry of Defence, *Strategic Defence Policy Statement 2018*, 6.

<sup>69</sup> *Ibid.*, 17.

<sup>70</sup> Anne-Marie Brady, “The Emerging Politics of Antarctica and What It Means for New Zealand,” in *The Arctic and Antarctica Differing Currents of Change*, ed. Peter Kennedy (New Zealand Institute of International Affairs, 2015), 57.

<sup>71</sup> Foster, “Antarctic Resources and Human Security,” 171.

Antarctica a “white” continent.<sup>72</sup> The Malaysian Prime Minister in 1982 stated that Antarctica was for the “privileged few” and advocated for the United Nations to oversee the continent.<sup>73</sup> However Malaysia abandoned its policy for change and became an ATS signatory in 2011.

Such observations, particularly from Asian countries, expose the reality that the ATS represents a geo-political environment that has long passed. Despite this, many dominant ATS nations, including New Zealand have been proactive in advocating for greater participation in the ATS to build legitimacy of the treaty. Such actions have been successful and the counter argument to Antarctic “colonialism” is that the ATS allows access from all states. However, in the event of a major challenge to the ATS, or the option of a better alternative, these underlining perceptions of European dominance in Antarctica could embolden or even justify the erosion of the ATS.

Individual states having a presence in Antarctica in itself is not a security challenge, assuming that states’ actions are peaceful, which all are at present. The problem lies in the inevitable friction that will develop between participants on any number of issues. The DPS notes China’s determination not to “engage with the international tribunal ruling on the status of sovereign claims.”<sup>74</sup> This is an example, as Professor Brady states it, of China’s willingness to go around or ignore

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<sup>72</sup> Sanjay Chaturvedi, “India and Antarctica – Towards Post – Colonial Engagement?,” in *The Emerging Politics of Antarctica*, ed. Anne-Marie Brady (London: Routledge, 2013), 52.

<sup>73</sup> B. A. Hamzah, “The Malaysian Journey to the Antarctic: A Glimpse at Public Policy Dynamics,” in *The Emerging Politics of Antarctica*, ed. Anne-Marie Brady (London: Routledge, 2013), 96.

<sup>74</sup> New Zealand Ministry of Defence, *Strategic Defence Policy Statement 2018*, 17.

international laws and norms. Brady does, however, assess that China will “try diplomacy, coalition building, and intimidation first” but further adds that “China’s foreign policy does not rule out the possibility of conflict.”<sup>75</sup>

Despite what conclusions may be drawn from China’s actions in the South China Sea, the country has been active in the ATS since signing the treaty in 1983.<sup>76</sup> The arrangement currently supports China’s interests by providing Antarctic access within a system in which no other party is willing to impose any consequences of breaches of ATS rules.

As a consequence, it is assessed that China will continue to participate in the ATS, build their Antarctic presence to support its broader geopolitical and military objectives while exploiting the vulnerabilities in the treaty system. China will likely take advantage of the opportunity to make an amendment to the Madrid Protocol in 2048 to demonstrate its growing international power, and to protect resource security. The 2049 celebration of 100 years of Chinese Communist Party rule may be another motivating factor in showing the strength of the Chinese state.

The lack of enforcement of treaty rules raises concerns about the effectiveness of the ATS in the face of emerging security challenges. To date the ATS has been successful in maintaining peace, but as Sam Bateman predicts,

Rising global powers, as well as other relatively new players in Antarctic affairs, will seek greater influence in the management of Antarctica and adds that they will no longer be satisfied with playing second fiddle to the United States and other powers that have dominated Antarctic affairs.<sup>77</sup>

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<sup>75</sup> Brady, *China as a Great Polar Power*, 252.

<sup>76</sup> Brady, *China as a Great Polar Power*, 51.

<sup>77</sup> Bateman, “Strategic Competition and Security Risks,” 132.

Consequently, the ability of the ATS, and other international governance and legal institutions to provide the mechanism for peaceful co-operation remains critical. The failure of the ATS would raise significant issues for Antarctic security.<sup>78</sup>

The second factor from the DPS is challenges to open societies. As discussed above, New Zealand's national security is deeply rooted in the maintenance of the international rules-based order. Western nations are facing greater polarization and pressure to act in the national interests over international co-operation.<sup>79</sup> Even states which New Zealand considers partners have demonstrated a view to disregard international norms, over internal popularism. The consequence of this factor is that countries may become unwilling to continue to align or act in the interests of the rules-based order, such as the ATS. Such a situation would undermine the ATS and likely result in Antarctic actors participating on the continent without mutual co-operation under shared values.

The factors described set the conditions for instability, but it will be "Complex Disruptors" as described in the DPS as the third factor that will be the trigger for a change in the status quo. These disruptors are broad and extend beyond the traditional definitions of security. They include climate change, resource access, the importance of space-based systems, and advanced military technologies. All of these disruptors are relevant in the Antarctic context.

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<sup>78</sup> Rothwell, "The Antarctic Treaty as a Security Construct," 49.

<sup>79</sup> New Zealand Ministry of Defence, *Strategic Defence Policy Statement 2018*, 18.

Antarctica is well known for its significance in climate change due to holding 90 percent of the globe's ice mass.<sup>80</sup> The security implications of climate change in Antarctica are numerous, one of which will be greater access to the continent for tourism, fishing, and resource extraction from receding ice. Combined with the global adverse effects of climate change on food and energy security and a rising global population will motivate countries to seek access to Antarctic resources.<sup>81</sup>

Some states have already expressed an interest in future resource extraction, however as C.E Foster explains that although oil and mineral extraction occurs in the Arctic, the conditions in Antarctica are prohibitively different. Commodity prices would have to rise significantly to be economically viable; however, such operations may be more feasible on some sub-Antarctic islands as global temperatures rise.<sup>82</sup> Although Professor Brady states from a Chinese perspective mineral exploration is just a matter of time.<sup>83</sup>

Global population growth and the effects of climate change on existing food production are also a growing challenge for many countries in ensuring food security. Antarctic waters will become a more economical and logical option to access protein as the demand for fish continues to rise. Although the CCAMLR exists to manage the fishery, those states that have food security concerns were not prominent when the CCAMLR was formed. That is no longer the case, and those now influential countries

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<sup>80</sup> U.S. Geological Survey, "Ice, Snow, and Glaciers and the Water Cycle," 2019, accessed November 11, 2019, [https://www.usgs.gov/special-topic/water-science-school/science/ice-snow-and-glaciers-and-water-cycle?qt-science\\_center\\_objects=0#qt-science\\_center\\_objects](https://www.usgs.gov/special-topic/water-science-school/science/ice-snow-and-glaciers-and-water-cycle?qt-science_center_objects=0#qt-science_center_objects).

<sup>81</sup> Foster, "Antarctic Resources and Human Security," 171.

<sup>82</sup> *Ibid.*, 168.

<sup>83</sup> Brady, *China as a Great Polar Power*, 204.

may seek a change to CCAMLR restrictions to increase fishery access to improve their food security.<sup>84</sup>

The Antarctic is also the location for the search of new micro-organisms that can be used in bio-technologies, known as bio-prospecting. Such discoveries could hold significant commercial value in applications such as pharmaceuticals, anti-freeze proteins, nutritional supplements, even cosmetics.<sup>85</sup> The concern from a security perspective is that unregulated bio-prospecting could be undertaken by states or private interests that could undermine the ATS, or create tension amongst competing interests.<sup>86</sup> Consequently the ATCM is developing regulations to mitigate such risks; however, bioprospecting does add another disrupting effect on the continent.

Antarctica is becoming increasingly popular for tourists, and changes in climate have extended the tourist season to five months.<sup>87</sup> Tourist numbers for the 2017 to 2018 season were up from 44,367 in the previous season to 51,707.<sup>88</sup> and is a trend that is likely to continue. The majority of tourism is seaborne and occurs in the vicinity of the Antarctic Peninsula. However, tourist operators do visit the Ross Dependency, and Verbitsky states that “Antarctic ship-borne tourism is operating in

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<sup>84</sup> Foster, “Antarctic Resources and Human Security,” 160.

<sup>85</sup> Boxall, *Foresight Report*, 37.

<sup>86</sup> Christopher Joyner, “Bioprospecting as a Challenge to the Antarctic Treaty,” in *Antarctic Security in the Twenty-First Century: Legal and Policy Perspectives*, ed. Alan D. Hemmings, Donald R. Rothwell, and Karen N. Scott (London: Routledge, 2012), 213.

<sup>87</sup> Verbitsky, “Titanic Part Two? Tourism, Uncertainty,” 223.

<sup>88</sup> International Association of Antarctica Tourist Operators, “IAATO reports latest Antarctic tourism figures ahead of responsible tourism conference,” April 30, 2018, accessed November 27, 2019, <https://iaato.org/documents/10157/2305849/IAATO+News+Release+-+annual+meeting+opens+2018+FINAL.pdf>.

an increasingly dangerous situation.”<sup>89</sup> Most significantly for New Zealand tourism operations pose risk of both a significant human and environmental disaster. The compounding effects of un-surveyed coastlines and sea beds, icebergs, unpredictable weather, and isolation produce conditions in which the likelihood of an accident is increased, and rescue efforts significantly constrained. Verbitsky argues that such an event could provide a cause for opponents of the current governance structure to “reawaken debate about Antarctica,”<sup>90</sup> Such a debate is unlikely to be in New Zealand’s interests.

The ATS Article I prohibits “any measures of military nature.”<sup>91</sup> This particularly ambiguous definition has been sufficient to maintain the de-militarization of Antarctica.<sup>92</sup> However, advantages in technology are creating difficulty in distinguishing between allowed and prohibited activities under the ATS.<sup>93</sup> Most states report on their military use in Antarctica as required by Article VII of the ATS to maintain the integrity of de-militarization. However, China has failed to report the use of the Peoples Liberation Army (PLA) despite it being well known.<sup>94</sup> Some do assume that this omission by China is a sign of having something to hide.<sup>95</sup>

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<sup>89</sup> Verbitsky, “Titanic Part Two? Tourism, Uncertainty,” 230.

<sup>90</sup> Verbitsky, “Titanic Part Two? Tourism, Uncertainty,” 233.

<sup>91</sup> Secretariat of the Antarctica Treaty, “The Antarctic Treaty.”

<sup>92</sup> Haward, “The Antarctic Treaty System,” 25.

<sup>93</sup> New Zealand Ministry of Defence, *Strategic Defence Policy Statement 2018*, 22.

<sup>94</sup> Brady, *China as a Great Polar Power*, 131.

<sup>95</sup> Bateman, “Strategic Competition and Emerging Security Risks,” 130.

The treaty does allow for a verification regime to ensure states are conforming to the prohibition and other regulations.<sup>96</sup> Signatory nations undertake annual inspections on the various facilities in the treaty area. a joint Russian and US team inspected New Zealand's Scott Base in 2012, and Chile and Argentina inspected China's Great Wall facility in 2016.<sup>97</sup> However, the ATS inspection database shows no inspections for Chinese Kunlun or Taishan Stations.

S. Bateman has questioned the effectiveness of the checks, particularly given the brief periods in which the inspections occur, and the expertise required to understand sophisticated technologies. A 2012 inspection report supports this assertion by noting that the "base commander confirmed there were no weapons" and "did not receive support from the military."<sup>98</sup> Such an assessment assumes a narrow interpretation of military capability and supports the assertion that the inspection regime is superficial. Bateman concludes that there appears to be little political will to conduct more thorough inspections due to concerns that they could become competitive. This resistance raises questions as to the effectiveness of the article.<sup>99</sup>

The presence of space infrastructure in Antarctica that supports military capability is one area of concern for maintaining the integrity of Antarctica's demilitarization. Space is increasingly critical for military communication, surveillance,

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<sup>96</sup> Secretariat of the Antarctica Treaty, "The Antarctic Treaty."

<sup>97</sup> Secretariat of the Antarctic Treaty, "Inspections Database," 2020, accessed March 19, 2020, <https://www.ats.aq/devAS/Ats/InspectionsDatabase?lang=e>.

<sup>98</sup> United Kingdom Foreign and Commonwealth Office, Netherlands Organisation for Scientific Research, and Spanish Polar Committee, *Antarctic Treaty Inspections Programme Report 2012* (London: The Stationery Office, April 2013), 39, accessed February 17, 2020, [https://documents.ats.aq/ATCM36/att/ATCM36\\_att108\\_e.pdf](https://documents.ats.aq/ATCM36/att/ATCM36_att108_e.pdf).

<sup>99</sup> Bateman, "Strategic Competition and Emerging Security Risks," 129.

positioning, mapping and imagery and deployment and defense of ballistic missiles. The US military has defined space as a military domain and has established a Space Command.<sup>100</sup> It is now widely recognized that control of space will be a significant factor in any conflict and that the US dominance in space is no longer assumed. A strength of the US space domain is its ability to establish a global network of space tracking systems due to its various international allies and partners. Countries such as China do not have this luxury.<sup>101</sup>

That makes Antarctica particularly crucial for any other country that wishes to have a global space capability. China is developing its equivalent to the US Global Positioning System (GPS), known as *BeiDou*.<sup>102</sup> Bateman further suggests that it is no coincidence that China has established a station on one of the highest points in Antarctica that is ideally suited for sending, receiving, and intercepting satellite signals.<sup>103</sup> Professor Brady expands by suggesting that China's astronomical program in Antarctica has "direct military applications".<sup>104</sup> However it must be noted China is not alone and that many Antarctic states with such dual-use capabilities have such technologies in Antarctica. The presence of such technologies would present an

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<sup>100</sup> U.S. Department of Defense, "Department of Defense Establishes U.S. Space Command," August 29, 2019, accessed October 2, 2019, <https://www.defense.gov/Newsroom/Releases/Release/Article/1948288/departments-of-defense-establishes-us-space-command/>.

<sup>101</sup> Bateman, "Strategic Competition and Emerging Security Risks," 126.

<sup>102</sup> Brady, *China as a Great Polar Power*, 107.

<sup>103</sup> Bateman, "Strategic Competition and Emerging Security Risks," 126.

<sup>104</sup> Anne-Marie Brady, "Special Report: China's Expanding Antarctic Interests Implications for Australia," Australian Strategic Policy Institute, August 2017, 16, accessed February 17, 2020, <https://www.aspi.org.au/report/chinas-expanding-interests-antarctica>.

obvious military target in a major conflict,<sup>105</sup> but any attempt to modernize the ATS definition to avoid such an outcome would likely be dismissed by the major Antarctic players.

States are not the only users of advanced technology. The use of robotics and unmanned vehicles could increase the accessibility of Antarctica for non-state organizations. A private United Arab Emirates (UAE) business is piloting a \$60M concept to tow an iceberg from Antarctica to the UAE to provide drinking water.<sup>106</sup> Whether the project is successful remains to be seen.

Furthermore, in 2019, the first autonomous unmanned surface vessel (USV) circumnavigated Antarctica.<sup>107</sup> A Hong-Kong non-profit organization funded the project. These examples demonstrate the disruption that is possible in Antarctica by non-traditional actors who wish to take advantage of the lack of governance, resources or opportunities Antarctica presents. Additionally, countries could exploit non-state actors in Antarctica by using them as an intermediary to achieve controversial goals without attribution back to that country, as has been observed in other parts of the globe.

Issue motivated groups have been active in Antarctica for many years.

Opposition to whaling by the Japanese government has been the most visible issue

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<sup>105</sup> Brady, *China as a Great Polar Power*, 107-113.

<sup>106</sup> David Cox, "How Hauling Icebergs Could Help Sustain the World's Thirstiest Regions," NBC News, August 7, 2018, accessed September 15, 2019, <https://www.nbcnews.com/mach/science/how-hauling-icebergs-could-help-sustain-world-s-thirstiest-regions-ncna898036>.

<sup>107</sup> Saildrone, "Saildrone Completes First Autonomous Circumnavigation of Antarctica," August 5, 2019, accessed September 24, 2019, <https://www.saildrone.com/news/unmanned-vehicle-completes-antarctica-circumnavigation>.

due to the direct action taken by the environmental protection group, Sea Shephard.<sup>108</sup> In 2013, Sea Shephard was involved in collisions with Japanese whaling vessels during efforts to disrupt whaling operations.

This type of action by non-government organizations benefits countries that share their views by highlighting the issue, but the risks posed by such actions are significant. The potential for the escalation for states to deploy forces to protect their commercial activities is one scenario that would pose substantial political challenges. Additionally, the potential for a vessel to be sunk during these “clashes” would require a response from the country responsible for search and rescue and the potential for environmental damage.<sup>109</sup>

#### Conclusions of Emerging Antarctic Security Challenges

The previous section outlined a range of emerging security challenges in Antarctica. However, these need to be viewed through the lens of New Zealand’s Antarctic interests which were defined at the start of chapter four. This section will contain that analysis and is summarized in figure 4 at the start of chapter 4.

As is evident, New Zealand has multiple, complementing interests in Antarctica. New Zealand has enjoyed the many advantages that have enabled it to claim a large portion of Antarctica, relative to its small size. Most significantly the

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<sup>108</sup> Sea Shephard announced in December 2018 it will no longer conduct operations in the Southern Ocean in response to Japan upgrading their defence systems for their whaling fleet. Japan announced on December 27, 2018 that it would withdraw from the International Whaling Commission, and stop whaling in Antarctic waters, but would recommence whaling in its own territorial waters.

<sup>109</sup> Joanna Mossap, “The Security Challenge Posed by Scientific Permit Whaling and Its Opponents in the Southern Ocean,” in *Antarctic Security in the Twenty-First Century, Legal and Policy Perspectives*, ed. Alan D. Hemmings, Donald R. Rothwell, and Karen N. Scott (London: Routledge, 2012), 315.

claim remains economically and diplomatically profitable for New Zealand. New Zealand's geography and intellectual Antarctic knowledge make it a useful and popular Antarctic partner for other nations. This is important for New Zealand as explained by the country's prime minister from 1999 to 2007, Helen Clarke who said "the world would get on quite well if we never existed at all, so it is an issue of New Zealand being relevant." Antarctica has a significant role in providing New Zealand a platform to demonstrate its relevance internationally, more so than it would be able to do without it.

Maintaining New Zealand's security in the traditional sense is another motivator. Having Antarctica militarized would eliminate the principles of peaceful international cooperation that has underpinned Antarctic governance. Instead, influence and control of the continent would sit with the state with the ponderance of military strength and would undermine New Zealand's existing means of influence in Antarctica. Furthermore, the militarization of Antarctica could potentially expose New Zealand's southern flank to an adversary. The consequences of which would significantly change New Zealand's security environment.

Overall, New Zealand has convincing interests in the Antarctic, more so than just about any other country. However, those interests exist in the current strategic environment in which New Zealand enjoys the presence of United States power in the region and a still effective rules-based system. The reality is that the Ross Dependency is almost 2,500km from New Zealand's mainland, no New Zealander's call it home and the claim is not widely internationally recognized. New Zealand can enjoy the benefits of its interests while the challenges contesting its affairs are insignificant, and within New Zealand's national power to shape and contain.

That national power used by New Zealand is done mostly through diplomatic means (see figure 5). Supporting other Antarctic nations is seen as a long-term method for encouraging co-operation, providing a platform for dialog and allowing New Zealand some input to other nations' activities. It also contributes diplomats to serve within the ATS. Furthermore, the military is used to support joint logistics' efforts and New Zealand's scientific presence, as well as enabling the enforcement of environmental protections.

The emerging security challenges New Zealand faces are broad. With the reemergence of powerful states, particularly China, Antarctica holds important strategic value to employ modern technologies. Antarctica provides an excellent location for satellite receiving stations that enable the establishment of global position systems, missile control and defense, and military communications. Such technologies can be defined as having civilian functions and are therefore ambiguous under the ATS military prohibition.

The risk with such capabilities being present in Antarctica is that it undermines the ATS and risks these capabilities becoming a target in a conflict between super-powers. The consequence of this could be an overt use of defensive measures to protect such capabilities. Antarctica is also seen as important as controlling global chokepoints. The denial of the Panama Canal leaves only the Drake Passage for access from the Pacific to the Atlantic Oceans, although some distance from the Ross Dependency, such competition for the Passage would significantly affect the ATS principles.

However, the militarization of the Antarctic is unlikely to be in any state's best interests in the near future. The United States still maintains the preponderance of military power in the Pacific and globally which acts as a deterrence. Furthermore, the

militarization of Antarctica would draw on military resources that would be deemed of more use at the point of contention between conflicting powers. Antarctica is likely to be a sideshow to any super-power conflict.

The challenge is that discrete militarization is likely to continue to build to set the conditions for 2048 and to install strategic infrastructure for emerging super-powers to contest US dominance. Such actions exploit the grey area of the ATS protocols to stay below the threshold of conflict, and as seen in other parts of the globe, other nations are unwilling or unable to find proportionate reactions to such situations.

Resource access could also prompt militarization. Although the extraction of resources is currently both financially and practically prohibitive, global population growth and technology developments will likely change that situation in the future. Many nations view access to Antarctic resources as evitable and legitimate. In light of this China is one, yet not only state actor in Antarctica who will likely seek a change to the status-quo in 2048 to improve its resource security.

At present, the ATS framework suits China's activities and ambitions on the continent. As the fastest growing actor in Antarctica, it is likely by 2048 they will enjoy a significant physical presence as well as intellectual and diplomatic influence. This would provide them a legitimate and robust position to shape the ATS post-2048.

Illegal or unregulated activities, by both state and non-state actors, are an emerging challenge to Antarctic security. Such actions are likely to be centered on illegal, unregulated or unreported (IUU) fishing, bioprospecting, or unregulated commercial activities such as tourist operations or scientific research. As technology improvement reduces the barriers to accessing the continent, combined with the power of multi-national entities such actions are likely, as demonstrated by the UAE

iceberg for drinking water plan. Such activities undermine the legitimacy of the ATS if not addressed but achieving a widespread consensus on commercial businesses may be just as tricky as nations attempting to enforce such regulations. The security risk is a minor one but would undermine New Zealand's interests and such actions in the Ross Dependency would require effort from New Zealand to deter escalation.

The final security challenge is the growing risk of an environmental or human disaster in the Ross Dependency. Such a disaster would likely be the result of a tourist expedition, other commercial interests, or worst case, a New Zealand government asset. New Zealand has the search and rescue coordination responsibilities, of which it has considerable experience; however, the response would be an international one. The security risk been that there would be an expectation of a New Zealand led response, which could be long-lasting in the case of an environmental disaster. Any perception of New Zealand's inadequate response could undermine its narrative about its Ross Dependency claim and be used by other nations to advocate for change. Such a scenario is unlikely to result in a serious challenge to New Zealand's interests but could be used to the advantage of another state who seeks more significant influence in the region to increase their legitimacy.

In summary, the emerging security challenges in Antarctica of militarization, resource access, illegal & unregulated activities, and environmental and human disasters in Antarctica (table 7). However, they are unlikely to escalate to a point where New Zealand is unable to maintain its current interests. This is due mainly to the ATS still being a functioning framework that works in most countries interests at this point, the United States still holding the preponderance of global military power, and the difficulty in accessing Antarctica.

The consequence for New Zealand is that the ATS is likely to continue to exist in its current form and to work in New Zealand's interests until 2048. It is expected at this period that the culmination of improved technologies enabling easier access to Antarctica, higher demand for resources coinciding with resource scarcity elsewhere, and the decline in United States influence will result in a much more uncertain and complex Antarctic security environment. Post 2048 it is likely New Zealand will have its claim questioned, and also its objection to resource extraction challenged.

Despite New Zealand's aversion to such developments, it will be mostly powerless to prevent them and will be required to condense its Antarctic interests in the face of more significant states potentially legitimate actions. New Zealand will still maintain relevancy due to its geographical proximity, however leveraging this is diminished by other "gateway countries" (Australia, South Africa, Chile and Argentina) and advances in technology that may enable bypass.

At present, New Zealand's Antarctic interests are appropriate and practical in the current strategic environment. New Zealand policymakers are not ignorant of future challenges, and it appears New Zealand is doing much more to prepare for a changing Antarctica than many other claimant states. International co-operation with other Antarctic nations seeks to leverage New Zealand's proximity, intellectual knowledge, and expertise to ensure a state's presence in Antarctica is tied to New Zealand in some way.

Given the security challenges that have been outlined concerning New Zealand's interests, a transition will be made to how the conclusions made effect the NZDF operating in Antarctica to support New Zealand's interests. The next section of this chapter will contain discussions on the challenges faced by the NZDF in both its size and the consequences of New Zealand's geographic isolation.

### Challenges of Size for the NZDF

The third variable that is the focus of this study is the challenges faced by the NZDF in maintaining New Zealand's Antarctic security interests. Table 3 adds to the table presented in chapter 2, and earlier in chapter 4, and illustrates the key themes that answer secondary research question 2.

There are two significant characteristics that define the challenges of the NZDF, these are its size (see figure 8), and New Zealand's geographic isolation (see figure 9). Each of these variables will be analyzed in the context of the NZDF's Antarctic responsibilities. Finally, the findings for the analysis will inform the model used previously to identify the relationship between the emerging Antarctic security challenges and New Zealand's Antarctic interests.

Table 3. Thesis Analysis: Effects of NZDF's Small Size		
<b>Problem Statement</b> How does the NZDF as a small military that is geographically isolated support New Zealand's security interests in Antarctica		
	<b>Sources</b>	<b>Findings</b>
<b>SRQ1 (Part 1) – Antarctica Security Challenges</b>	Antarctic Security Strategic competition and emerging security risks: Will Antarctica remain demilitarized? The Antarctic Treaty as a Security Construct Antarctic Resources and Human Security Titanic Part II? Tourism, uncertainty, and insecurity in Antarctica China as a Great Polar Power Foresight Report: Deep South Exploring Change in Antarctica	Militarization Resource access Illegal and unregulated activity Major environmental or human incident  Current security environment likely to be challenged in anticipation of possible 2048 Madrid Protocol amendment
<b>SRQ1 (Part 2) – New Zealand's Antarctic Interests</b>	New Zealand's Antarctica 2018 Strategic Defence Policy Statement Antarctic New Zealand 2016-2020 Statement of Intent New Zealand Foreign Affairs and Trade—Statement of Commitment to Antarctica Foresight Report: Deep South Exploring Change in Antarctica	Modest economic benefits, environmental protection of region and fishery stocks. Deter militarization to New Zealand's south and use of Antarctic presence for diplomatic influence. Interests have never been significantly challenged.
<b>SRQ2 – Effects of Small Size of the NZDF</b>	2018 Strategic Defence Policy Statement 2019 Defence Capability Plan Military Force Structures in Small states: Providing for Relevant and Credible Military Capability Cutting Their Cloth: New Zealand's Defence Strategy Foresight Report: Deep South Exploring Change in Antarctica New Zealand's Dangerous 'Strategic Apathy in an Uncertain Age'	Limited military effects Reliance on international partners
<b>SRQ3 – Effects of Geographic Isolation</b>	Same as above	Operations in the Ross Dependency are non-discretionary The NZDF has to expect to operate unilaterally in the Ross Dependency The NZDF lack persistent capabilities to maintain situational awareness

Source: Created by author.

## The Size of the NZDF

The first challenge of size is an obvious constraint. Table 4 displays the key themes that result as a consequence in the Antarctic context. The following section will discuss these themes of limited military effects and need for international partners in further detail.

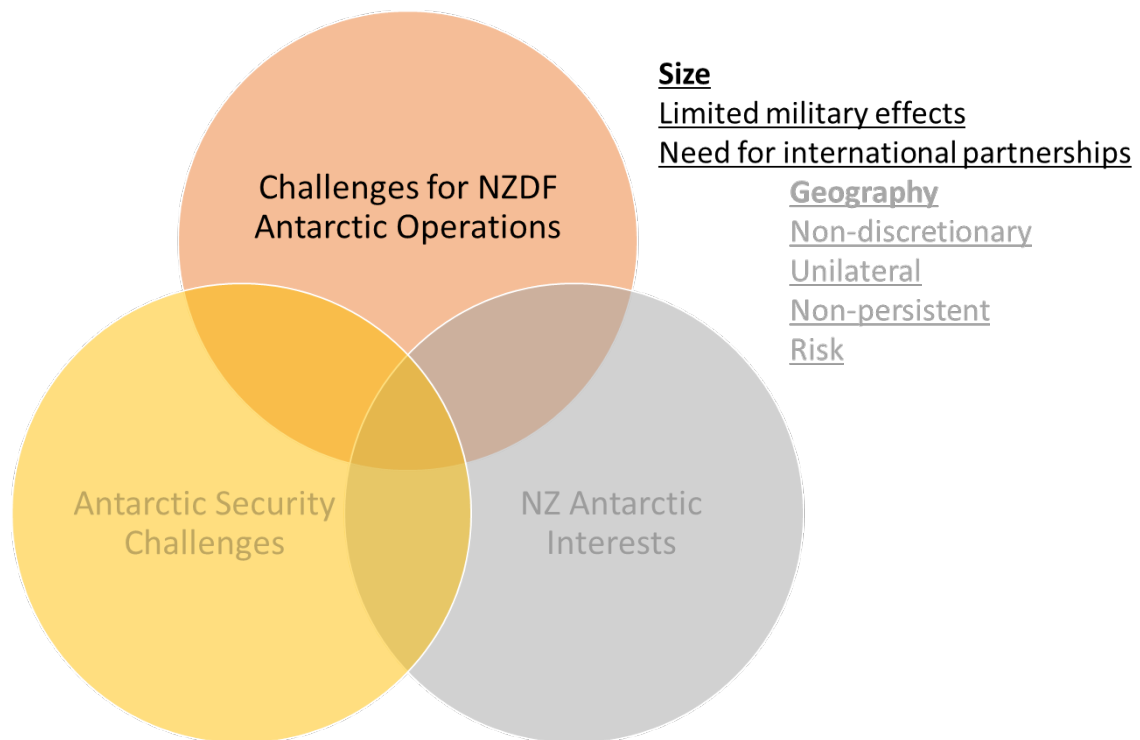


Figure 8. Challenges of size for the NZDF

*Source:* Created by author.

The NZDF is a small military of a little over 12,000 uniformed personnel (Active and reserve) that make up three services. The following paragraphs briefly detail the size of each service

The Royal New Zealand Navy (RNZN) has 2,718 personnel.<sup>110</sup> that sail ten vessels. The Navy seeks to maintain a blue-water expeditionary warfighting capability to contribute to international security missions and does so with two ANZAC Frigates, and a sustainment ship that is also ice-strengthened for Antarctic resupply (enters service in 2020). In recent years, the focus has been on developing a patrol fleet of six vessels for constabulary duties within New Zealand’s EEZ, and safety, stability, and assistance operations in the South Pacific. A sealift capability is provided by a single multi-role vessel that has enabled broader joint response options in the South Pacific. As a result of its success, another similar ship is planned for within the next decade.<sup>111</sup> A specialist dive and hydrography ship provide specialist capabilities that round out the fleet.

The New Zealand Army is 6,647 strong, including reserves.<sup>112</sup> It seeks to maintain combat-capable land elements capable of operating across the continuum of conflict up to battalion level. It is structured and trained to be flexible to ensure it is capable of operating independently in HADR and security operations in the South Pacific, or combat operations further afield as part of a coalition.

The Royal New Zealand Air Force (RNZAF) is 2,738 in strength. It maintains capabilities in strategic and tactical airlift and maritime patrol. These capabilities contribute to outputs across the spectrum from domestic fishery patrols, search and rescue in the South Pacific, and in high-end environments as part of a coalition. Capabilities also include a tactical rotary wing squadron and a naval helicopter

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<sup>110</sup> New Zealand Defence Force, “Personnel Summary,” 2019, accessed September 27, 2019, <http://www.nzdf.mil.nz/personnel-records/personnel-branch/>.

<sup>111</sup> New Zealand Ministry of Defence, “Defence Capability Plan 2019,” 14.

<sup>112</sup> New Zealand Defence Force, “Personnel Summary.”

squadron, which contributes to the maritime combat capability.<sup>113</sup> The strike/ fighter capability was disbanded in 2001 as a result of a government decision to prioritize funding on more flexible military capabilities suited to New Zealand's security environment.<sup>114</sup>

The NZDF has undergone a centralization of functions over the last twenty-years to gain efficiencies and commonality. The formation of HQ Joint Forces New Zealand (HQJFNZ) to function as the operational headquarters for all NZDF operations in 2001 was the start of an effort to develop a joint approach and improve coordination between the three services.<sup>115</sup> The single services are responsible to raise, train, and sustain forces that are then assigned to the Commander Joint Forces for operational deployments.<sup>116</sup> More recently, the NZDF has centralized common training with the establishment of the New Zealand Defence College, along with other initiatives where there are commonalities amongst the services.

#### Current Outputs of the NZDF

The 2016 Defence White Paper and 2018 Strategic Defence Policy Statement provide the strategic direction for the NZDF. The ten principle roles for the NZDF in support of the national security objectives are:

1. Defend New Zealand's sovereign territory;

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<sup>113</sup> Royal New Zealand Air Force, "Squadrons of the RNZAF," September 29, 2019, accessed September 29, 2019, <http://www.airforce.mil.nz/about-us/who-we-are/squadrons/default.htm>.

<sup>114</sup> Rolfe, *Cutting Their Cloth: New Zealand's Defence Strategy*, 19.

<sup>115</sup> Hon Derek Quigley, "The Evolution of New Zealand Defence Policy," *Security Challenges* 2, no. 3 (October 2006): 55.

<sup>116</sup> New Zealand Defence Force, "About Us," 2019, accessed September 29, 2019, <http://www.nzdf.mil.nz/about-us/hqjfnz/default.htm>.

2. Contribute to national, community and environmental wellbeing and resilience, and whole of government security objectives;
3. Meet New Zealand’s commitment as an ally of Australia;
4. Support New Zealand’s civilian presence in the Ross Dependency of Antarctica, and participate in whole of government efforts to monitor and respond to activity in the Southern Ocean;
5. Conduct a broad range of operations in the South Pacific, including leading operations when necessary to protect and promote regional peace, security and resilience.
6. Make a credible contribution in support of peace and security in the Asia-Pacific region;
7. Protect New Zealand’s wider interests by contributing to international peace and security, and the international rule of law;
8. Contribute to the advancement of New Zealand’s security partnerships;
9. Participate in whole of government efforts to monitor the strategic environment; and
10. Be prepared to respond to sudden shifts in the strategic environment.<sup>117</sup>

The NZDF roles in the DPS expanded from the 2016 Defence White Paper. Specifically, in the inclusion of “community and environmental wellbeing and resilience,” and an expansion of the NZDF’s role in the South Pacific to include “abroad range of operations” and to “promote regional peace, security, and resilience.”<sup>118</sup>

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<sup>117</sup> New Zealand Ministry of Defence, *Strategic Defence Policy Statement 2018*, 8.

<sup>118</sup> *Ibid.*

In 2019 the NZDF participated in twelve overseas missions under the output of contributing to international security. This has been consistent with NZDF deployments over the last twenty years, peaking over a period from 2006-2012 when up to 9 percent of the force was deployed in Afghanistan, Timor Leste, the Solomon Islands, concurrently with ongoing minor UN missions.<sup>119</sup> The New Zealand government indicates in its security policies that the use of the NZDF will continue as “incidents requiring a New Zealand response are more likely to occur.”<sup>120</sup> So what do those future outputs look like for the NZDF?

### Future Outputs of the NZDF

The 2018 Strategic Defence Policy Statement paints an environment that will require more of the NZDF. As a consequence of both internal and external factors, the NZDF developed a strategy out to 2035, known as Future 35 (F-35). The plan seeks to deliver an integrated defense force that is agile and able to provide robust response options for the government. Its success to date in achieving its mid-term milestones of establishing a Joint Amphibious Task Force and enhancing its combat capabilities has resulted in the acceleration of the strategy by ten years. By 2025, the NZDF goal is to have an integrated defense force that is “connected, coordinated and agile” that is “working with our partners to achieve better security outcomes for New Zealanders.”<sup>121</sup> The goal addresses the challenges of size by integrating capabilities to

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<sup>119</sup> Rolfe, *Cutting Their Cloth: New Zealand’s Defence Strategy*, 28.

<sup>120</sup> New Zealand Ministry of Defence, *Strategic Defence Policy Statement 2018*, 8.

<sup>121</sup> New Zealand Defence Force, “NZDF 2025 Strategy Blueprint,” March 2018, accessed November 23, 2019, <http://www.nzdf.mil.nz/downloads/pdf/public-docs/2019/nzdf-2025-strategy-blueprint.pdf>.

be greater than the sum of its parts and acknowledging that to be able to achieve any significant military effects then that must be with international partnerships.

Furthermore, in acknowledgment of the NZDF's small size, information is seen as critical in making the right decisions to deliver the capabilities at the right time, place, for the right effect, or to use the information itself to create an effect. The commitment to increase maritime, space and cyber capabilities to enhance information will be a significant factor in future NZDF deployments.<sup>122</sup>

As a consequence of these strategies and the security environment, the NZDF is likely to see an increase in operations in the South Pacific and Southeast Asia region across the spectrum of tasks. The DSP states that the New Zealand government will maintain a high level of discretion as to the size and nature of any contribution outside of New Zealand's immediate neighborhood.<sup>123</sup> The conclusions made from the strategic documents is that New Zealand will continue to assume the continued strength of international order and the rules-based system is deter any threat to the country. Although the NZDF is required to be "prepared to respond to sudden shifts in the strategic environment" there are no provisions to account for such a shift.<sup>124</sup>

It is the frequency and complexity of situations caused by climate change, technology, and by state and non-state actors operating outside of international norms that will change NZDF operations in the future. This will increase the risk of those operations and the growing demand for the limited NZDF resources. In this context how does the NZDF operate in meeting its Antarctic responsibilities?

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<sup>122</sup> New Zealand Ministry of Defence, *Strategic Defence Policy Statement 2018*, 38.

<sup>123</sup> *Ibid.*, 7.

<sup>124</sup> *Ibid.*, 8.

## Challenges of Size for NZDF Antarctic Responsibilities

In figure 8 at the start of this section two significant challenges concerning the NZDF's size in its Antarctic responsibilities were identified. One is the limited ability to achieve enduring military effects; second is its reliance on international security partners. This section will discuss those specific challenges in the Antarctic context.

There are two aspects that limit the NZDF's ability to achieve military effects in Antarctica. One is the lack of depth within the NZDF; second is that operations are prohibited south of 60° latitude. As a small nation, it would be unrealistic to expect New Zealand to have the military capability, let alone the strategic imperative to operate independently. As a consequence, the NZDF has limited means to achieve enduring military objectives with the small size of its military; it lacks the depth and breadth to do so concerning the large size of the Ross Dependency and other outputs. Ultimately the NZDF is designed to operate in the current strategic environment, underpinned by regional stability and confidence in the international rules-based system. Although the Antarctic security challenges are growing, they remain primarily benign, and within the capabilities for the NZDF to operate unilaterally against non-military threats. The risk being that these conditions will be confronted in 2048, and military challenges may very well develop for which the NZDF would not have the means to achieve any meaningful military objectives.

The second aspect of the ability to achieve military effects is the prohibition on the use of military forces in Antarctica, excluding those used in support of any civilian presence. New Zealand exploits this provision to achieve an economy of effort, using its limited national resources to best effect. This is to sustain the scientific mission in Antarctica which remains the primary instrument of lawful

presence. The NZDF supports this presence through its various capabilities but does not use them in a military capacity as to do so would violate the ATS.

The dilemma is, how the NZDF addresses security challenges given that constraint on not being able to operate in territory it is required to protect? It does so by supporting New Zealand's presence as it does currently, by supporting the joint logistics pool, enforcing CCMARL regulations, and defending the broader international rules-based system.

However, the small size of the NZDF limits its capability to sustain the logistics demands of New Zealand's presence, and it is only achieved through the joint logistics program between the United States and Italy. The NZDF lacks the air and sea platforms to contribute proportionately to the joint logistics program. Consequently, the United States provides the majority of the transport links to the Ross Dependency where both countries have bases in close proximity of one another (McMurdo (US) and Scott Base (NZ)). In an effort to balance the contribution the NZDF provides military engineers, drivers, cargo specialists and aircraft maintenance personnel to support the United States Antarctic Program (USAP) at McMurdo. Such support reduces USAP's need to project additional resources from the continental United States but draws on mainly New Zealand Army capabilities that come from units with high readiness requirements for security operations in other theatres.

Partnerships, such as those with the United States and Italy are also considered a way to reinforce diplomatic relationships.<sup>125</sup> Combined with the expectation of growing demand for scientific research as a result of climate change effects and resource security, it is predicted that there will be a higher demand on the need for

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<sup>125</sup> Boxall, *Foresight Report*, 32.

logistic support to maintain New Zealand's presence. As a small partner in the logistic program the NZDF does need to consider the risks associated with not being able to meet its obligations. Possible mitigation could be the commitment of additional military support functions, which would further deplete the NZDF's depth to achieve other outputs in other regions.

The introduction of an ice-strengthen sustainment ship, HMNZS Aotearoa, capable of resupplying both McMurdo and Scott Base, in 2020, will significantly increase the NZDF's capability to contribute to the joint logistics pool. This will enable New Zealand some flexibility to expand its Antarctic presence without risking unbalancing the logistics arrangement. Alternatively, it could withdraw the other capabilities, such as military engineers currently used in Antarctica to be used in their primary outputs. The navy's acquisition will be complemented with the upgrade of the RNZAF's C-130 fleet which will increase the NZDF's air transport capacity to the joint logistics pool.<sup>126</sup>

The introduction of additional capabilities reduces New Zealand's dependency on partner nations. Although international co-operation remains fundamental to New Zealand's Antarctic interests, its claim is still not widely recognized. Furthermore, having the ability to sustain a presence on the Antarctic without reliance on partner nations, whose position on Antarctica's future may very well change, will strengthen New Zealand's position.

The reality is however that given the small size and lack of depth in combat capabilities, the NZDF is unable to achieve enduring military effects to protect the Ross Dependency in a more complex security environment, such as that that may

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<sup>126</sup> New Zealand Ministry of Defence, "Defence Capability Plan 2019," 29.

develop as 2048 nears. The cheap and low-risk support capabilities used at present as part of a multinational effort will be of no use in a contested environment.

It is unrealistic to expect New Zealand to have the economic resources to sustain a military sufficient to defend the Ross Dependency. It is, however, realistic to expect New Zealand to sustain credible combat capabilities that can contribute to the maintenance of the status-quo in Antarctica with traditional partners. Such efforts could include denying or disrupting access to Antarctica from an actor who was acting outside of international law. Such an application of force could be employed outside of the demilitarized area. Having relative credible military capability would provide New Zealand wider scope to negotiate in an uncertain security environment. Without a credible military option New Zealand will be limited to its relatively insignificant diplomatic and economic influence would likely have no other choice but to concede aspects of its Antarctic interests.

As mentioned, such actions would only be feasible with multinational support, and international legitimacy. From the NZDF perspective maintaining close military partners is crucial in mitigating the challenges of its small size.<sup>127</sup> Australia is New Zealand's only formal ally, but a range of bi-lateral and multilateral security relationships enhance New Zealand's security flexibility.<sup>128</sup> For such arrangements to function in New Zealand's interests the NZDF must have credible and capable capabilities that can contribute, and potentially lead such a military action within New Zealand's immediate area of interest.

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<sup>127</sup> Bennett, "Military Force Structures in Small States," 115.

<sup>128</sup> New Zealand Ministry of Defence, *Strategic Defence Policy Statement 2018*, 14.

However, the NZDF's credibility in sustaining combat capable forces is questionable. Vernon Bennett states that the credibility of New Zealand's military capabilities is constrained by the lack of critical mass and structural depth.<sup>129</sup> This is reinforced by the NZDF 2019 Annual Report which indicated several capabilities were unable to meet their readiness and output requirements. For the 2018/19 financial year the Naval Combat capability was only at 50 percent down from 89 percent in the previous period, and the Naval Patrol capability at 67 percent.<sup>130</sup> Many of these figures are attributed to the Navy undergoing upgrades of its frigates, however Jim Rolfe had stated prior that there are "practical problems in providing enough trained sailors to crew the additional vessels."<sup>131</sup>

The government recently realized the risk of having limited depth in capabilities when the British government requested naval support in patrolling the Strait of Hormuz after the seizure of a British oil tanker in mid-2019. Due to the naval combat fleet undergoing upgrades, New Zealand had no capability to offer.<sup>132</sup> In this case, any commitment was discretionary but it demonstrates the lack of depth within the force and a significant risk to New Zealand's credibility to deliver on its security objectives.

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<sup>129</sup> Bennett, "Military Force Structures in Small States," 122.

<sup>130</sup> New Zealand Defence Force, *Annual Report 2019* (New Zealand Defence Force, 2019), 121, accessed November 21, 2019, <http://www.nzdf.mil.nz/downloads/pdf/public-docs/2019/nzdf-annual-report-2019-web.pdf>.

<sup>131</sup> Rolfe, *Cutting Their Cloth: New Zealand's Defence Strategy*, 19.

<sup>132</sup> Boris Jancic, "New Zealand Has No Boats to Send to Strait of Hormuz: Defence Minister Ron Mark – NZ Herald," *New Zealand Herald*, accessed September 29, 2019, [https://www.nzherald.co.nz/nz/news/article.cfm?c\\_id=1&objectid=12260633](https://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=12260633).

Fortunately for New Zealand the security challenges faced in Antarctica are not those faced in the Middle East or elsewhere. The risks associated with the lack of depth and breadth in the NZDF is of little consequence in its Antarctic support role in the current Antarctic security environment. Transport, logistics and engineering capabilities are relatively inexpensive and can be employed within the constraints of the ATS in the support of New Zealand's presence. Furthermore, those capabilities are appropriate in support of international partners for whom New Zealand relies on to maintain its Antarctic presence.

However, those support capabilities are likely to become increasingly ineffective to contain the security challenges as 2048 nears. The current NZDF capabilities will continue to be useful to New Zealand's presence, however, assume that the ATS will remain functioning, and actors will continue to choose to adhere to the norms in Antarctica.

The NZDF currently lacks sufficient capabilities provide greater options to New Zealand in the face of a sudden shift in the Antarctic security environment that will become more plausible as 2048 nears and any subsequent withdrawal of nations from the Madrid Protocols. The assumption is that the NZDF will be able to respond to such sudden shifts in the Antarctic security environment with its military partners. However, if the NZDF's combat capability is questionable those partners, whose interests may not be as important as New Zealand's, maybe less willing to carry the burden to maintain New Zealand's Antarctic interests.

Unfortunately for the NZDF size is not is only challenge. Chapter one alluded to some of the advantages enjoyed by New Zealand's geographic isolation, however the next section will include discussions on the challenges that isolation brings to the NZDF's Antarctic operations.

### Geographic Isolation and NZDF operations in Antarctica

The final secondary research question explores the effects of New Zealand's geographic isolation on the NZDF, and how it executes its Antarctic responsibilities. Table 4 adds on the previous tables displayed earlier in this study and shows the key themes drawn from the literature review as it relates this thesis question.

Table 4. Thesis Analysis: Effects of Geography on the NZDF		
<b>Problem Statement</b> How does the NZDF as a small military that is geographically isolated support New Zealand’s security interests in Antarctica		
	<b>Sources</b>	<b>Findings</b>
<b>SRQ1 (Part 1) – Antarctica Security Challenges</b>	Antarctic Security Strategic competition and emerging security risks: Will Antarctica remain demilitarized? The Antarctic Treaty as a Security Construct Antarctic Resources and Human Security Titanic Part II? Tourism, uncertainty, and insecurity in Antarctica China as a Great Polar Power	Militarization Resource access Illegal and unregulated activity Major environmental or human incident  Current security environment likely to be challenged in anticipation of possible 2048 Madrid Protocol amendment
<b>SRQ1 (Part 2) – New Zealand’s Antarctic Interests</b>	New Zealand’s Antarctica 2018 Strategic Defence Policy Statement Antarctic New Zealand 2016-2020 Statement of Intent New Zealand Foreign Affairs and Trade—Statement of Commitment to Antarctica Foresight Report: Deep South Exploring Change in Antarctica	Modest economic benefits, environmental protection of region and fishery stocks. Deter militarization to New Zealand’s south and use of Antarctic presence for diplomatic influence. Interests have never been significantly challenged.
<b>SRQ2 – Effects of Small Size of the NZDF</b>	2018 Strategic Defence Policy Statement 2019 Defence Capability Plan Military Force Structures in Small states: Providing for Relevant and Credible Military Capability Cutting Their Cloth: New Zealand’s Defence Strategy Foresight Report: Deep South Exploring Change in Antarctica New Zealand’s Dangerous ‘Strategic Apathy in an Uncertain Age’	Limited military effects Reliance on international partners
<b>SRQ3 – Effects of Geographic Isolation</b>	Same as above	Operations in the Ross Dependency are non-discretionary The NZDF has to expect to operate unilaterally in the Ross Dependency The NZDF lack persistent capabilities to maintain situational awareness Physical and mission risk to NZDF operations

Source: Created by author.

New Zealand’s geographic location more than any other factor shapes its strategic outlook and the structure of its military. Few developed western states have

such a luxury of enjoying the benefits of globalization without any credible likelihood of an existential threat. Expenditure on defense has always been below the expectations of its closest friends leading to suggestions that New Zealand enjoys “free-riding” when it comes to defense.<sup>133</sup>

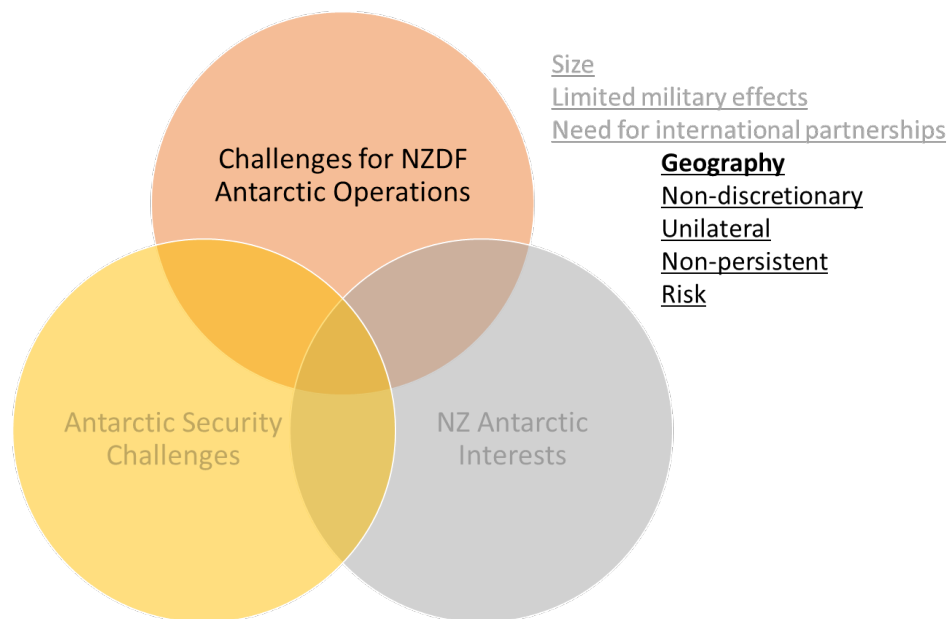


Figure 9. Challenges of geography for NZDF Antarctic Operations

*Source:* Created by author.

Counter to that assessment New Zealand argues that it has shaped its military to meet its strategic realities, and it is unrealistic for such a small nation to be able to maintain meaningful combat naval and air forces.<sup>134</sup> Furthermore, maintaining such forces would not be suitable for the security needs of the region. Consequently, since the 1990s the NZDF has been shaped to meet New Zealand’s foreign policy objectives, rather than for its defense. Recent history would suggest that New

<sup>133</sup> Rolfe, *Cutting Their Cloth: New Zealand’s Defence Strategy*, 35.

<sup>134</sup> Quigley, “The Evolution of New Zealand Defence Policy,” 60.

Zealand's approach has been the right one and has enabled it to have maintained credible niche combat capabilities for multinational operations.

However, this approach to defense has been only possible due to New Zealand's geographic isolation which has provided New Zealand discretion. Jim Rolfe states that "the further away a region from New Zealand, the more choices it has about whether it should send its armed forces."<sup>135</sup> The fact is everything is far away from New Zealand and this provides New Zealand a great deal of discretion in whether to commit forces. If it does provide forces, it has further choices on the type, location and duration of such a military commitment.

It is in this context in which the NZDF is structured to operate in Antarctica. Capabilities designed for employment elsewhere are employed in the Antarctic mission in the summer months. The uncontested and stable region has allowed the NZDF to operate in a completely benign environment, except for that of the harsh climate. However, in recent years in recognition of the emerging security challenges the NZDF has realized that a more deliberate approach is needed to be taken in its Antarctic responsibilities. The next section will discuss that approach and the challenges for the NZDF due to its geographic isolation, and that of Antarctica.

#### Impact on geographic isolation on the NZDF operations in Antarctica

There are four main impacts on NZDF operations in Antarctica as a consequence of New Zealand's geographic isolation (see figure 9). The first is that the New Zealand government is going to consider NZDF deployments in Antarctica to be non-discretionary. The 2018 Strategic Defence Policy Statement states;

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<sup>135</sup> Rolfe, *Cutting Their Cloth: New Zealand's Defence Strategy*, 7.

The government's highest priority for the Defence Force is its ability to operate and undertake tasks in New Zealand's territory (including its EEZ) and its a neighborhood, from the South Pole to the Equator.<sup>136</sup>

Such statements make it clear that NZDF operations in Antarctica are non-discretionary. The challenge is that the South Pacific is also "non-discretionary" and the NZDF lacks the depth in capabilities to be able to respond over the vast geographical space. The NZDF has overcome this challenge through the flexibility of its capabilities.

Flexibility is often a cliché in military terms. It is a principle of war and a quality that every military seeks to maintain. For the NZDF flexibility is less of a vision; instead, it is forced upon it by the realities of its size compared to its outputs. The 2019 Defence Capability Plan details flexibility as a principle in NZDF capability development. Platforms and capabilities are expected to be employed "to deliver a broad range of activities that support New Zealand's overall wellbeing."<sup>137</sup> This is within the context of New Zealand "remaining confident that the country does not face a direct military threat"<sup>138</sup> and that financial considerations will take precedence over broader capability.

Maritime surveillance aircraft are used frequently for search and rescue, EEZ patrols, as well as high-end tasks in support of defense partners.<sup>139</sup> This flexibility extends to the land forces that are "configured to respond to tasks ranging from

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<sup>136</sup> New Zealand Ministry of Defence, *Strategic Defence Policy Statement 2018*, 29.

<sup>137</sup> New Zealand Ministry of Defence, "Defence Capability Plan 2019," 7.

<sup>138</sup> New Zealand Ministry of Defence, "Defence White Paper 2016," 10.

<sup>139</sup> New Zealand Ministry of Defence, "Defence Capability Plan 2019," 14.

humanitarian support through combat.”<sup>140</sup> Many NZ Army units have outputs across the spectrum of operations, from providing support to the civilian authorities through joint combat operations. The RNZN and logistics capabilities for the NZ Army and RNZAF are particularly affected by such demands. This flexibility within units comes at the risk of readiness.

The NZDF has three levels of readiness, operational level of capability (OLOC), directed level of capability (DLOC), and basic level of capability (BLOC). This enables units to maintain competencies in a range of outputs, but without the resource and expense required to maintain OLOC which is the required level to be operational effective. Once a unit is notified for deployment, in theory, it should have sufficient notice to complete OLOC training for the specific mission, threat, and environment.<sup>141</sup> The levels of readiness relate to the other mitigating principle of size being discretion. Given the discretionary nature of expeditionary operations most units are held at DLOC. It is common for most NZ Army units to have elements of the unit at varying levels of readiness for differing outputs. In practice this is problematic and inevitably results in some tactical level functions been held at BLOC.

Capabilities used in Antarctica are task-organized and are employed at BLOC. However, the units from which the personnel and equipment are sourced have higher readiness for operations in the South Pacific and contribute to international peace and security. The acquisition of ice-capable vessels for the RNZN, personnel growth for the Army and fleet upgrades for the RNZAF seek to reduce this challenge. However,

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<sup>140</sup> New Zealand Ministry of Defence, *Strategic Defence Policy Statement 2018*, 35.

<sup>141</sup> Rolfe, *Cutting Their Cloth: New Zealand's Defence Strategy*, 13.

in the case of the patrol vessel planned for mid-2020's its only function will be to operate in the Southern Ocean in a constabulary role.<sup>142</sup> Such a specific platform is suitable for the existing Antarctic security environment, but significantly limits the NZDF's military options should a sudden shift in security occur. Its single-use focus contradicts the NZDF's own capability development priorities of having flexible platforms.<sup>143</sup>

With the Ross Dependency being non-discretionary the NZDF is going to have to take risk in its approach. As mentioned earlier the Ross Dependency is 2,500km away from New Zealand, there is no indigenous population to protect and New Zealand's claim is not widely recognized. Compare that to the South Pacific where New Zealand has vital interests that directly relate to the security of its citizens and obligations to New Zealand's Pacific territories. The NZDF cannot choose where it operates but can decide how. The increasing Antarctic security challenges are going to draw further on the NZDF, but such demands must be viewed in the context of other NZDF outputs.

The second challenge is that the NZDF will have to be prepared to act unilaterally in the Ross Dependency as New Zealand's Antarctic claim is not recognized by most countries. Although the ATS allows for such territorial claims, New Zealand has traditionally been "cautious about asserting the Ross Dependency claim" to avoid friction in the ATS.<sup>144</sup> One of New Zealand's strongest Antarctic

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<sup>142</sup> New Zealand Ministry of Defence, "Defence Capability Plan 2019," 33.

<sup>143</sup> *Ibid.*, 22.

<sup>144</sup> Brady, "New Zealand's Antarctica," 150.

partners, the United States, does not recognize New Zealand's claim.<sup>145</sup> It may be argued that many of the emerging security risks identified in this study are likely to be shared with New Zealand's Antarctic partners, including the United States, and any response to a security challenge would be multi-lateral. However, the political issue of claim recognition may constrain the extent some partners are willing to extend support in such a scenario.

This point conflicts with the assertion made in the previous section which stated that New Zealand would need multinational military support if it wished to defend its Antarctic interests. Given this conclusion New Zealand needs to emphasize its shared security challenges rather than the Ross Dependency claim. Such actions may mitigate the challenge of having to operate unilaterally in the Ross Dependency.

The third factor of geography is the lack of persistent situational awareness presence in the Ross Dependency. The enormous area in which the NZDF is required to monitor creates significant gaps in situational awareness. A range of systems are used to provide awareness however many of these rely on third parties or the compliance of those operating within the Ross Sea. Any physical presence relies solely on the NZDF platforms. In the case of maritime air patrol, the use of expensive combat-capable anti-submarine and ISR platforms is an inefficient use of aircraft for such duties. Furthermore, such platforms are restricted in their ability to operate within the Ross Dependency due to ATS restrictions on military. As a consequence, the NZDF lacks the ability to gain timely and persistent information in the Ross Dependency.

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<sup>145</sup> Christopher Joyner, "US Foreign Policy Interests in Antarctica," in *The Emerging Politics of Antarctica*, ed. Anne-Marie Brady (London: Routledge, 2014), 113.

The fourth factor is risk. The NZDF must operate from one of the most isolated countries in the world to the most isolated continent in the world. The Southern Ocean must be negotiated to reach the Ross Dependency in which ice-bergs present hazardous obstacles. Deploying single ships into such conditions comes with obvious risks to the safety of the ship and crew, and also risks the RNZN's ability to achieve mission's success. In 2015 an RNZN patrol was unable to board a fishing vessel operating illegally in the Ross Sea which drew criticism about the NZDF's ability to enforce the CCALMR.<sup>146</sup>

The RNZAF face similar challenges with air operations. In 2013 an RNZAF flight with 130 people on board was forced to land in a complete whiteout in Antarctica when the weather changed after passing the point of no return from Christchurch. The potential for disaster was significant, despite the crew adhering to all regulations.<sup>147</sup> The consequence of such risks is apparent, but from an operational perspective, it is the considerable time and resource required to train and maintain naval and aircrews capable of operating in such environments at the expense of military readiness.

For land forces, Antarctic operations remain benign, and the risk posed comes in their ability to maintain land combat readiness for other outputs. Land capabilities deployed to Antarctica are done so for their specific specialty, and little training is required. Their individual level of training is sufficient for the benign environment,

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<sup>146</sup> Felicity Ogilvie, "NZ Navy Attempts to Board Illegal Fishing Boats in Southern Ocean," Text, ABC News, last modified January 23, 2015, accessed September 12, 2019, <https://www.abc.net.au/news/2015-01-14/new-zealand-navy-attempts-to-board-illegal-fishing-boats/6016922>.

<sup>147</sup> Charlie Mitchell, "Murray McCully's Dramatic Antarctic Flight Report Released," Stuff, accessed November 26, 2019, <https://www.stuff.co.nz/travel/news/65543703/murray-mccullys-dramatic-antarctic-flight-report-released>.

and the relatively short duration. The impact is on the availability of those capabilities for maintenance of readiness for specific military deployments elsewhere. The 2019 NZDF Annual Report states that “readiness options are impacted by people and equipment availability” due to “scarcity of enabling elements.” It is reasonable to conclude that the use of military capabilities in support of the Antarctic civilian presence does impact some capabilities and risks land combat readiness.

### Future Operations in Antarctica

This section of the study will inform the intersection of the Antarctic security challenges and the challenges of the NZDF operating in Antarctica. The conclusions will identify the actions needed by the NZDF to mitigate, avoid or contain the emerging threats. As the Antarctic security environment becomes increasingly competitive as interested states seek to set suitable conditions for the likely 2048 renegotiations, the NZDF can expect their role to evolve.

One area that will likely be enhanced will be the contribution of a construction engineer, logistic and communication capabilities that provide maintenance of facilities, support to partner nations, and reinforce New Zealand’s presence on the ice. This is in addition to the functions that contribute to the Joint Logistics Pool with the United States and Italy. The NZDF will continue to provide air terminal capabilities at Christchurch Airport. The introduction of HMNZS Aotearoa, which will be capable of reaching McMurdo Station, combined with the planned replacement of the C-130 fleet will significantly improve the NZDF’s lift capacity to contribute to the joint logistics pool and sustain the Antarctic presence.

The growing presence of tourism operations in Antarctica, and the risk caused by ice-bergs and extreme weather increase the likelihood of a major maritime

incident. Given New Zealand's significant search & rescue area of responsibility, and the popularity of the Ross Sea for tourist operators it is feasible such a disaster could occur that would require a significant New Zealand response. New Zealand is already proactive in mitigating many of the risks through regulation and monitoring; however, any perceived delay in an intervention has the potential to degrade New Zealand's credibility in demonstrating its claim. The acquisition of a specialist patrol vessel with capability for extended patrols in the Southern Ocean should ensure the NZDF has a vessel within a reasonable response time during peak tourist periods while conducting resource protection duties.

Those resource protection duties using maritime patrol and surveillance capabilities will be increased to mitigate the growing presence of both legal and illegal fishing in the Ross Sea Protected Area and the CCAMLR area for which New Zealand is responsible. The acquisition of an ice-strengthened sustainment and patrol vessel will provide the ability for more persistent patrols and improved ability to identify, board, and if necessary apprehend any illegal actors.

Naval patrol capabilities may also be required to monitor or intervene in the event of non-state actors operating in Antarctica. Activities by non-state actors, such as commercial or issue motivated groups are likely to be subject to legal and diplomatic complexities that will pose a dilemma for the New Zealand government and NZDF commanders. As a consequence, the NZDF will have to be increasingly aware of the actors involved in Antarctica and ensure the appropriate agency with jurisdiction is available on such patrols to provide legitimacy and to demilitarize any response.

The acquisition of new maritime patrol aircraft, the P8 Poseidon will improve the ability to monitor activities in the Ross Dependency, although it is recognized that

such a platform is an expensive and inefficient asset for identifying fishing boats and other non-military activities. The P8's priority will remain contributing to global international security operations, and the purchase of a long-range uncrewed aircraft capability will likely provide a more cost-effective and persistent platform for which to support resource protection functions. However, the use of the P8 may expand beyond resource protection into military surveillance in the region.

It is the surveillance of other nations' activities that may become more likely given Sam Batemans conclusion that some countries will increasingly test the Antarctic Treaty.<sup>148</sup> Having modern surveillance capabilities, including space-based systems would provide the NZDF the ability to provide situational awareness of any activities presumed to be breaching the Treaty. However, such operations would violate the Antarctic treaty itself in using military capabilities below 60° South and provide cause for protest from any nation that was the potential target of such surveillance. Any such operation would pose a significant diplomatic risk; however, the consequences of a military buildup on the continent would likely be higher still. It would be naïve to believe that New Zealand would not wish to gain such information in order to seek resolution through the ATS, or most likely, the UN security council to limit the consequences of such an action.

### Conclusions of Geography

The challenges of geography on NZDF operations intersect with the emerging challenges in Antarctica, and New Zealand's security interests. In relation to the emerging security risks there are the following areas that require mitigation, avoidance or protection.

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<sup>148</sup> Bateman, "Strategic Competition and Emerging Security Risks," 129.

Militarization. NZDF needs to be able to monitor and inform, along with other government agencies on risks to New Zealand's security. Priority to identify militarization should remain with existing ATS mechanisms for inspections, however as discussed earlier such inspections are infrequent, and of questionable effectiveness.<sup>149</sup> Any monitoring of other nations' activities could only be conducted outside of 60° Latitude South. Such monitoring would be a sensitive topic and is outside of the scope of this study. However, it remains a challenge for the NZDF to consider further given the lack of ability to maintain a persistent presence in the region and the risk of losing the initiative to a competitor seeking to disrupt the status quo.

The other aspect of militarization is the reliance on NZDF resources to sustain New Zealand's Antarctic presence. Although the use for the military is appropriate under the ATS it does create the opportunity for other states to justify using their military outside of the scope of the provisions. Moreover, the reliance on the NZDF to sustain an Antarctic presence makes New Zealand's Antarctic operations at risk of being secondary to high priority needs for the capabilities elsewhere.

The challenge of resource access remains largely at the political level. Countries are preparing themselves to be in a greater negotiating position in 2048 to be able to achieve their interests. It is expected that 2048 will be aligned with technology developments that improve access and extraction, depletion of other global resources, a growing global population and greater strategic competition. The NZDF can contribute to minimizing this security challenge by contributing to the integrity of the ATS and wider international rules-based system. Furthermore, the

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<sup>149</sup> Bateman, "Strategic Competition and Emerging Security Risks," 129.

ability to maintain persistent situational awareness and respond to incidents in the Ross Dependency will demonstrate the NZDF's expertise in the Antarctica environment. Being able to act unilaterally increases the NZDF's response time and freedom of action, however, acting independently will reduce the effects that can be achieved.

Similar factors exist in the NZDF's response to illegal and unregulated activity. The NZDF already has considerable experience of monitoring and enforcing marine and environmental resource protection in the Ross Dependency and greater Southern Ocean. However, the challenge is only going to increase as global fishery stocks become increasingly depleted, and technology enables greater access for commercial and issue motivated groups. The necessity to maintain the integrity of the ATS and its regulations is critical for New Zealand's interests, and the NZDF must be able to increase its situational awareness and response to those illegal or unregulated activities. Failure to do so would invite greater interference, or another state taking the opportunity to demonstrate their presence in New Zealand's absence.

To maintain such a presence is reliant on naval and maritime air patrols. The use of such platforms is expensive in economic and human resources. Furthermore, their effectiveness as demonstrated in 2015 is questionable. With fishing vessels that are unwilling to respond to international law and operating in an environment where boarding vessels to force compliance is often prohibited by weather conditions, the need for manned platforms can be questioned.

Often in such cases the most effective deterrence is denying IUU fishing vessels the ability to sell their catch in the jurisdictions where they port. However, such methods require multilateral co-operation and would not work in the case where a state is justified in harvesting the resource for their own food security.

Given both perspectives, it can be concluded that there will remain a need for a physical presence in the Ross Dependency to enforce resource protections.

However, given the lack of depth and broad outputs the NZDF needs a more efficient method for monitoring such as remotely piloted aircraft and space-based surveillance.

Increasing the situational awareness and ability to respond in the Ross Dependency will also be critical to addressing the final security challenge of a major environmental or human disaster. There is currently a reliance on international capabilities to effect rescues in the Ross Dependency. The fact that the NZDF is unable to maintain a persistent presence contributes to this situation. Furthermore, any response to a disaster is going to be inherently risky, and the limited NZDF capabilities, combined with the large geographical distances means NZDF will have significant risks to mitigate during a response.

In summary, geography is a defining challenge for the NZDF operating in Antarctica. The effects of having no discretion, having to operate unilaterally, being unable to maintain a persistent presence and being exposed to the risk of the unique environment shape how the NZDF address the emerging security challenges. When the challenges of geography are included with the challenges of size and analyzed against New Zealand's interests, conclusions can be made on the areas of risk in the ability of the NZDF being able to maintain New Zealand's security interests in Antarctica.

In the final chapter conclusions will be made from this analysis in chapter four, and recommendations made for further study and on how the NZDF can address the challenges identified.

## CHAPTER 5

### CONCLUSIONS AND RECOMMENDATIONS

While the strong do what they can and the weak suffer what they must.<sup>150</sup>  
—Thucydides, *Melian Dialogue*

The purpose of this study was to identify the challenges facing the NZDF in maintaining New Zealand's security interests in Antarctica. In the pursuit of answering the thesis question, the primary investigator's analysis has identified risks faced by the NZDF in Antarctica are not dissimilar to those faced in New Zealand's wider security interests. Furthermore, the future of the Antarctic security environment is shaped around the Madrid Protocol which amendments or modifications to the resource extraction prohibitions are able to be presented in 2048 by member states.

The results from the analysis in chapter four demonstrated that any escalation of Antarctic security challenges is contained by a functioning ATS, United States preponderance of global power, and the limitations on accessibility. The consequences of which means that the challenges that the NZDF does face in its Antarctic operations are reasonable and within existing capabilities.

Significantly 2048 is gauged as the period in which the Antarctic security challenges will expand. This will be due to tensions related to mineral extraction challenges eroding the effectiveness of the ATS, United States dominance having been succeeded or matched, and physical barriers to Antarctic access overcome. Figure 10 demonstrates these conclusions by displaying the retraction of those external factors from their current state to 2048 when a gap will allow the expansion

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<sup>150</sup> Robert B. Strassler, ed., *The Landmark Thucydides: A Comprehensive Guide to the Peloponnesian War* (Riverside, CA: Free Press, 1996), 352.

of the security challenges. Consequently, those security challenges will impede on New Zealand’s interests, increasing the risk to the NZDF in its Antarctic operations.

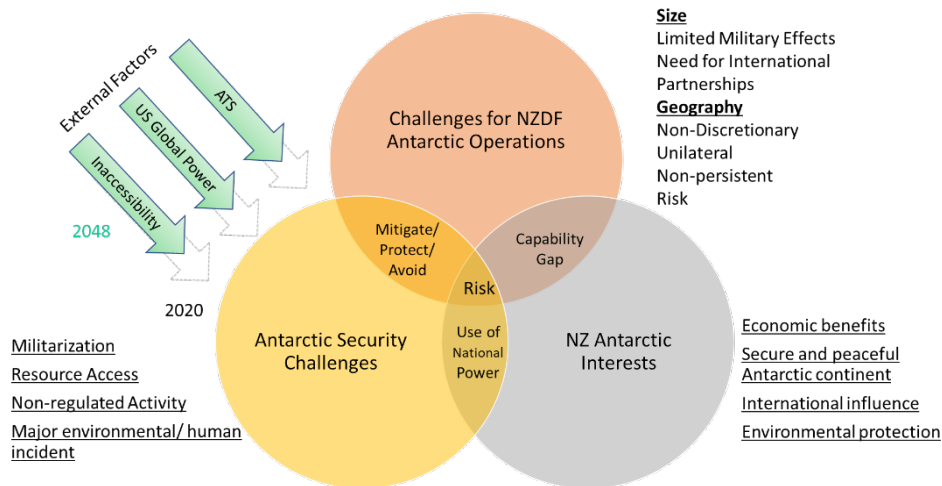


Figure 10. NZDF Antarctic Security Environment

Source: Created by author.

The challenge of size is the key factor which is a limit that defines the NZDF. A fundamental part of the NZDF’s strategy for mitigating the challenges of its small size is by being “credible and trusted” with international partners. Having small, but capable and credible forces has enabled the NZDF to be employed in a range of theatres that it would be incapable of doing within its own resources.

Such mitigations are likely to work in New Zealand’s other immediate areas of interest such as the South Pacific. In that region, New Zealand could responsibly expect to share common interests with its international partners resulting in coordinated military efforts in the region. However, New Zealand’s Antarctic interests are unique, and its claim is not widely recognized. Despite numerous multi-lateral arrangements with other Antarctic nations that support New Zealand’s presence, such as the joint logistics pool, these do not extend to the security realm. For any security

challenges in the Ross Dependency it is difficult to see non-claimant states willing to defend New Zealand's claims which they do not recognize.

However, the concept of an overt security challenge in the Ross Dependency requiring a military response appears highly unlikely. The conclusions from this study indicate that there is no incentive for any state that is capable of such action to use military force. The reality is that the ATS works well and provides at this point of time sufficient freedom for states to operate with few restrictions. Any militarization that is occurring in Antarctica is not for the purposes of securing a piece of the continent, although it may be a convenient outcome. Rather it is to utilize the geographic advantage the region provides in broadening satellite control. Such control is critical in extending a state's global space programs which provide alternatives to the United States GPS system and enable offensive and defensive ballistic missile capabilities, and strategic communications.

Consequently, it is concluded that although a conflict between major powers could overflow into Antarctica such actions would be a side show, and temporary. The greatest security challenge will stem from the diverging views, and competition for Antarctica's mineral resources. However, until the growing global population has depleted the world's more easily accessed minerals and the cost of those commodities make extraction in such harsh conditions economically viable such challenges will not materialize. However, such conditions are inevitable, encouraged by technologies that will expedite the extraction process, and the opportunity for renegotiation of the Madrid protocols in 2048 provides that catalyst. Furthermore, the discussions that 2048 will cultivate will offer the prospect for those states with concerns with the ATS arrangement to pursue a governance regime that is more reflective of the global geopolitical realities.

Nations are well aware of the 2048 Protocol timeline and are positioning themselves to negotiate for their interests in Antarctica. The concern being that if no amendments can be agreed upon then nations may withdraw from the ATS. The consequence of which could change the security environment in Antarctica. Such events would significantly challenge New Zealand's interests. Particularly the legitimacy of its claim which is not widely recognized and seen by some as undemocratic and a relic of European colonialism. Furthermore, New Zealand's attempts to maintain environmental protections may appear to be naïve in the face of food and resource security needs of much larger nations that do not enjoy New Zealand's abundant natural resources.

New Zealand will at some point in the middle of the twenty-first-century have to consider how much Antarctic is worth to it. Since inheriting the claim in 1923 New Zealanders have had to give very little thought to the benefits enjoyed due to the benign security environment. But the sun is setting on the benign security environment in Antarctica. Prof Brady argues that New Zealand is “committed to maintaining its strategic interests at almost any cost.”<sup>151</sup> The challenge for New Zealand is that as a small state it has very little national power in which to maintain those strategic interests.

In this study those interests were interrogated. Many of the interests are altruistic. New Zealand benefits economically from being a gateway nation and from the diplomatic access and leverage provided by an Antarctic presence. As a small and geographically isolated state, the claim of 15 percent of Antarctica is without parallel globally. However New Zealand has enjoyed such broad Antarctic interests due to

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<sup>151</sup> Brady, “New Zealand's Antarctica,” 10.

both geography and being on the right side of history. Its historical beginnings with Britain and subsequently its close, albeit at times stressed, relationship with the United States has ensured New Zealand's interests have been supported by its closest allies and partners. It has also benefited from the unique and remarkable success of the ATS which has assured a peaceful Antarctica since its inception in 1959.

Ultimately the key strategic interest is in keeping New Zealand's southern flank free from "any potential use by a hostile power."<sup>152</sup> New Zealand could hope to concede other expendable interests to maintain the single strategic interest for which the loss of would be seen as an existential threat. This assumes in 2048 New Zealand will enjoy the protection of the rules-based system, and that a more powerful state will not just simply ignore New Zealand's protests.

New Zealand's security policy is grounded in the confidence of the rules-based system to prevent any direct threats to its sovereignty. Reliance on the "faith-based theory"<sup>153</sup> for national security is viewed as idealistic by some, and view events in eastern Europe and increasing western isolationism as examples of its fallacy. The conclusions of this study show that the ATS as part of the rules-based system cannot be enduring, and 2048 is likely a catalyst for a change in Antarctica. Without the rules-based system New Zealand will be weak to the interests of stronger states, and the current capabilities employed by the NZDF to support New Zealand's presence will be wholly inadequate. New Zealand's strategic view is similar to that of the Melians in ancient Greece, that neutrality could ensure peace. However as is well

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<sup>152</sup> Foster, "Antarctic Resources and Human Security," 156.

<sup>153</sup> Cavanaugh, "New Zealand's Dangerous Strategic Apathy in an Uncertain Age."

known they learnt from the Athenians that the “strong will do what they can and the weak suffer what they must”<sup>154</sup>

If the NZDF is going to be strong and capable of maintaining New Zealand’s security interests in Antarctica post-2048, it is going to require strategies to limit its challenges and contain the security threats. If not, then New Zealand will have to concede on its interests. Most significantly the NZDF requires credible combat capabilities relevant to these geographic realities. Investing in anti-access and area denial (A2AD) capabilities would enable the NZDF to deter and if necessary, disrupt an adversary attempting to operate in Antarctica. Such capabilities would exploit New Zealand’s geographical advantage as a gateway nation and be more economically realistic given the constraints on defense spending.

Furthermore, A2AD capabilities would enhance the NZDF’s credibility with its partner nations whose support is critical for success. Particularly in the case of Australia, New Zealand’s only ally and another Antarctic claimant state. Such a capability would have the additional benefit of having flexibility of employment in the South Pacific and the defense of Australia.

Alternatively, or in parallel, New Zealand could gain strength in its Antarctic security by re-establishing its alliance with the United States that was terminated in 1987. Such an approach assumes the United States would wish to continue the alliance, and that the power of the United States will still be a sufficient deterrent by the middle of the century. Furthermore, there are domestic and diplomatic complexities that would make such an approach contentious and could constrain the multilateral approach New Zealand has taken since 1987 with other nations.

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<sup>154</sup> Strassler, *The Landmark Thucydides*, 352.

However, if New Zealand does not have a strong alliance, New Zealand cannot expect to be able to maintain its Antarctic interests in the face of a strong state with divergent interests. Either way, New Zealand requires a robust security policy and military that is adequate to operate in a “sudden shift of the strategic environment.”<sup>155</sup> Without either an alliance or military ability New Zealand will be unable to negotiate from a position of strength to maintain not only its Antarctic interests but all its regional interests. Signs are being observed globally that the rules-based system is not a national defense system and New Zealand must be prepared to operate without it. The NZDF faces a closing window in which to advocate for such changes. The capabilities needed will take fifteen to twenty years to develop and to be operational and would likely require an increase to defense spending to 2 percent of GDP. Such a rate would meet the expectations of New Zealand’s security partners. Such decisions need to be made now to be ready for the security environment of the mid-twenty-first-century.

However, while the ATS is functioning, any militarization remains ambiguous and deniable, and Antarctic mineral resources remain both practically and economically unviable to extract the largely benign Antarctic security environment is likely to persist until one of those variables change.

To ensure those variables do not change and that New Zealand can maintain the status-quo the NZDF is well suited to continue to support the civilian presence. The use of military capabilities to contribute to the joint logistics pool with partner nations and to monitor and enforce resource protections in the Ross Dependency

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<sup>155</sup> New Zealand Ministry of Defence, *Strategic Defence Policy Statement 2018*, 8.

remains prudent. Such roles are outside of the traditional military roles and challenge the NZDF in the use of its limited resources in a range of non-discretionary outputs.

In this regard, the conclusions suggest the NZDF should continue to recognize Antarctica as a supporting function and an output in which redundant capabilities are used at the lowest level of readiness possible. This is to ensure military capabilities, required at high levels of readiness are not diminished by the Antarctic mission; they may compromise outputs in the South Pacific or further afield. Also, the NZDF needs to be conscious of itself militarizing Antarctica or creating an unrealistic dependency for the civilian presence that could be at risk if other outputs are prioritized.

In summary, the NZDF demonstrated a long history of support to New Zealand's Antarctic presence and maintaining New Zealand's security interests. NZDF capabilities are at present sufficient to support the mitigation of the emerging security challenges in Antarctica. However, there are reliable indicators that the mid-twenty-first-century may well see the disruption of Antarctica's security environment and is one that the NZDF is not equipped to be able to maintain New Zealand's Antarctic interests. Interests that are critical to New Zealand's security.

#### Areas for Further Study

There are three areas in which further study could be conducted to develop understanding in the NZDF's role in New Zealand's Antarctic interests. The first is examining the capabilities required by the NZDF to meet the Antarctic security challenges post-2048. Such a study could utilize a mixed method approach to demonstrate the military threats using historical quantitative data on NZDF capability funding concurrently with qualitative data on potential military threats to Antarctica post 2048.

The second area of study is researching alternative options for New Zealand sustaining its Antarctic presence. As discussed in this thesis, New Zealand relies heavily on military capabilities to support its civilian presence, creating challenges for the NZDF. A quantitative study on the human resources required to maintain New Zealand's Antarctic presence could determine the reliance on the NZDF. Such study would offer data to determine the feasibility of developing non-military capabilities to support New Zealand's Antarctic activities.

The final area for further study would be a qualitative comparative analysis with other Antarctic claimant states (Australia, Argentina, Chile, Britain, and Norway) and how they use their militaries to support their Antarctic presence. Such a study may provide insights on how nations with similar Antarctic interests are approaching the changing Antarctic security environment, and offer alternative approaches for the NZDF

### Recommendations

Based on the conclusions, the following recommendations are made. New Zealand defense policy should include more significant consideration for capabilities required for the NZDF to operate in the collapse of the rules-based system.

Antarctic New Zealand should investigate the other options, including commercial, to sustain the joint logistics pool in order to reduce its dependency on the NZDF. This would reduce the risk of New Zealand's contribution to the logistics pool should the NZDF have a greater need for capabilities for other outputs.

The NZDF should continue to recognize its Antarctic outputs as a supporting role only to other government agencies and focus capability development on

platforms that provide utility in the South Pacific and to international security operations and avoid any Antarctic specialization.

### Summary

In ancient Greece Thucydides documented the unfortunate but inevitable human condition that the strong will do as they can and the weak suffer what they must. Since 1959 the ATS has temporarily neutralized Thucydides theory in Antarctica, enabled by a period of international cooperation and United States global hegemony. Both of those influences are on the decline and 2048 looms near where global conditions will allow the strong to do as they can. New Zealand does not have to “suffer as it must” and having a relevant and credible military will prevent New Zealand from finding its Antarctic interests on thin ice.

## BIBLIOGRAPHY

### Books

- Bateman, Sam. "Strategic Competition and Emerging Security Risks: Will Antarctica Remain Demilitarised." In *Antarctic Security in the Twenty-First Century: Legal and Policy Perspectives*, edited by Alan D. Hemmings, Donald R. Rothwell, and Karen N. Scott, 116-134. London: Routledge, 2012.
- Brady, Anne-Marie, ed. "New Zealand's Antarctica." In *The Emerging Politics of Antarctica*, edited by Anne-Marie Brady, 147-162. London: Routledge, 2013.
- . *China as a Great Polar Power*. Washington, DC: Woodrow Wilson Center Press, 2017.
- Chaturvedi, Sanjay. "India and Antarctica – Towards Post-Colonial Engagement?" In *The Emerging Politics of Antarctica*, edited by Anne-Marie Brady, 50-74. London: Routledge, 2013.
- Foster, Caroline E. "Antarctic Resources and Human Security." In *Antarctic Security in the Twenty-First Century Legal and Policy Perspectives*, edited by Alan D. Hemmings, Donald R. Rothwell, and Karen N. Scott, 154-171. London: Routledge, 2012.
- Hamzah, B. A. "The Malaysian Journey to the Antarctic: A Glimpse at Public Policy Dynamics." In *The Emerging Politics of Antarctica*, edited by Anne-Marie Brady, 96-109. London: Routledge, 2013.
- Haward, Marcus. "The Antarctic Treaty System: Challenges, Coordination, and Congruity." In *The Emerging Politics of Antarctica*, edited by Anne-Marie Brady, 13-28. London: Routledge, 2013.
- Hemmings, Alan D., Donald R. Rothwell, and Karen N. Scott, ed. "Antarctic Security in a Global Context." In *Antarctic Security in the Twenty-First Century: Legal and Policy Perspectives*, edited by Alan D. Hemmings, Donald R. Rothwell, and Karen N. Scott, 328-336. London: Routledge.
- Joyner, Christopher. "Bioprospecting as a Challenge to the Antarctic Treaty." In *Antarctic Security in the Twenty-First Century: Legal and Policy Perspectives*, edited by Alan D. Hemmings, Donald R. Rothwell, and Karen N. Scott, 197-214. London: Routledge, 2012.
- . "US Foreign Policy Interests in Antarctica." In *The Emerging Politics of Antarctica*, edited by Anne-Marie Brady, 110-129. London: Routledge, 2014.
- Mossap, Joanna. "The Security Challenge Posed by Scientific Permit Whaling and Its Opponents in the Southern Ocean." In *Antarctic Security in the Twenty-First Century, Legal and Policy Perspectives*, edited by Alan D. Hemmings, Donald R. Rothwell, and Karen N. Scott, 307-327. London: Routledge, 2012.

- Rolfe, James. *The Armed Forces of New Zealand*. St. Leonards, New Zealand: Allen and Unwin Pty Ltd, 1999.
- Rolfe, Jim. *Cutting Their Cloth: New Zealand's Defence Strategy*. Canberra: Australian Strategic Policy Institute, April 2007. Accessed November 21, 2019. [https://s3-ap-southeast-2.amazonaws.com/ad-aspi/import/cutting\\_cloth\\_NZ.pdf?RmROKjyAjfMqyWGQR1WQ03RlnQIs315x](https://s3-ap-southeast-2.amazonaws.com/ad-aspi/import/cutting_cloth_NZ.pdf?RmROKjyAjfMqyWGQR1WQ03RlnQIs315x).
- Rothwell, Donald R. "The Antarctic Treaty as a Security Construct." In *Antarctic Security in the Twenty-First Century. A Legal and Policy Perspective*, edited by Alan D. Hemmings, Donald R. Rothwell, and Karen N. Scott, 33-50. London: Routledge, 2012.
- Rothwell, Donald R., Karen N. Scott, and Alan D. Hemmings. "The Search for 'Antarctic Security.'" In *Antarctic Security in the Twenty-First Century: A Legal and Policy Perspective*, edited by Alan D. Hemmings, Donald R. Rothwell, and Karen N. Scott, 1-17. London: Routledge, 2012.
- Strassler, Robert B., ed. *The Landmark Thucydides: A Comprehensive Guide to the Peloponnesian War*. Riverside, CA: Free Press, 1998.
- Verbitsky, Jane. "Titanic Part Two? Tourism, Uncertainty, Insecurity." In *The Emerging Politics of Antarctica*, edited by Anne-Marie Brady, 220-241. London: Routledge, 2013.
- U.S. Department of Defense. "Department of Defense Establishes U.S. Space Command." August 29, 2019. Accessed October 2, 2019. <https://www.defense.gov/Newsroom/Releases/Release/Article/1948288/departments-of-defense-establishes-us-space-command/>.
- U.S. Geological Survey. "Ice, Snow, and Glaciers and the Water Cycle." 2019. Accessed November 11, 2019. [https://www.usgs.gov/special-topic/water-science-school/science/ice-snow-and-glaciers-and-water-cycle?qt-science\\_center\\_objects=0#qt-science\\_center\\_objects](https://www.usgs.gov/special-topic/water-science-school/science/ice-snow-and-glaciers-and-water-cycle?qt-science_center_objects=0#qt-science_center_objects).
- United Kingdom Foreign and Commonwealth Office, Netherlands Organisation for Scientific Research, and Spanish Polar Committee. *Antarctic Treaty Inspections Programme Report 2012*. London: The Stationery Office, April 2013. Accessed February 17, 2020. [https://documents.ats.aq/ATCM36/att/ATCM36\\_att108\\_e.pdf](https://documents.ats.aq/ATCM36/att/ATCM36_att108_e.pdf).

#### Periodicals

- Elvy, Dale. "Defence: Exploring the Silent Consensus." *New Zealand International Review* 33, no. 3 (June 2008): 23-26.
- Quigley, Hon Derek. "The Evolution of New Zealand Defence Policy." *Security Challenges* 2, no. 3 (October 2006): 55.

## Government Documents

- Antarctic New Zealand. *2017-2018 Antarctica New Zealand Annual Report*. Christchurch: Antarctica New Zealand, October 2018. Accessed September 30, 2019. [https://www.antarcticanz.govt.nz/uploads/images/ANZ\\_annual\\_report\\_landscape\\_-FINAL.pdf](https://www.antarcticanz.govt.nz/uploads/images/ANZ_annual_report_landscape_-FINAL.pdf).
- Boxall, Sheryll. *Foresight Report: Deep South Exploring Change in Antarctica, Southern Ocean, Sub-Antarctic Islands and Space above 60° Latitude Southwards*. 2nd ed. Wellington: New Zealand Defence Strategy Management, 2019.
- New Zealand Defence Force. "About Us." 2019. Accessed September 29, 2019. <http://www.nzdf.mil.nz/about-us/hqjfnz/default.htm>.
- . *Advancing Pacific Partnerships 2019*. Wellington: New Zealand Ministry of Defence, October 2019. Accessed February 17, 2020. <https://defence.govt.nz/assets/publication/file/5f6dd307e7/Advancing-Pacific-Partnerships-2019.pdf>.
- . "NZDF 2025 Strategy Blueprint," March 2018. Accessed November 23, 2019. <http://www.nzdf.mil.nz/downloads/pdf/public-docs/2019/nzdf-2025-strategy-blueprint.pdf>.
- . "Personnel Summary." 2019. Accessed September 27, 2019. <http://www.nzdf.mil.nz/personnel-records/personnel-branch/>.
- . *Annual Report 2019*. Wellington: New Zealand Defence Force, 2019. Accessed November 21, 2019. <http://www.nzdf.mil.nz/downloads/pdf/public-docs/2019/nzdf-annual-report-2019-web.pdf>.
- . "Vote Foreign Affairs and Trade." Accessed November 7, 2019. <https://www.budget.govt.nz/budget/pdfs/estimates/v4/est19-v4-foraff.pdf>.
- New Zealand Department of the Prime Minister and Cabinet. *National Security System Handbook*. Wellington: New Zealand Government, August 2016. Accessed November 2, 2019. <https://dpmc.govt.nz/sites/default/files/2017-03/dpmc-nss-handbook-aug-2016.pdf>.
- New Zealand Ministry of Defence. "Defence Capability Plan 2019." Ministry of Defence. June 11, 2019. Accessed September 2, 2019. <https://defence.govt.nz/publications/publication/defence-capability-plan-2019>.
- . "Defence White Paper 2010." Ministry of Defence, 2010. [http://www.nzdf.mil.nz/downloads/pdf/public-docs/2010/defence\\_white\\_paper\\_2010.pdf](http://www.nzdf.mil.nz/downloads/pdf/public-docs/2010/defence_white_paper_2010.pdf).
- . "Defence White Paper 2016," 2016. Accessed September 7, 2019. <http://nzdf.mil.nz/downloads/pdf/public-docs/2016/Defence-White-Paper-2016.pdf>.

- . *Strategic Defence Policy Statement 2018*. Wellington: New Zealand Government, July 2018. Accessed 19 August 2019. <http://nzdf.mil.nz/downloads/pdf/public-docs/2018/strategic-defence-policy-statement-2018.pdf>.
- New Zealand Ministry of Foreign Affairs and Trade. *Strategic Intentions 2018-2022*. Wellington: Government of New Zealand, 2018. Accessed September 16, 2019. <https://www.mfat.govt.nz/assets/MFAT-Corporate-publications/MFAT-Strategic-Intentions-2018-2022.pdf>.
- . “New Zealand’s Statement of Commitment to Antarctica and the Southern Ocean.” 2019. Accessed September 28, 2019. <https://www.mfat.govt.nz/assets/Environment/Antarctica-and-the-Southern-Ocean/Statement-of-Commitment-to-Antarctica-and-the-Southern-Ocean-2019.pdf>.
- Office of the Governor-General. “New Zealand’s Constitution.” 2019. Accessed September 30, 2019. <https://gg.govt.nz/office-governor-general/roles-and-functions-governor-general/constitutional-role/constitution/constitution>.
- Royal New Zealand Air Force. “Squadrons of the RNZAF.” Accessed September 29, 2019. <http://www.airforce.mil.nz/about-us/who-we-are/squadrons/default.htm>.
- Royal New Zealand Navy. NZBR 48. *RNZN PLAN 2017 – 2025*. Wellington: New Zealand Navy, October 2017. Accessed September 29, 2019. <http://navy.mil.nz/downloads/pdf/public-docs/rnzn-plan-2017-2025.pdf>.
- Stats. “Population.” New Zealand Government. 2020. Accessed April 17, 2020. <https://www.stats.govt.nz/topics/population>.

#### Other Sources

- Antarctic and Southern Ocean Coalition. “Ross Sea.” 2019. Accessed November 7, 2019. <https://www.asoc.org/advocacy/marine-protected-areas/ross-sea-preservation>.
- Antarctica New Zealand. *Antarctica New Zealand Statement of Intent 2016-2020*. Wellington: International Antarctic Centre, June 2016. Accessed April 11, 2020. <https://www.antarcticanz.govt.nz/uploads/images/2016-2020-SOI.pdf>.
- Bennett, Vernon Noel. “Military Force Structures in Small States: Providing for Relevant and Credible Military Capability.” PdD diss., Victoria University of Wellington, New Zealand, 2018.
- Brady, Anne-Marie. “Special Report: China’s Expanding Antarctic Interests Implications for Australia.” Australian Strategic Policy Institute. August 2017. Accessed February 17, 2020. <https://www.aspi.org.au/report/chinas-expanding-interests-antarctica>.

- Cavanaugh, M. L. "New Zealand's Dangerous Strategic Apathy in an Uncertain Age." *The Strategist*. February 11, 2020. Accessed March 16, 2020. <https://www.aspistrategist.org.au/new-zealands-dangerous-strategic-apaty-in-an-uncertain-age/>.
- Christchurch Antarctica Office. "Christchurch's Antarctic Connections." 2019. Accessed September 7, 2019. <https://www.christchurchnz.com/christchurch-the-gateway-to-antarctica/christchurchs-antarctic-connections/>.
- Colmar Brunton. "Better Futures." 2019. Accessed November 8, 2019. <https://static.colmarbrunton.co.nz/wp-content/uploads/2019/05/Colmar-Brunton-Better-Futures-2019-MASTER-FINAL-REPORT.pdf>.
- Committee for Environmental Protection. "Protocol on Environmental Protection to the Antarctic Treaty," October 4, 1991.
- Cox, David. "How Hauling Icebergs Could Help Sustain the World's Thirstiest Regions." *NBC News*. August 7, 2018. Accessed September 15, 2019. <https://www.nbcnews.com/mach/science/how-hauling-icebergs-could-help-sustain-world-s-thirstiest-regions-ncna898036>.
- Erebus. "The Story." New Zealand Air Line Pilots' Association. 2019. Accessed September 7, 2019. <http://www.erebus.co.nz/background/thestory.aspx>.
- Greener, B. K. "Useful Ambiguity? New Zealand's Strategic Defence Policy Statement." Australian Strategic Policy Institute, July 9, 2018. Accessed September 11, 2019. <https://www.aspistrategist.org.au/useful-ambiguity-new-zealands-strategic-defence-policy-statement/>.
- International Association of Antarctica Tourist Operators. "IAATO reports latest Antarctic tourism figures ahead of responsible tourism conference," April 30, 2018. Accessed November 27, 2019. <https://iaato.org/documents/10157/2305849/IAATO+News+Release+-+annual+meeting+opens+2018+FINAL.pdf>.
- Jancic, Boris. "New Zealand Has No Boats to Send to Strait of Hormuz: Defence Minister Ron Mark - NZ Herald." August 21, 2019. Accessed September 29, 2019. [https://www.nzherald.co.nz/nz/news/article.cfm?c\\_id=1&objectid=12260633](https://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=12260633).
- Mitchell, Charlie. "Murray McCully's Dramatic Antarctic Flight Report Released." *Stuff*. January 29, 2015. Accessed November 26, 2019. <https://www.stuff.co.nz/travel/news/65543703/murray-mccullys-dramatic-antarctic-flight-report-released>.
- New Zealand History. "Edmund Hillary in Antarctica." July 22, 2014. Accessed September 30, 2019. <https://nzhistory.govt.nz/media/photo/edmund-hillary-antarctica>.

- Ogilvie, Felicity. "NZ Navy Attempts to Board Illegal Fishing Boats in Southern Ocean." ABC News. Last modified January 23, 2015. Accessed September 12, 2019. <https://www.abc.net.au/news/2015-01-14/new-zealand-navy-attempts-to-board-illegal-fishing-boats/6016922>.
- Patman, Robert. *Globalisation, Sovereignty, and the Transformation of New Zealand's Foreign Policy*. Working Paper, No. 21/05. Wellington: Centre for Strategic Studies, Victoria University of New Zealand, 2005. Accessed September 8, 2019. <https://www.victoria.ac.nz/strategic-studies/documents/working-papers/wp-21.pdf>.
- Saildrone. "Saildrone Completes First Autonomous Circumnavigation of Antarctica." August 5, 2019. Accessed September 24, 2019. <https://www.saildrone.com/news/unmanned-vehicle-completes-antarctica-circumnavigation>.
- Secretariat of the Antarctic Treaty. "Inspections Database." 2020. Accessed March 19, 2020. <https://www.ats.aq/devAS/Ats/InspectionsDatabase?lang=e>.
- . "Parties." 2019. Accessed November 3, 2019. <https://www.ats.aq/devAS/Parties?lang=e>.
- . "The Antarctic Treaty." October 16, 1959. Accessed August 30, 2019. <https://www.ats.aq/e/ats.htm>.
- World Bank. "Military Expenditure (% of GDP) – New Zealand 1960-2018." Accessed April 17, 2019. <https://data.worldbank.org/indicator/MS.MIL.XPND.GD.ZS?locations=NZ>.