Professional Journal of the

Royal New Zealand Navy

TE TAUA MOANA O AOTEAROA

VOLUME TWO
NUMBER ONE
JULY 2021

Professional Journal of the

Royal New Zealand Navy | Te Taua Moana o Aotearoa

TE TAUA MOANA NAVY

ISSN (Print): 2744-340X
ISSN (Online): 2744-3418

Published July 2021

Printed with Blue Star

Te Taua Moana o Aotearoa: The New Zealand Warriors of the Sea

COPY-EDITING & PRODUCTION

RNZAF Publications, Information and Drawing Support
Emily Brill-Holland

COVER IMAGE

The pounamu featured on the cover is a highly prized gift from Ngāi Tahu to the Royal New Zealand Navy. For the full story of the gift, see page 4.

TE TAUA MOANA NAVY

HEI MANA MŌ AOTEAROA
A FORCE FOR NEW ZEALAND

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THE POUNAMU

Sir Tipene O'Regan, chairman of the Ngāi Tahu Māori Trust Board, writes about the gift of the pounamu by Ngāi Tahu to the Royal New Zealand Navy:

The Ngāi Tahu community of Rapaki on the shores of Whakaraupo (Lyttelton Harbour) has particularly close maritime associations with the port. That association has been the more intense with ships carrying names such as "Canterbury", a visit from which is seen as a "home port" arrival. Thus it was that when the old Leander class frigate, HMNZS *Canterbury* was on her final visit to Lyttelton prior to decommissioning in 2005, her departure was marked by Ngāi Tahu with a block of their treasured pounamu as a tohu (mark) of the relationship. The stone came from the Arahura River on Te Tai Poutini and the transaction was arranged and supervised by the respected Ngāi Tahu kaumatua, the late Mrs Te Whe Phillips of Rapaki.

ABOVE
Sir Tipene O'Regan at the official welcoming ceremony in Queenstown for the Irish rugby team competing at the Rugby World Cup, September 4, 2011. Image courtesy of Teaukura Moetaua/Getty Images.

ABOVE LEFT
Commander Pete Kempster, RNZN, accepting the pounamu.

ABOVE RIGHT
The pounamu lashed to the flight deck of HMNZS *Canterbury* for the voyage north from Te Wai Pounamu to Tāmaki Makaurau.

Background notes by Lieutenant John (Jack) Rudolph, RNZN

On March 21, 2005, the Royal New Zealand Navy was presented with a greenstone from the people of Ngāi Tahu of the South Island. The presentation was the result of discussion between the Chief of Navy, Rear Admiral David Ledson and the Chairman of the Ngāi Tahu Māori Trust Board, Sir Tipene O'Regan. The greenstone was intended as a powerful message of support from Ngāi Tahu for the Navy Marae, and the role it would have for all sailors of the Royal New Zealand Navy. The presentation in Christchurch coincided with the final voyage of the Leander class Frigate HMNZS *Canterbury* F421 prior to decommisioning on 31 March 2005, and the greenstone was accepted by the CO of HMNZS *Canterbury*, CDR Peter Kempster, on behalf of the Chief of Navy and the Officers and Ratings of the RNZN.

The Māori word for greenstone is pounamu. The Māori people call the South Island of New Zealand Te Wai Pounamu, meaning the [land of] greenstone waters. Greenstone is highly valued by Māori and plays an important role within the culture. It is considered a tāonga, or treasure, and is protected under the Treaty of Waitangi/Te Tiriti o Waitangi. A hard and durable stone (nephrite jade, bowenite, serpentinite) formed during millions of years of compression within the earth, pieces of this precious stone are found in glacial rivers of the South Island and were used by Māori for tools, weapons and treasured ornaments worn by chiefs. Today greenstone tāonga are made and passed down to family members.

For the pounamu, the protocols for the travel from Te Wai Pounamu to Tāmaki Makaurau (Auckland) on HMNZS *Canterbury*'s final voyage were to keep it exposed to the elements, secured to the flight deck, and doused frequently by sea water (hence the green bucket in the photo).

Extracts from a background note by Commander Pete Kempster, RNZN
Commanding Officer of HMNZS *Canterbury* at the time of the gifting of the pounamu

HMNZS *Canterbury* F421 was the transport from Christchurch to Auckland, and we secured the pounamu to the helicopter trap on the flight deck.

I can tell you it copped a little bit of Tangaroa's wrath as we came north and into Wellington to drop the Admiral off and provide a gun salute to CDF unfortunately without stopping there for a run ashore.

I have recovered some photos, a couple of which may provide a laugh.

The first photo is of me giving the speech of acceptance of the pounamu, which was my first time speaking in te reo. You can imagine my nervousness especially with my audience being some very special people from Ngāi Tahu in particular and the crowd that was assembling to farewell *Canterbury* for the last time from Lyttelton. An audience of about 5,000 people—it was a little intimidating I can tell you; the photo provides Admiral Ledson's reaction to my mastery of the Māori language (or not).

The other photo of note is how the pounamu travelled north on the upper deck, secured to the helicopter trap sitting inside the wooden frame you can see. We heard it had to be kept wet, so that is what the bucket was for—to ensure it was kept well and truly wet the entire voyage.

IN MEMORIAM
DR LANCE ALEXANDER BEATH

In his closing sentence of the inaugural *Professional Journal of the Royal New Zealand Navy* Volume One, Number One, of December 2020, the General Editor, Dr Lance Beath wrote 'I look forward to welcoming you all back for the next issue of the Journal.' This he does, of course, with typical aplomb as he completed his editorial responsibilities and submitted the second issue of the Journal for publication, prior to his untimely passing on Sunday 1 August 2021. It is with a heavy sense of loss for a serious intellect lost to us, therefore, that I join you in reading his Editorial comments... insightful as always.

With his usual flare, Dr Beath welcomes the reader back to a place of professional inquiry and, through his introductory words, entices you to explore the greater body of work within. He is clearly proud of the product that he, and others, have created. It is evidence, also, of the professionalism and dedication that Dr Beath represented through his hugely impressive career as a diplomat, a scholar, a university Fellow, a consultant, and a teacher. He was an unwavering supporter of, and advocate for, the New Zealand Defence Force and its people; he had a particularly special relationship with the Royal New Zealand Navy.

As the General Editor of the *Professional Journal of the Royal New Zealand Navy*, we, the sailors of Te Taua Moana o Aotearoa, were served exceptionally well by Dr Beath. His legacy is this excellently crafted publication designed purposefully to stimulate and inform debate—an aspect of learning that Dr Beath encouraged and thoroughly enjoyed (ask anyone who knew him).

Dr Beath would readily admit, however, that he was but one person in the creation of the Journal's design and content with many others willingly contributing through articles, photographs and imagery, or simply the time to devote to editorial reviews and, of course, the necessary effort to undertake the printing process which completes the production cycle. Albeit a team effort, he was undoubtedly the key in orchestrating its development and publication.

Those who collaborated with Dr Beath during the process remember him as tenacious in his pursuit of excellence, particularly when it came to the quality of the imagery. He was always generous in his time and energy when engaging with the contributor of an article; he was truly invested in what was to be illuminated through the subject matter. A conversation with Dr Beath was something one always looked forward to because not only did he often offer to buy you a coffee to sweeten the deal, he also showed a sincere warmth toward the person he was talking to and a genuine interest in the topic being discussed. He epitomised the core value, Tū Tira—Comradeship.

In recalling his interaction with Dr Beath, Russell Martin, Naval Staff Portfolio Manager, who worked closely with him on the Journal, recounts:

> *Lance took pride in both the look and content of the Journal and worked extremely hard to make it what it is. Lance was a delight to work with, always in his natty tweed jacket. We enjoyed sharing coffees and a cheeky scone at his perch at Mojo. One learned something new at every meeting. Often about Lord Nelson!*

It was clearly in Dr Beath's nature to be curious, as his career resume demonstrates. In preparing this memoriam, I took a moment to remember Lance through his biography on the Victoria University of Wellington website. It describes a variety of fulfilling and influential positions held by Dr Beath along with a broad range of achievements, all of which offer a glimpse into the drive he brought to each of his endeavours. He was dedicated in his focus on the success of the Journal and right up until his passing, was working on the beginnings of the third issue.

Others too have acknowledged his ability to achieve aspirational goals. The Deputy Chief of Navy, Commodore Melissa Ross, RNZN, Chair of the Journal's Editorial Review Board, remembers that:

> *What started as an idea to bring together the essays that were being produced at various War and Staff Colleges around the world quickly turned in to the professional naval journal we have today. Dr Lance Beath not only created the Journal, but gave us the opportunity to focus on our naval and maritime futures. He also created the Editorial Review Board to meet the highest editorial and production standards and ensuring that the journal would endure.*

RIGHT
Rear Admiral David Proctor, Chief of Navy, RNZN, with Dr Lance Beath.

As an avid follower and collector of literature on Admiral Lord Horatio Nelson, Dr Beath was the RNZN Nelsonian Scholar-in-Residence. His interest was in Nelson as a maritime leader whose exploits shape a myriad of traditions we enjoy in the Royal New Zealand Navy today. That said, if Dr Beath could revisit his closing remarks of this, the second issue of the Journal, he might proffer a quote from the great sea commander; one that perhaps resonates with the many people with whom he shared his life's adventures, namely:

> *Now I can do no more. We must trust to the Great Disposer of all events and the justice of our cause. I thank God for this opportunity of doing my duty.*[1]

In closing, there are not enough words to thank Dr Beath, Lance, for his dedicated commitment to the warriors of Te Ope Kātua o Aotearoa. His academic influence and career achievements will act as an inspiration to us all as we navigate toward our next headmark in the continued security of New Zealanders and prosperity for Aotearoa New Zealand. Wherever the journey takes us, I have every confidence that Lance will maintain a light hand on the tiller through the intellect and debate stimulated in this, the *Professional Journal of the Royal New Zealand Navy*.

Whāia te mātauranga hei oranga mo koutou.
Seek after learning for the sake of your wellbeing.

RADM D.C. PROCTOR
Chief of Navy

1 Said in response to the cheer that was raised after he sent the signal 'England expects every Man will do his duty.' Clarke and McArthur, *The Life of Admiral Lord Nelson, K. B.*,667.

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FOREWORD

COMMODORE MELISSA ROSS

Chair of the Editorial Review Board
Deputy Chief of Navy, RNZN

It is a pleasure to write this foreword to introduce the second publication of the *Professional Journal of the Royal New Zealand Navy*. It is however a pleasure tempered with great sadness at the sudden loss of our wonderful editor, Dr Lance Beath. We received the news of Lance's passing just as this edition was about to go to press. It has given us the opportunity to honour Dr Beath in these pages with the In Memoriam from the Chief of Navy. This seemed eminently appropriate, as it is an edition that Lance poured his heart, his soul and his wonderful intelligence into.

Nō reira, e taea te tika atu i te tangi, i te maumahara ki a ia i mahi ai. Waiho rātou ki a rātou, tātou ki a tātou. Tēnā anō tātou.

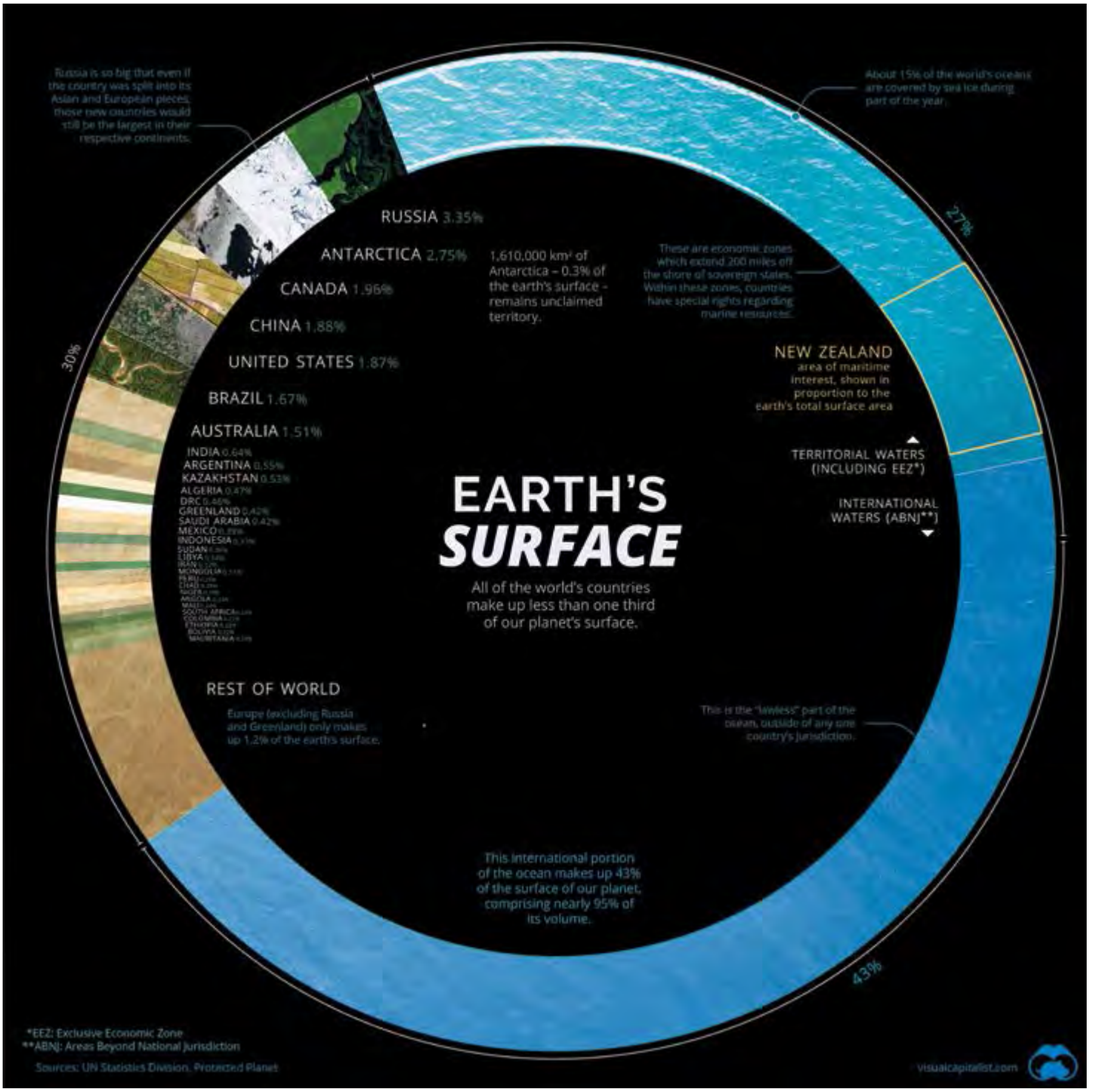
Therefore it is right to mourn his loss and remember his deeds. The dead have passed on and the living remain. Greetings to you.

I am delighted that the treasured pounamu gifted by Ngāi Tahu to the Royal New Zealand Navy (RNZN) in 2005 features on our cover. The story of its journey on the final trip of the old Leander class frigate HMNZS *Canterbury* in 2005 to the marae at the Devonport Naval Base is covered inside. We are honoured that Sir Tipene O'Regan has provided some words on the pounamu for the Journal and allowed us to use his image inside the Journal.

This publication has a particular focus on strategy, with five of the twelve articles relating to the creation, implementation and assessment of strategy. Readers will find two articles on different aspects of the Indo-Pacific concept and innovative articles on a possible green hydrogen future and on meeting demand for critical minerals from the deep sea. One author makes a case for a greater role for New Zealand's ocean estate in addressing climate change, while another puts forward a new approach for professional military development in the New Zealand Defence Force. Readers will also find articles providing updates on the Royal Australian Navy force structure, and on maritime projects for the RNZN's current and future fleet.

As we think about the issues connected with the future fleet, one of the things that we need to remember is the size of New Zealand's Exclusive Economic Zone and search and rescue area in relation to the available assets. The geographic extent of the challenges for this and future governments contemplating options around the size and composition of the future fleet could not be clearer. But with challenges also come opportunities, and the Journal is just one vehicle that the RNZN will use for exploring these opportunities with our readers.

My Editorial Review Board, the contributors and the wider team who have helped put this edition of the Journal together have all been remembering and celebrating Lance. We now will embark on creating the next edition of the Journal, which Dr Beath had already extensively planned. As Lance would expect: we will endeavour to meet the exemplary standards that Lance created with these first two publications of the Navy Journal.



ABOVE
Visualising Countries by Share of Earth's Surface

There are over 510 million sq kms of area on the surface of the Earth, but less than 30% of this is covered by land. The rest is water, in the form of vast oceans.
Data drawn from the United Nation's Statistics Division to rank the world's countries by their share of Earth's surface.
Illustration by Visual Capitalist at www.visualcapitalist.com; altered by RNZAF Publications, Information and Drawing Support unit to show the extent of New Zealand's maritime domain and search and rescue responsibilities.

At 30 million sq kms, these responsibilities are 9-10 times larger than India's land mass of just over 3 million sq kms.

CHANGES TO THE EDITORIAL REVIEW BOARD

Assisting Commodore Melissa Ross as Chair of the Editorial Review Board are Service members and others, drawn from Navy, the Ministry of Foreign Affairs and Trade, academia and elsewhere.

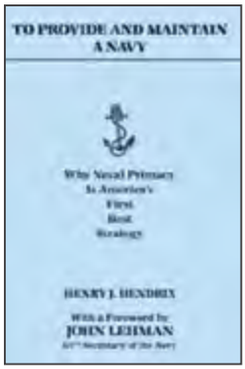
Changes to the Board since the publication of the first edition of the Journal in December 2020 include the departure of Commander Des Tiller, who has moved to the New Zealand Defence Force Capability Branch to lead the introduction into service of Naval maritime capability. Replacing Commander Des Tiller as Assistant Chief of Navy for Strategy and Engagement and on the Board is Captain Lisa Hunn, while another addition to the Board is Captain Garin Golding, Director, Maritime Domain, NZDF Capability Branch. Dr Brian Hewson of the Ministry of Foreign Affairs and Trade, who began serving on the Board in February 2021, has now been appointed to Vienna as New Zealand Ambassador, where he will continue to serve on the Board.

Born in Wellington, **Captain Lisa Hunn** completed secondary schooling in Auckland before joining the Royal New Zealand Navy in 1990. During her thirty-year Naval career, she has served at sea as a warfare officer primarily in the Naval Combat Force. Her most recent sea experience was in command of HMNZS *Te Mana* where she gained experience in defence diplomacy, leadership of multi-national task groups and circumnavigated the Pacific Ocean to deliver *Te Mana* to Victoria, Canada for a major upgrade. She has also served as the Chief of Staff of the New Zealand-led multi-national battle staff for the Commander Amphibious Task Force 176 during Exercise RIMPAC 2016. In April 2019, Captain Hunn was promoted and appointed Captain Fleet Operational Readiness and in 2020 she completed her Masters in Defence and Strategic Studies at the Australian War College in Canberra. On return to New Zealand, she took up her current role as Assistant Chief of Navy (Strategy and Engagement) in Naval Staff.

Captain Garin Golding joined the Royal New Zealand Navy in 1988 and completed his officer training in the same year. He did his basic officer of the watch and navigation training and appointments on various ships before specialising as a Mine Clearance Diving Officer in 1995. He has commanded the Operational Dive Team and HMNZS *Manawanui*. He has a variety of operational experience from tours in Bougainville and Timor-Leste. Senior appointments include command of the Deployable Joint Inter-Agency Task Force Headquarters and Assistant Chief of Navy (Strategy and Engagement). Prior to his current appointment, Captain Golding completed the United Kingdom's Royal College of Defence Studies programme. He holds a Masters in Strategic Studies from Victoria University of Wellington and an MA in International Security and Strategy from King's College, London. He is married and has two adult children. He enjoys a wide variety of sports.
Captain Golding posted as Director, Maritime Domain within the New Zealand Defence Force's Capability Branch in August 2020.

EDITORIAL

Note: *With the sad passing of our General Editor Dr Lance Beath just before the publication of this second issue of the Journal, the team that worked with Dr Beath on the Journal have elected to keep this page just as it was written by him in July 2021.*



ABOVE
To Provide and Maintain a Navy.

BELOW
Dr Henry J. Hendrix.

In the current issue of *The Naval Review*, Dr Tim Benbow, Deputy Director of the Corbett Centre for Maritime Policy Studies and Reader in Strategic Studies at King's College, London, reviews Dr Henry J. Hendrix's recent book *To Provide and Maintain a Navy: Why Naval Primacy is America's First, Best Strategy*.[1] This review had me thinking—could New Zealand be substituted for America in the above title and, if so, would we think that naval primacy is New Zealand's first and best strategy?

The authors of the *NZDF Strategic Plan 2019–2025*[2] had something pertinent to say about this. The plan describes one of its strategic outcomes as being 'operational domain mastery'. This is to be delivered by combat-ready maritime, land and air force elements supported by integrated information capabilities.[3]

On the face of it, operational domain mastery, like Hendrix's naval primacy, is a big claim. A surprising claim even, given the relatively limited means available to New Zealand's maritime and surface action forces. All the same, it is an ambition that we should keep in mind and nurture at every opportunity—especially if we take the phrase to mean operational domain mastery in the immediate vicinity of a deploying force, where primacy in an area of operations is not just an ambition, but an urgent and practical necessity.

Domain mastery can, of course, mean other things. It might just mean mastery of the assets under command in a particular domain. In an even more limited sense, it might just mean doing one's best—being as good as we can with what we have got. But the drafting focus in the *NZDF Strategic Plan 2019–2025* is plainly on domain mastery, and this requires many things: satellite assets to provide situational awareness, allies and partners operating alongside or near-to-hand, the will to win, and, finally and critically, the means to do so. In the New Zealand context, when we talk about surface action groups and the means available to them, we also encompass the air assets and deploying army groups that make up a fully integrated force.

Notwithstanding all this, the claim that we are aiming at operational domain mastery was a surprise to me when I first came across it. But, as editor of the *RNZN Journal*, I am getting used to surprises of different kinds. For example, when we first started planning the contents of the initial volume in early 2020 and then the current volume in early 2021, I had little idea that the Journal would take on quite the strategic character that it has, nor quite so soon. A glance at the contents page for this issue confirms the impression. John Martin writes on good and bad strategy. Adam Norrie writes on the rediscovery of strategy in the Ministry of Defence. Peter Mersi writes about the new Maritime Security Strategy, and Justin Allan writes about the task of developing multiagency strategy. Reuben Steff and Dave McEwan both argue for a New Zealand association with the Indo-Pacific Quad grouping and the desirability of our participation in the annual Malabar series of naval exercises; Reuben writes from an academic standpoint, Dave from a deeply practical perspective. Both of them are thinking and writing in a serious and rewarding strategic vein.

Additional examples of strategic thinking in the current issue include Shane Gowan and Phil Robson of Beca commenting on the achievability of the Government's green hydrogen strategy, and John Sellwood's examination of deep sea minerals and metals and how the mining of these may or may not be a necessary adjunct of the global move toward a lower

1 Hendrix, *To Provide and Maintain a Navy: Why Naval Primacy is America's First, Best Strategy*.
2 Ministry of Defence, *NZDF Strategic Plan 2019-2025*.
3 Ibid, 21-22.

carbon future. John comments that the drive toward decarbonisation will involve more mining, not less, as a result of the sharply increasing demand for the metals and rare earths involved in the manufacture of wind turbines, batteries and solar arrays. It is just a question of where this mining will take place.

It may not be in the deep sea anytime soon, but, if and when it is, we will need to have anticipated the security implications. Moreover, anticipation needs to come well in advance of the requirement, since navies can't be pulled down from what Allen Curnow called 'the high shelf of spiritual daring'.[4] Navies need to be built over lengthy periods of time. They are expensive assets that need to be planned for many years in advance, their crews trained and exercised, and their doctrine regularly refreshed.

And this is, of course, where strategy comes in. Maritime issues are inherently large in scope. They involve big spaces, big thinking, big opportunities, big problems and big solutions. New Zealand's maritime domain is so extensive that strategy absolutely demands a place at the table.

We envisaged this when we first laid out the scope of the Journal. We wanted there to be a safe place for the publication of critical and well-informed thinking. The aim was to build the professionalism of the Service by providing "manoeuvre room", within which ideas could be explored, advocacy advanced, and imaginative and critical thinking cultivated. In a word, strategy. We need to be thinking further ahead. As John Sellwood, Shane Gowan and Phil Robson, Dave McEwan, Reuben Steff, Peter Mersi, Andrew Brown and others writing in this issue of the Journal demonstrate, the cultivation of longer-term thinking in New Zealand has become an absolute necessity. The rediscovery of strategy, as Adam Norrie urges, is well overdue.

Speaking of strategy, something additional needs to be said. The thought is prompted partly by Adam Norrie's article in this issue of the Journal, and partly by something that I have long regarded as a serious pathology among many strategy practitioners in New Zealand. This is the deeply Clausewitzian idea that it is governments who make policy, and military strategists who devise the means of implementation. Or, as the late Colin Gray used to say, strategy is best thought of as the bridge between a government's policy intentions and the military instrumentality.

It is not that this way of thinking about strategy is necessarily wrong, only that it is seriously limited. Governments do not spring into being fully-formed. Their policy intentions may be impractical, sharply parochial or poorly informed. Their intentions may not fully reflect what should be the essence of all "big S" strategy. Namely, an answer to the questions "What are we trying to achieve? How are we going to achieve it? And why have we chosen this particular strategy and not others?"

If we fall into the trap of thinking that it is only ministers who do "big S" strategy and officials who do the "little s" implementational stuff, we risk the worst of all possible worlds: ministers with solutions chasing problems to solve, and officials only doing what they think ministers want. A better model is reflected in an architectural analogy; in this model, experienced officials help their ministers work toward a different and expanded possibility space. Just as a good architect will bring experience and imagination to a client who may not know exactly what they want or how to get it, officials can help their ministers formulate the "big S" strategies. At the same time, ministers who are close to their constituents can help officials working in the "small s" implementational space. In short, a partnership. Not the horse and the cart. Rather, two willing horses working in tandem.

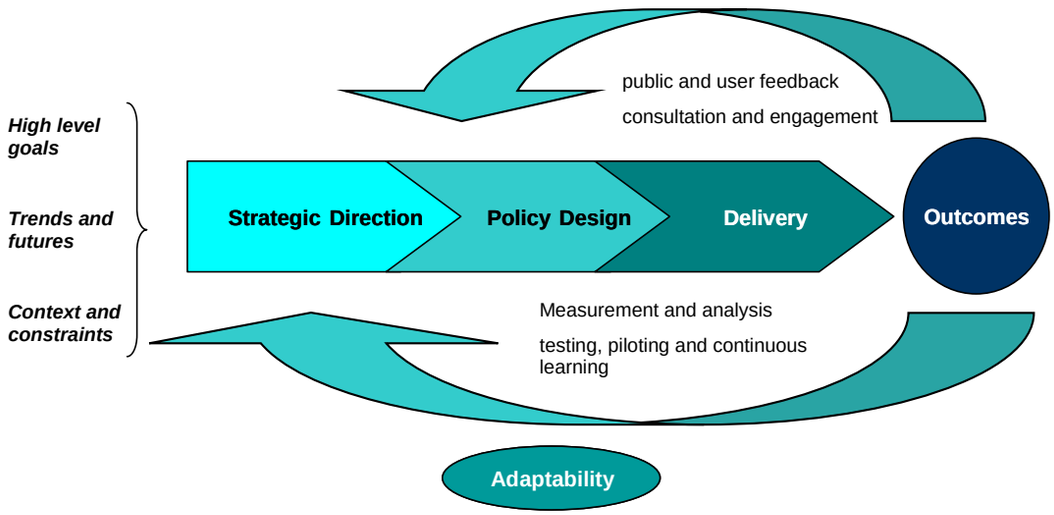
Where then, in this model, does policy sit? It sits between strategy and delivery. It is the design phase where officials (typically, but ministers may want and need to be involved in the practicalities also) work out how to go about implementation.

This is not as strange a model as it may seem. Many senior officials in Wellington describe themselves as Strategic Policy Advisors. In this model, strategy comes before policy. The titular order is never reversed.

The UK Cabinet Office under the Tony Blair government in 2002 set up a strategy unit designed to do just what I am advocating here. In this model, strategy advisors work to increase the options available to governments. A graphic that sets out how the UK strategy unit saw its role is shown at Figure 1. The point to note is that, although strategy is depicted as leading policy, it is not a linear process. Feedback loops ensure that lessons learnt from policy design and delivery are fed back into the strategy design process.

There is an important "so what?" to all of this. In the New Zealand context, the underlying thread to this discussion of strategy and policy and its place in and around government is this:

4 Curnow, "Landfall", 95.



LEFT
The relationship between strategy and policy, UK Cabinet Office *Strategy Survival Guide*, 2004.

there is a lack of appreciation in too many places about the true benefits to be derived from strategy. We prefer to solve problems as they crop up, whereas strategy, when well done, properly informed and fully connected across government, provides coherence, a sense of purpose and the long-term direction that many observers believe is currently missing.

Back to Dr Henry Hendrix, his book on naval primacy and his advocacy of the idea that this represents America's first and best strategy. On one level, the idea of such a strategy appeals. But there are at least two problems with it. Naval primacy, if it can be achieved, is not an end in itself. It is a means to an end that can be variously expressed but includes such notions as freedom of the high seas and the fundamental role of naval power in underpinning the liberal international order. In that sense, naval primacy serves a larger strategic purpose that has to do with legitimacy, values, freedom from coercion, open sea lanes, seaborne commerce, national prosperity and many other things. But naval primacy, along with diplomacy and legal instruments, is just one of the instruments of national power. It cannot be described as first and best when it is one among many. In some ways, in fact, it is last and worst, since its employment to force an adversary to do one's will suggests the prior failure of many other instruments of national power.

In his review of the Hendrix book, Dr Benbow points toward another problem with the primacy thesis. A way must be found to explore and accommodate the role of the US Army (and armies in general) in furthering the aims of maritime strategy. And the more that such strategies aim at primacy or, as in New Zealand's case, operational domain mastery, the greater the need will be for the Army to reconceptualise its role in the maritime space to help enable the underlying strategy.

Conclusion

Naval primacy is not a strategy, it is a means to an end. As such, it is a part of how a nation conceives of its grand strategy. Arguably, New Zealand has yet to develop grand strategy in any ordinary sense of the term. But when it does develop this grand strategy, the role of naval power in protecting our sea-borne commerce and other maritime interests will be a central part.

In the meantime, what we do have in Wellington is a well-defined national security system that aims to do what doctrine suggests, namely to coordinate the instruments of national power in pursuit of national policy aims to secure New Zealand's interests. This system, it is fair to say, is focused on national security issues. What is missing, as John Martin argues in his article on strategy in this issue, is a broader, well-articulated sense of what strategy at the national level should be aiming at. Across government, this would be 'a substantially different level of ambition, scope or scale...[that] entails a clear understanding of *what is fundamental to the survival of the nation and therefore must be met with the resources of the nation*.'

Lance Beath
General Editor

Ko te kairapu, ko ia te kite.

He who seeks will find.

The Raupō: Book of Māori Proverbs. A E Brougham & A W Reed, revised by Tīmoti Kāretu (1987). Reed Publishing (NZ) Ltd. 5th edition Penguin Group (NZ) 2012.

LETTERS TO THE EDITOR

Dear Lance

Thank you for taking the trouble to send me such an interesting and indeed very professional journal on the Navy. Its appearance, which seems miraculous in such a solid form, is also an encouraging sign that New Zealand is at last thinking about the implications of being a maritime nation. I have heard earlier ministers and even a prime minister say, what's the point of all this spending when we never even use the things. Perhaps time and a little more reading will erode such innocence....

I have one thought to add. The journal points out that we have little or no need to defend against foreign invasion but that a navy is needed to protect our maritime approaches. This is true but I think our interests go further out than that. Our national interest is to deter or deal with threats to the peace of the whole region. The western Pacific is largely air and water. To be able to help our friends protect it requires more emphasis on sea and air capabilities as our ASEAN friends are doing. Such capabilities underwrite our foreign policy because our friends will hardly be interested in our protestations of support if they are not backed up by sea/air capabilities to make our support real.

Gerald Hensley. December 29, 2020. (letter abridged)

Sir,

It occurs to me that Timothy Portland's excellent article in the first edition of the journal is complementary to my own - I concentrate on the technological and doctrinal opportunities that could shape our next fleet (provided they are addressed now), whereas Timothy gives an excellent geo-political overview while reaching very similar conclusions about the form our next fleet could take. He also identifies the looming block obsolescence challenge, and the need to break away from the "like for like" replacement paradigm.

However, there is one point that Timothy makes with which I take issue. I don't believe we need to talk about re-orientation to "constabulary" missions. As Tim identifies, the capabilities he suggests as candidates for our next fleet could have utility in medium intensity conflict by the adoption of capability modularity. A modular fleet would thus have utility across the combat and constabulary spectrum. I believe Timothy is also correct when he infers that our key security partners would take a dim view of an overt move away from combat capability, although I believe they would recognise that high end multi-functional combat capability of the type represented by the Hunter class frigate may be beyond our economic reach. But as Simon Murdoch points out in the same issue, New Zealand's most critical maritime interests may lie on our maritime periphery, and I would suggest that a meaningful contribution to multi-national operations in that sphere would require capabilities beyond the constabulary. However, this may simply be a terminology issue, for which I may be partly to blame having contributed to the definitions in New Zealand Maritime Doctrine to which Timothy refers.

All that aside, the main point I'd make in relation to Timothy's article is that it's great to see a senior member of our diplomatic community making a contribution to the discussion. I hope there's more to come in the same vein from Timothy and his colleagues.

A.G.A. Watts, Captain, RNZNR. January 24, 2021

Dear Lance,

Congratulations on getting a first issue out - that really is an achievement. I think that the content looks very interesting and can see it attracting considerable interest over here. I will see if we can publicise it through the Corbett Centre https://www.kcl.ac.uk/research/corbett-centre-for-maritime-policy-studies, and will bring it to the attention of the Staff College Library. I will also flag it to the team who are currently putting together an online platform for Royal Navy professional military education (internal only, I'm afraid), which has a section for links like this.

There is no direct UK equivalent of this publication; the *Naval Review* comes close but it is unofficial.

In terms of the visit of the Queen Elizabeth carrier group to the Asia-Pacific, I suspect that staff and students at the Staff College would be interested to read a New Zealand perspective on it in the Journal. If you wanted an officer to write a piece for the Journal covering the UK perspective, I dare say a volunteer could be found.

Dr Tim Benbow
Reader in Strategic Studies
Defence Studies Department,
King's College London. February 4, 2021

Dear Sir,

A link to the Journal was included in the latest publication from The New Zealand Company of Master Mariners bulletin and as both a retired naval officer and merchant navy master I found the magazine both interesting and informative.

I believe the United States found that the logistics required to keep one soldier in the field for a month required two cubic metres of cargo space, in other words 16 soldiers require one standard 20' container per month containing food, ammunition, and other supplies.

The modern army needs more than what can be carried on a soldiers back and the range of equipment that can be carried in HMNZS *Canterbury* is useful but could be supplemented by a ship such as the Sedna Degagnes.

This vessel and two other ships were used to supply remote communities within the Hudson Bay, Canada landing thousands of tonnes of break-bulk and containerized cargo on beaches using two barges, two small tugs and two payloaders carried onboard. Such a vessel could be usefully employed on a coastal service when not required and the barges and tugs manufactured locally.

There are a number of merchant marine officers who have been working internationally that have experience gained through the offshore oil industry and other specialized areas of marine transport, including heavy lift vessels, who could man such a vessel now.

Mike Smith, February 15, 2021 (letter abridged)

Good Afternoon Lance

Many congratulations. I love the look and more importantly the content - I think it covers much about NZ that is often

hidden from this part of the globe (perhaps due to our penchant for introspection over the last decade that I hope we are now starting to break out of).

Since taking up the post here in *Naval Review* I have been regularly exchanging our output with counterpart publications in Australia (*The Navy* - the magazine of the Navy League of Australia) and Canada (*Canadian Naval Review*). All of us have slightly different modus operandi and look but, from time to time we exchange articles that might resonate beyond the limits of our respective audiences. So I would very happily begin doing so with you if you should so wish. In any respect I will copy you an electronic copy of our quarterly journal as it is produced. If you are able to reciprocate as a routine that would be great.

I believe we are on the cusp of public realisation that the maritime matters more than ever, so the future I think must be bright for those who want to engage braincells on the defence and naval challenges ahead, and articulate them in fora such as yours and mine.
Bruce Williams
Editor The Naval Review
February 17, 2021
(letter abridged)

Good morning Lance.

The Journal arrived yesterday. I've not got very far into it but already I can see a big gap in our Defence thinking.

If I still see that when I've finished reading this wonderful journal I'll be submitting a paper for the next Journal. I well know how much effort goes into producing such a document. Well done for a great project.
Gerry Wright
February 26, 2021.

Dear Editor

Congratulations on the first issue of your Journal. Such high quality publications are welcome and will surely find a receptive audience including some across the Tasman. The Naval Historical Society of Australia would for one be pleased to establish closer links.

The attached draft article on the wartime history of Norfolk Island is forwarded for consideration by your editorial committee. From recent investigations this aspect of our history is almost unknown by our naval fraternity.

For information I briefly served as a junior seaman officer in the RNZN before migrating to the RAN where I retired as a commander in 1989. After another civilian career and retirement I joined the Naval Historical Society based at Garden Island in Sydney and edit their quarterly magazine.
Walter Burroughs, March 4, 2021

Dear Lance,

In a recent issue of Foreign Policy, there is a timely reminder from the US about taking too narrow a view of what we need and where the money should come from whether that's from within Defence or the wider Government.[1] I suspect the author of this article was being deliberately provocative or a Foreign Policy Magazine sub-editor has an axe to grind, but I have never seen the point of this sort of internecine argument. I was an analyst for Vote Defence in Treasury in the early 2000s, and the behaviour of Defence at that time complicated working out where to best spend the government's dollar. At the end of the period, NZ had disbanded the Air Combat Force, halved the Naval Combat Force, and bought 105 LAVs. (To be fair, it also resulted in upgrades to P3s/C130s, and acquired *Canterbury* and the Naval Patrol Force). This was not entirely the result of inter-service rivalry, but it certainly played more than a minor part. That said, the article makes some very salient points which are applicable beyond the USA and resonate for New Zealand:

- The USA relies primarily on sea-based commerce and maritime resources... which means it needs a Navy
- The Navy's role in guarding the world's sea lines of communication – and in times of conflict, driving the enemies' fleets from the seas – is wholly unfamiliar to a generation familiar with conflicts in Afghanistan and Iraq
- Future challenges to be faced by the US (and its partners) are maritime. If there is conflict with China, it will be across the Pacific Ocean.
- It takes time to build a Navy.

His major point though; there is a need to invest in ships at the expense of the Army (or any other Defence area) may reflect the US funding system, but it is a false dichotomy. To put into NZ terms, the NZDF exists to apply military effects (at Government direction), and each service has its own area of expertise. To argue one is more pre-eminent than another is to argue a hammer is better than a screwdriver when for all we know, the requirement is for both, or perhaps a paintbrush. In the New Zealand context, my personal view is that the NZDF as a whole needs investment and this is reflected in the *Defence Capability Plan*. Shifting money within the envelope works up to a point, but at some point, the choice is not A or B, but A and B (and perhaps C as well). More importantly, it points up the fact that as strategic circumstances change, the policy response needs to change as well.

Yours aye
LTCDR Richard Davies, RNZN
May 27, 2021

1 Herzinger, *Give the U.S. Navy the Army's Money*.

COMMENTARIES

Editor's note
In this section of the Journal*, we republish some of the more interesting commentaries resulting from articles in previous issues of the* Professional Journal of the Royal New Zealand Navy*. The first of these commentaries is by Dr Anthony Bergin, writing in* The Strategist*, the blog of the Australian Strategic Policy Institute, where he is a Senior Fellow.*

Anthony Bergin: Navies must reduce their carbon emissions in the face of climate change

30 Mar 2021

The Royal New Zealand Navy recently launched its own journal, which aims to build the service's professionalism and 'engage and exchange views with all those who have an interest in naval and maritime affairs'. The most eye-catching contribution in the inaugural edition is by the RNZN's chief naval architect, Chris Howard, with the provocative title 'Toward a zero carbon navy'. It's a fascinating read.

In November 2019, New Zealand's parliament passed the Climate Change Response (Zero Carbon) Amendment Act. Net emissions of all greenhouse gases, except methane, are to be reduced to zero by 2050. The act requires all parts of society to examine their emissions levels and reduce them wherever possible and practicable.

There aren't any net-zero-carbon navies. But the RNZN is the only navy paying into an emissions trading scheme. It pays New Zealand's treasury a capped price of NZ$25 per tonne of carbon dioxide equivalent and receives a substantial rebate for fuel assessed as burned overseas on task. That's because those emissions are deemed international and so fall outside the scope of the national scheme.

Howard argues that the RNZN should declare an intent to work towards becoming the world's first zero-carbon navy and seek operational and technological efficiencies in its fleet.

Interestingly, Howard doesn't support targets for emissions reductions, noting that 'the security implications flowing from climate change are likely to increase the required operational tempo'. Rather, he suggests that the RNZN support alternative green fuel technologies to reduce the carbon intensity of operations.

Defence ship acquisition policies and maritime regulations should, Howard argues, be developed to encourage technological improvements. He suggests that the RNZN partner with others in the maritime domain, and with its sister services, which are also seeking to reduce their carbon footprints.

While not sceptical, Howard is realistic about the difficulties of reducing the carbon footprints of navies: '[F]or the next few decades, it seems probable that most naval ships worldwide will continue to rely on diesel fuel.' But he suggests that the RNZN could, for example, showcase a green-ship technological commitment by acquiring an all-electric vessel as a tender or future VIP barge. (New Zealand's first all-electric passenger ferry is currently being constructed locally.) Autonomous maritime vessels such as solar-powered wave gliders could also help monitor New Zealand's large offshore zone.

Howard points out that New Zealand's future Southern Ocean patrol vessel is expected to feature clean and efficient design practices and support climate change science in Antarctica. He suggests that the vessel aim for part usage of methanol as fuel, noting that any spill would be almost non-toxic. New Zealand has one of the largest methanol production plants in the world.

Howard concludes, however, that over the next few decades, the full net-zero-carbon goal can only be achieved by purchasing carbon offsets through the NZ emissions trading scheme to 'make up the deficit between the design and operational efficiencies that can be generated, and the Navy's total carbon footprint'. He also talks about 'blue' carbon sequestration in New Zealand's exclusive economic zone and suggests that the RNZN use its international rebates under the scheme to invest in blue carbon research.

Climate change is expected to result in an increase [in] the frequency and intensity of extreme weather events, which will affect the missions of navies. That's because navies play a key role in disaster relief operations, particularly when airports have been rendered unusable. Think of the Royal Australian Navy's role in bushfire relief in 2019–20.

Navies may be the most effective first responders in

such circumstances, with their ability to bring in important capabilities, including medical amenities, command and communications facilities and heavy machinery. (Paradoxically, an increasing use of navies in climate disaster missions would, without a major technological breakthrough, increase carbon emissions.)

It's not surprising, then, that navies have in many ways taken the lead in setting up cooperative arrangements for disaster responses in the Indo-Pacific.

Reflecting the frequency of natural disasters, the Indian Ocean Naval Symposium has highlighted disaster response as a priority area for cooperation among regional navies, helping build confidence and trust among those who might otherwise see each other as adversaries.

At sea, more cyclones and rough seas may affect mobility. Naval engagement in law enforcement will increase to deal with people flows as well as more illegal, unreported and unregulated fishing and other changes to the marine environment caused by increased ocean acidification.

Most naval infrastructure was built on the assumption of a stable climate with a predictable variability. But many naval facilities are built in low-lying areas exposed to storm surges and sea-level rise. Naval maintenance schedules could be disrupted if facilities are damaged by storms.

Understanding the ocean environment is vital to naval operations. The data routinely collected by naval vessels, including submarines, can be used to monitor the impact of climate change on ocean conditions.

Climate change will alter the physical environment in which navies deploy. Naval planners will need the best climate science to inform their plans.

Navies can't prevent climate change and it will be decades before they become carbon neutral, if they ever do. Many ships need steel, but steel production contributes significantly to climate change. Still, navies should prepare for climate change and lower their carbon emissions.

In a memorandum issued to all Department of Defense employees, US Secretary of Defense Lloyd Austin states that to tackle the climate crisis the department will reduce its carbon footprint and 'seek to lead the way for alternative climate-considered approaches for the country'. As part of this effort, the department is establishing a working group on climate change.

When it comes to the environment, the declared efforts by the RAN don't mention climate change. And we've heard little about progress in the RAN's agreement with the US Navy to explore the use of alternative fuels.

Prime Minister Scott Morrison has said Australia should get to net-zero emissions 'as soon as possible' and preferably by 2050.

The RAN should be a leading example in meeting, and possibly exceeding, requirements for reducing greenhouse gas emissions. The challenge will be for the RAN to achieve this without curtailing its operations.

DR ANTHONY BERGIN

Dr Anthony Bergin is a senior fellow at ASPI and co-author of *A change in climate for the Australian Defence Force and Heavy weather: climate and the Australian Defence Force*.

Image courtesy of Department of Defence.

UPDATE ON CURRENT AND FUTURE DEFENCE-LED MARITIME PROJECTS

In this article, **Jon Finderup**, Director, Maritime Domain, Ministry of Defence, provides a brief update on capability projects in New Zealand's maritime domain.

IMAGE

Viewed from HMNZS *Aotearoa*, HMNZS *Te Kaha* practises refuelling at sea approaches in the Hauraki Gulf during February 2021. Image courtesy of NZDF.

Introduction

This note provides a brief account of maritime projects currently underway and in prospect being managed by Ministry of Defence-led integrated project teams.

Current projects: In-flight

Over the past two years, significant defence capability has been delivered.

The first capability to be brought into service was the Dive and Hydrographic Support Vessel, HMNZS *Manawanui*. Delivered in 2019, she underwent a comprehensive customisation phase before achieving interim operational release in early 2020. The process of operational release involves proving the capabilities of the system in the real world and incorporating elements beyond the equipment such as personnel, support and operational processes. While impacted by COVID-19, her operational release has progressed over the past year with many significant capabilities realised, including humanitarian and disaster response and sub-surface search and hydrographic survey. The next capability to be realised by HMNZS *Manawanui* is surface supply diving.

The Maritime Sustainment Capability—HMNZS *Aotearoa*—was in the middle of contractor sea trials when there was a major COVID-19 outbreak in South Korea. Fortunately, these sea trials were largely complete, and the ship had gained all necessary certifications to allow her delivery to New Zealand, albeit with significant COVID-19 constraints to work within. Subsequently, over the second half of 2020, she undertook a customisation phase where specialist military equipment was installed. Sailing for the first time under the New Zealand White Ensign in late 2020, she embarked a full load of fuel cargo before deploying for replenishment trials to Australia in early 2021. HMNZS *Aotearoa* has the capacity to hold up to 12,000 cubic meters of fuel, which supplements New Zealand Defence Force (NZDF) strategic fuel supplies to provide resilience in the event of disruption to commercial fuel supplies. HMNZS *Aotearoa* will complete a short maintenance period mid-2021 before participating in exercises and then undertaking her first deployment to Antarctica in early 2022.

HMNZS *Te Kaha* completed sea acceptance trials in October 2020 off the west coast of Canada. The ship's frigate systems upgrade was accepted from the contractor in November, with HMNZS *Te Kaha* crossing the Pacific to return to New Zealand before

BELOW
Defence Capability Plan 2019. Image courtesy of the NZDF.

Christmas. Representatives from Lockheed Martin and other system manufacturers have been working onboard and undertaking further trials to resolve any issues that were unable to be addressed before departure from Canada. HMNZS *Te Kaha* has just completed a short maintenance period and will deploy to Australia and Southeast Asia to undertake operational release activities in conjunction with planned exercises in the second half of 2021.

Recently contracted projects

The upgrades of the communications systems for HMNZS *Canterbury* and the two offshore patrol vessels HMNZ Ships *Otago* and *Wellington* have begun with the signing of a contract with L3Harris Mission Systems Australia. This project completed preliminary design as part of source selection and is now in the detailed design phase. The solution is based on the Australian Arafura class communications system, with Royal New Zealand Navy initial operational release planned for late 2022.

Projects approaching investment decision

A tender has been completed for the upgrade of the Anzac frigate external communication systems. The implementation business case has been completed and will shortly be submitted to Government for an investment decision.

A tender for the supply of Littoral Manoeuvre Craft (LMC) is in the final phases of evaluation. The LMC is a very capable high-speed boat of up to 12.5 metres in length that is able to support divers and littoral warfare system operators engaged in mine warfare and rapid environmental assessment activities.

Future projects

An indicative business case for the Southern Ocean Patrol Vessel was approved by Cabinet in August 2020, and work is continuing on bringing a detailed business case to Government with a recommended option before the end of the year.

Preliminary studies have begun to define what the composition of the future fleet may be. This work will look at fleet numbers and the possibility of combining multiple roles into similar or identical hull types. The outcome of this fleet composition study will inform future capability replacement projects, including the future surface combatant requirement and the enhanced sealift vessels needed to support deploying land forces, and other NZDF and All of Government roles.

With regard to the other three maritime projects described in the *Defence Capability Plan 2019*,[1] (the Maritime Helicopter Replacement Project, Enhanced Sealift Vessels and the Offshore Patrol Vessels Replacement Project), full definition studies of these are not yet underway, except in so far as these projects are relevant to the future fleet composition study. Some pre-definition work is being done on maritime helicopters before this is formally established as a project.

1 Ministry of Defence, *Defence Capability Plan 2019*.

JON FINDERUP

DIRECTOR, MARITIME DOMAIN, MINISTRY OF DEFENCE

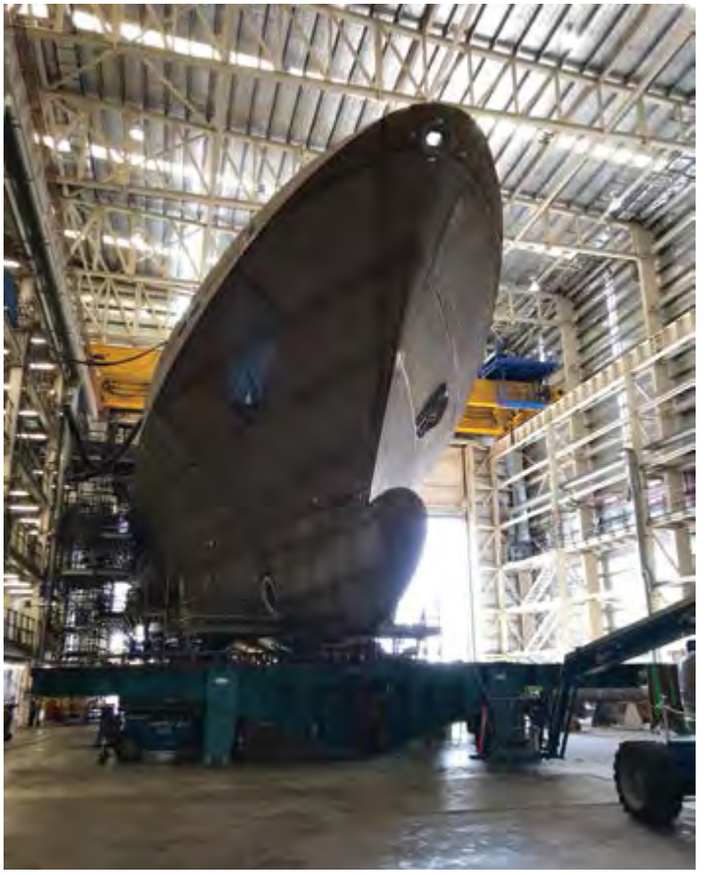
Jon Finderup currently holds the position of Director Maritime Domain, New Zealand Ministry of Defence, having taken up that role in 2016.

Prior to joining the Ministry of Defence, Jon had a 32-year career as a Weapon Engineering Officer with the Royal New Zealand Navy. He retired in the rank of Captain (N).

Notable positions held in the Navy included the New Zealand Defence Force Maritime Regulator, Project Manager for the Frigate System Upgrade, Director of Weapon Engineering, Commissioning Weapon Engineer of HMNZS *Te Mana* and Flag Lt to the Chief of Naval Staff.

ROYAL AUSTRALIAN NAVY FORCE STRUCTURE UPDATE

In this article, **Dr Lance Beath** outlines recent policy and capability developments in the Royal Australian Navy: toward a 'thinking Navy, a fighting Navy, an Australian Navy.'



RIGHT
Arafura class OPV under construction. Image courtesy of RAN.

Introduction

The aim of this brief update on future Royal Australian Navy (RAN) capability is to illustrate current Australian defence thinking by bringing together a selection of recent policy and planning documents and distilling from them an account of the key investments that are intended to drive the future force structure of the RAN as 'a thinking Navy, a fighting Navy, an Australian Navy'.[1]

This short update will be of interest to the readership of the Journal because of the close working relationship between the Royal New Zealand Navy (RNZN) and the RAN. It is born out of both the defence alliance and the practical necessity of location that our two navies work and exercise closely in order to face future challenges and uncertainties together.

Background

In this context, the most recent Australian documents of interest are the *2020 Defence Strategic Update* (DSU) and its accompanying *Force Structure Plan* (FSP). Additional background documents that bear on Australian maritime defence thinking include the 2016 Australian Defence White Paper, the 2017 *Naval Shipbuilding Plan* and RAN Plans Pelorus, Galileo and Mercator.

By way of comparison, New Zealand's defence capabilities through to 2030 are set out in *Defence Capability Plan 2019* (DCP).[2] This is an indicative plan, approved by government and based on interdepartmental consultation, that contains a proposed future investment programme for all three services, with a projected costing of NZD 20 billion through to 2030. As with Australian planning documents, each investment in the New Zealand plan is subject to the development of an appropriate business case, and each is subject to Cabinet consideration and approval. To that extent, the DCP is subject to the normal government budget processes and is, therefore, provisional in nature.

Australian *Defence Strategic Update*

The DSU, published on 1 July 2020, notes that Australia's region, the Indo-Pacific, is 'in the midst of the most consequential strategic realignment since the Second World War.'[3] Strategic competition, primarily between the United States and China, is seen as the principal driver of dynamics in the region. Though still remote, the prospect of high-intensity military conflict in the Indo-Pacific is considered to be 'less remote than in the past.'[4] As a consequence of this, the Australian government has set a number of new objectives to guide Australian defence planning. These objectives include a range of issues to do with force structure, force generation, international engagement and operations.

LEFT
Australian Prime Minister Scott Morrison at launch of the *Defence Strategic Update* and the *Defence Force Structure Plan* 1 July 2020. Image courtesy of Australian Department of the Prime Minister and Cabinet.

1 Royal Australian Navy, "Plan Pelorus 2022".

2 Ministry of Defence, *Defence Capability Plan 2019*.

3 Department of Defence, *2020 Defence Strategic Update*.

4 Ibid.

ABOVE
HMA Ships *Anzac* and *Ballarat* conducting close quarters Officer of the Watch manoeuvres in the Natuna Sea. Image courtesy of RAN.

The most prominent of the objectives are:

(i) to shape Australia's strategic environment;

(ii) to deter actions against Australia's interests; and

(iii) to respond to adversary threats and actions with credible military force, when required.

The government has also directed Defence to grow, among other things, its self-reliance, expand its ability to respond to grey-zone operations, enhance the lethality of the Australian Defence Force (ADF) for high-intensity operations and maintain its ability to deploy forces globally. The DSU calls for prioritisation of investment in a range of capability areas, including long-range strike weapons, cyber capabilities and area denial. It also calls for more durable supply chain arrangements and strengthened sovereign industrial capabilities to enhance ADF self-reliance.

Australian *Force Structure Plan*

The FSP was released along with the DSU. Building on capabilities announced in the Australian *Defence White Paper 2016* and the 2017 *Naval Shipbuilding Plan*, the FSP puts emphasis on enhanced posture and partnerships in the region and a range of more potent capabilities to hold adversary forces and infrastructure at risk further from Australia. Capabilities listed as relevant in this latter context include the new Attack class submarines, advanced strike systems (unspecified), remotely-piloted combat aircraft, sea-mining and offensive cyber capabilities. Capabilities designed to enhance posture and partnerships in the region include the new Arafura and Guardian class patrol vessels, and new amphibious landing craft.

Naval shipbuilding and the Australian *Naval Shipbuilding Plan*

Accompanying the FSP is a series of fact sheets that provide additional detail on individual aspects of the plan, including a fact sheet on naval shipbuilding.[5] The fact sheet is based on, and extends, announcements contained in the 2017 Australian *Naval*

5 Department of Defence, *Fact Sheet: Naval Shipbuilding Plan*.

Shipbuilding Plan.[6] The main elements in the plan include the following:

- **Surface combat.** The construction of nine Hunter class guided missile anti-submarine frigates (FFG). These are to be an Australian version of the BAE Systems Global Combat Ship. Their displacement will be 8,800 tonnes. The programme cost is AUD 35 billion (2018 estimate).

- **Undersea warfare.** Twelve Attack class diesel electric submarines displacing 4,500 tonnes (surfaced) are to be built. They will be designed and built in Australia in association with the French firm Naval Group (formerly DCNS) at an estimated cost of AUD 90 billion (2020 figure). A life-of-type extension programme for the six Collins class submarines is also included.

- **Maritime mine warfare and patrol.** A build programme for 12 Arafura class offshore patrol vessels and 21 Guardian class Pacific patrol boats is in place. The Arafura class offshore patrol vessels are already well underway, as are the Guardian class vessels being built by Austal at Henderson in Western Australia. Also included are plans for up to eight new vessels optimised for mine counter-measures and hydrographic survey.

- **Maritime combat support and amphibious warfare.** Two new multirole sea-lift and replenishment ships and a salvage and repair vessel are included along with a number of other planned acquisitions.

- **Army littoral warfare.** The *Naval Shipbuilding Plan* includes three items of direct interest to the Australian Army: these are (unspecified) future Army watercraft (up

6 Department of Defence, *Naval Shipbuilding Plan*.

BELOW
Hunter class production line at Osborne Naval Shipyard, South Australia. Image courtesy of CDR Michael Collinson, RNZN.

to AUD 800 million), a large Army landing craft (costed at up to AUD 1.2 billion) and Riverine Patrol Craft (up to AUD 90 million).

Of special note in all of this is the determination of successive Australian governments to create a continuous naval shipbuilding plan in order to support the development of a secure, sustainable, innovative Australian naval shipbuilding industry that is cost-competitive with major naval shipbuilding yards overseas.

Cost of investments in naval shipbuilding

The Australian *Naval Shipbuilding Plan* gives a projected cost of investments in shipbuilding of between AUD 168 and AUD 183 billion over the period from now out to the end of the Attack class submarine build programme in the 2050s (i.e. 30 years approximately). This is undoubtedly a highly speculative figure given the uncertainties inherent in building two brand new classes of ships (the Hunter class frigates and the Attack class submarines), technology impacts, movements in exchange rates over 30 years, inflation adjustments and the like.

Nonetheless, this is a reasonable indication of the rough order of cost involved in Australia's current naval shipbuilding programme.

RAN plans Pelorus, Galileo and Mercator

Alongside the DSU and the FSP, the RAN has a number of existing service plans that provide strategic guidance on different aspects of the Navy. Plan Pelorus 2018–2022 provides direction on workforce matters, force integration, battleworthiness, safety, sustainability, lethality and resilience. Plan Galileo 2019–2025 focuses on sustainment and capability lifecycle management issues. Plan Mercator 2036 contains the Chief of Navy's strategic guidance on the evolution of the RAN and its transition to the Future Navy 2036. It covers warfighting, capability, industry, logistics, facilities, workforce and seaworthiness.

Implications for the New Zealand Defence Force

The Australian *Naval Shipbuilding Plan* is an ambitious but realistic response to changes in Australia's strategic environment. It represents a significant recapitalisation of the RAN, which is designed to give it the capabilities that it needs to shape, deter and respond with military force when required throughout the region as well as globally.

The projected cost of recapitalisation is significant. On today's estimated figures, the cost comes to some AUD 180 billion over the next 30 years, or around AUD 6 billion a year.

By way of comparison, a recent back-of-the-envelope figure for the cost of New Zealand maritime recapitalisation (including the likely maritime capability requirements of the RNZN as well as the Royal New Zealand Air Force and the New Zealand Army) was given by Gareth Chaplin and John Martin in Volume 1 Number 1 of this Journal (December 2020). Their estimate there was that it 'would not be out of the ballpark' to think that the required recapitalisation of maritime capability was likely to be in the order of NZD 2–2.5 billion a year over each of the next 10–15 years, this being in addition to

RIGHT
OPV *Arafura* under construction. Lead ship HMAS *Arafura*, named after the Arafura Sea in northern Australia, is currently under construction at the ASC Shipyard in Osborne, South Australia. Image courtesy of RAN.

the current indicative planning figure of NZD 20 billion out to 2030.[7]

So, it is not just Australia that is finding maritime capability and recapitalisation an expensive but necessary investment in the future. New Zealand is likely to do so as well.

For the New Zealand government, one of the main points to take away from all this is the question of whether it might be in New Zealand's longer term interests to support Australian naval shipbuilding by actively seeking an association with the Australian government in its determination to build a cost-competitive naval shipbuilding industry. Whether we could, or would want to, do this or not is likely to hinge on a number of factors, including future cost movements at Australian shipbuilding yards and the extent to which New Zealand industry can share in Australasian naval shipbuilding contracts. As a former Chief of Navy has been quoted as saying:

> *'very often at the heart of warship acquisition programmes is the primary desire for a relationship, not just the ships themselves...'*

Conclusion

Australia has launched its most ambitious and far-reaching force structure rebuild of the RAN since the end of the Second World War. For the RNZN, this is a very significant development that it is following with close interest. Australian maritime force structure developments are one of the factors that will inform New Zealand thinking as it approaches the questions of its own future fleet renewal requirements, including the issues thrown up by the need to maintain interoperability and complementary capability sets between the RNZN and the RAN.

7 Chaplin and Martin, "Affordability and Value: the Defence Context," 60-69.

DR LANCE BEATH

GENERAL EDITOR OF THE JOURNAL

Lance is the General Editor of the Journal and Advisor to the Editorial Review Board. He brings to his work a background in the Ministry of Foreign Affairs and Trade and the Ministry of Defence.

Lance convened and taught a post-graduate degree course in strategic studies at Victoria University of Wellington's School of Government. He has also taught various papers at Massey University's Centre for Defence and Security Studies and for the Advanced Course at the NZDF Command and Staff College. Lance is the RNZN's Residential Nelsonian Fellow.

He graduated with a BSC First Class Honours and a PhD in thermodynamics from Otago University before completing post-doctoral studies under a Fulbright scholarship at UCLA.

IMAGE

US and China Summit Meeting Alaska, March 18–19 2021. Image courtesy of Frederic J. Brown/Pool via AP/AAP images. The Chinese delegation comprised Foreign Minister Wang Yi (far left) and the Director of the Office of the Central Commission for Foreign Affairs of the Chinese Communist Party, Yang Jiechi (second left).
The United States delegation was led by US Secretary of State, Antony Blinken (far right) with Jake Sullivan, National Security Advisor (out of the photo).

STRATEGIC LIBERALISM

A NEW FRAMEWORK FOR NEW ZEALAND FOREIGN AND DEFENCE POLICY IN THE FACE OF ACCELERATING GREAT POWER COMPETITION IN THE INDO-PACIFIC

In this article, **Dr Reuben Steff** outlines a new framework for foreign and defence policy before arguing for a three point action plan. Included in the plan is a call for New Zealand to seek associate or observer status in the Indo-Pacific Quad grouping and an invitation to participate in Exercise Malabar.

‘Outcomes will be stronger and more enduring if they are built through dialogue, shared understanding, and taking account of a range of diverse perspectives’

—Hon Nanaia Mahuta, New Zealand Minister of Foreign Affairs. Inaugural foreign policy speech to the Diplomatic Corps, 4 February 2021, Waitangi.

Abstract

In her first speech as New Zealand Minister of Foreign Affairs, Hon Nanaia Mahuta argued that New Zealand’s foreign policy would result in better outcomes if it were based on enhanced dialogue, shared understanding and diverse perspectives. This article is based on the Foreign Minister’s call. It outlines a new approach and framework for the development of New Zealand’s foreign and defence policy, specifically *strategic liberalism*. After backgrounding the new approach, it then outlines a three-point action plan to illustrate how strategic liberalism could be put into practice. The action plan suggests the creation of a new research and teaching institution to deepen New Zealand’s understanding of the perspectives of emerging and significant great powers, such as China, India and Japan, and their relationships with established powers like the United States (US); it suggests that New Zealand should offer to host an early high-level summit meeting between the US and China to begin the task of resolving their different approaches to a range of security issues; and, it argues that New Zealand should balance this initiative by seeking associated or observer status in the Quadrilateral Security Dialogue grouping of the US, India, Japan and Australia, participating in the next multilateral naval exercise in the

Exercise Malabar series most recently hosted by India in the Bay of Bengal in 2020.

Introduction

While the world’s attention is fixed on COVID-19, ties between the US and China continue to deteriorate. This has led to claims that a new Cold War is underway, signalling the end of US global pre-eminence and the onset of a more competitive and dangerous multipolar world.[1]

This system- and epoch-defining competition is a new structural reality for international relations and diplomacy. It is not hyperbole to say that grappling with it should be the highest priority for New Zealand’s foreign and defence policymakers.

1 For articles that make this case, see Kaplan, “A New Cold War Has Begun,” and Rick Gladstone, “How the Cold War between China and U.S. Is Intensifying”. For articles that reject this view and seek to add nuance to the discussion, see: Thomas J. Christensen, “There Will Not Be a New Cold War: The Limits of U.S.-Chinese Competition”, and Fareed Zakaria, “The New China Scare: Why America Shouldn’t Panic About Its Latest Challenger.”

LEFT
Hon Nanaia Mahuta, Minister of Foreign Affairs. Image courtesy of the minister's office.

As part of the new equation, Washington is portraying China to be both a military and ideological threat to democracy and the international liberal rules-based order—an order that has been immensely beneficial to New Zealand. A hard turn in US policy has commenced and Beijing shows no sign of backing down.

The shifting balance of power in the Indo-Pacific (and sub-regions like the South Pacific) has created a dilemma for New Zealand, given its close security ties to the US and high levels of trade with China. Wellington, therefore, has sought to balance relations between Beijing and Washington and prefers to take a relatively discreet approach over differences with China (and the US, for that matter).

But the deterioration of US and China relations threatens to upend Wellington's balancing act, and great power conflict is no longer inconceivable—in 12 of 16 cases over the last 500 years, rapid shifts in power between rising nations and declining ones resulted in war.[2]

To address rising tensions, some commentators suggest New Zealand act as an intermediary between Washington and Beijing, leveraging its independent credentials and reputation for pragmatism and fair-mindedness.[3]

Yet, these appeals rarely include a broader conceptual framework. To fill the gap, this article outlines strategic liberalism[4]—a set of ideas consistent with New Zealand's aspirations. These ideas offer a foundation to guide Wellington's response to great power tension.

As part of this, Wellington could make a conscious political decision to frame its objectives as more far-reaching than appears currently plausible. Ultimately, the intention is to foster an inclusive and sustainable peace that contributes toward an emerging world order founded on great, medium and small power cooperation.

This article builds its case in four stages. First, it outlines the new US–China great power competition. Second, it discusses the implications of this for New Zealand's interests, and how it threatens New Zealand's existing hedging strategy. Third, it provides an overview of strategic liberalism and its key principles, and fourth, it puts forward a three-point Action Plan. Point 1 seeks to enhance New Zealand's US-China-India-Japan expertise and capabilities, point 2 proactively pushes for new US–China understandings and cooperation, and point 3 advocates that New Zealand seek observer or associate status in the Quad/Malabar series of maritime exercises in the Indo-Pacific.

It concludes that the stakes involved in the escalating US–China competition are high and, while there are risks in New Zealand adopting a more proactive posture, the present trajectory of great power relations is already threatening to undermine the foundation of our hedging strategy.

A new era of Great Power Competition

A multi-dimensional competition between the US and China is underway across the Indo-Pacific. It is comprised of military balancing and counter-balancing, economic competition, new institutional arrangements, territorial disputes, assertive diplomacy, and a dash for military-technological advantage.

Washington, under the Trump administration (2017–2021), portrayed China to be a "revisionist power" that was undermining the international order,[5] and officially elevated Great Power Competition to the forefront of US grand strategy.[6] A hard policy turn against China took place. This included launching a trade war, elevating ties with Taiwan, decoupling from China in high technology areas, tightening visa rules for Chinese Communist Party members and launching investigations into Chinese efforts to acquire research by scientists employed by US universities and research institutes.[7]

The US Congress also approved the Pacific Deterrence Initiative (PDI),[8] a plan designed to maintain a credible balance of military power vis-à-vis

2 Allison, "The Thucydides Trap: Are the U.S. and China Headed for War?"
3 Tan, "Could New Zealand serve as an 'honest broker' to repair ties between China and the West?"
4 Steff, "Strategic Liberalism and Kiwi Maximalism," 14-17. NB: Readers of this earlier article will note that my ideas have taken on both a more liberal and a more conservative cast over the 5 years since this first attempt to think about strategic liberalism was drafted. I am, for example, no longer advocating a strategic alliance with China (which I suggested could complement and exist simultaneous alongside a New Zealand-US alliance), though I do look for a better-balanced relationship with this emerging Great Power.
5 Pompeo, "Communist China and the Free World's Future."
6 White House, *National Security Strategy of the United States of America*; Department of Defense, *Summary of the National Defense Strategy of the United States of America*.
7 Khoo, "The Trump Administration and the United States' China Engagement Policy," 1-19.
8 Shelbourne, "U.S. Indo-Pacific Command Wants $4.68B for New Pacific Deterrence Initiative."

ABOVE
Two USAF F-22 Raptors and a B-2 Spirit bomber deployed to Andersen Air Force Base, Guam, fly in formation over the Pacific Ocean off the coast of Guam. Image courtesy of Master Sgt. Kevin Gruenwald/ Alamy.

China's expanding military power, and that will likely see the Americans deploy medium and long-range missiles around the First Island Chain in coming years (Washington appears to have concluded that stopping Beijing's military power from extending a sphere of influence beyond the First Island Chain to the Second Island Chain is critical; if Beijing does so, US partnerships with states like the Philippines and Vietnam, not to mention American territory and military power in Guam, will be in jeopardy).

Washington also advanced relations between India, Japan and Australia—the four members of the Quadrilateral Security Dialogue (Indo-Pacific Quad).[9] Furthermore, countries across Europe, from Britain to France, Germany and Russia, are all increasing their interest in the region, producing their own Indo-Pacific strategies and dispatching naval forces for manoeuvres.[10] Rather than the Pacific living up to its name, the possibility, if not probability, of increased militarisation of the region beckons.

Washington frames all of this as a response to Chinese expansionism. In the maritime sphere, Beijing has accelerated its military activity in the South China Sea and is pursuing a naval build-up. Institutionally, it has launched new economic groupings; diplomatically, its "wolf warrior" diplomacy casts Washington as a declining and irresponsible superpower (with China campaigning to take its place); and ideologically, Beijing challenges liberal values through its behaviour toward Hong Kong, Taiwan, and in Xinjiang.

9 Akita and Sugiura, "Pompeo aims to 'institutionalize' Quad ties to counter China."

10 Wintour, "Why Britain is tilting to the Indo-Pacific region."

The Chinese leadership is doing little to reassure its American critics, declaring it is 'building a socialism that is superior to capitalism, and laying the foundation for a future where we will win the initiative and have the dominant position'.[11] Meanwhile, the Chinese Communist Party domestically characterises its efforts as inevitable and natural; having been a great power for much of its history, China is rightfully returning to a position of global prominence that was waylaid by a "century of humiliation" between 1839 and 1949 as western powers, Russia and Japan intervened and subjugated China.

The outbreak of COVID-19 (and concerns about Beijing's transparency and management of the outbreak) has compounded matters. Rather than cooperating to address the pandemic, Beijing and Washington politicised the issue, accusing one another of irresponsibility and of being the true origin of the virus.

Thus, toward the end of Trump's tenure, US–China relations were at their worst point since 1991, with Chinese Foreign Minister Wang Yi declaring in May 2020 on the side-lines of the annual session of China's National People's Congress that the US had smeared China over the COVID-19 pandemic and pushed the relationship 'to the brink of a new Cold War'.[12]

The arrival of the Biden administration has not changed the fundamental trajectory of US–China relations. Even as Biden jettisoned the Trump administration's "America First" rhetoric, a break with his predecessor's view on China and tough economic policies has not been forthcoming. Indeed, in its *Interim National Security Strategic Guidance*, it declares China to be 'the only competitor potentially capable of combining its economic, diplomatic, military, and technological power to mount a sustained challenge to a stable and open international system'.[13] As such, the Biden administration seeks to enact domestic and foreign policies to allow the US to 'prevail in strategic competition with China'.[14]

One notable shift from Trump is that Biden seeks to get US allies 'on the same page' with its China strategy.[15] This involves creating 'a united front of friends and partners to challenge China's abusive behaviour', and to better organise the 'techno-democracies' against the 'techno-autocracies'.[16]

Relative to its predecessor, the Biden administration intends to elevate ideological differences with Beijing in its strategy, believing this will clarify the difference between the US and Chinese worldview and rally more nations to its side.

Uncomfortable realities

It is worth plainly recognising a few uncomfortable realities. In the South China Sea, the military balance of power may have shifted in China's favour—and Washington appears unwilling to start a war to remove China's presence. To be glib—for the moment, China appears to have "won" in the South China Sea while ignoring international law and without firing a shot. This is, in effect, a challenge to the "rules-based international system" that New Zealand regularly affirms is critical to its long-term security.

China is also increasing its presence and influence in the South Pacific through greater levels of diplomacy, trade, aid and loans, infrastructure development (with dual use utility—for example, ports can be used for both trade activity and military operations) and increasing security and military cooperation.[17]

Meanwhile, Australia (Wellington's sole active treaty ally given that the ANZUS relationship is currently "inactive") is engaged in a heated spat with China. It is taking significant steps in the military sphere with China in mind, intending to spend

11 Jinping, "Uphold and Develop Socialism with Chinese Characteristics."

12 DW, "China Diplomat Warns U.S. Against Pushing to 'Brink of a New Cold War'."
13 White House, *Interim National Security Strategic Guidance*, 8.
14 Ibid, p. 20.
15 Sonne, "To Counter China and Russia, Biden has said he will strengthen alliances"; for additional thoughts by the author on what this means for New Zealand, see: Steff, "The Biden Administration and New Zealand's Strategic Options: Asymmetric Hedging, Tight Five Eyes Alignment, and Armed Neutrality,' 1-23.
16 Davis and Wei, "Biden Plans to Build a Grand Alliance to Counter China. It Won't Be Easy."

17 Zhang, "China's military engagement with Pacific Island countries."; Pryke, "The risks of China's ambitions in the South Pacific."

AUD 270 billion over the next decade to extend the reach and power of its military forces, and it is acquiring new capabilities to deter Beijing and impose costs in the event of a conflict.[18]

We also have scant evidence that Washington and Beijing are willing or politically able to jointly manage pressing issues: North Korea remains a belligerent pariah; the South China Sea appears increasingly to be under China's writ; and Trump and Xi both failed to work together in responding to COVID-19.

As China's power continues to rise relative to the US, these issues—and undoubtedly more to come—are test cases as to whether the two powers will manage major international issues jointly, or whether a zero-sum competition will prevail. The latter scenario

ABOVE
China's first-generation domestically built aircraft carrier *Shandong*. According to unverified sources, the photo is said to show *Shandong* transiting the Taiwan Straits in December 2020. Launched April 2017. Commissioned Type 002 Dec 2019 for People's Liberation Army Navy (PLAN). Initial Operating Capability October 2020.

18 This will include a strengthened defence infrastructure, new Long Range Anti-Ship Missiles (LRASM) purchased from the US Navy, research and development into high-speed, long-range weapons, including hypersonic missiles, an underwater surveillance system, and improving Australia's cyber, information and space warfare capabilities (including a network of satellites for an independent communications network). Canberra may also purchase US missile defence systems that China perceives to be part of a global effort by Washington to undermine its nuclear deterrent. Australian Government, *2020 Defence Strategic Update* and *2020 Force Structure Plan*, July 1, 2020. For analysis of the role US missile defence has played in US-China relations, see Steff and Khoo, *Security at a Price: The International Politics of US Ballistic Missile Defense*.

HEADLINES FROM THE CHINA-US HIGH-LEVEL STRATEGIC DIALOGUE

'US and China trade angry words at high-level Alaska talks' – *BBC*, March 19, 2021

'Bitter Alaska Meeting Complicates Already Shaky U.S.-China Ties' – *The Wall Street Journal*, March 19, 2021

'Tense Talks With China Left U.S. 'Cleareyed' About Beijing's Intentions, Officials Say' – *The New York Times*, March 22, 2021

'US accuses Beijing of sabotaging 'rules-based' world order & decries 'protocol violation' after Chinese hit back at Alaska talks' – *Russia Today*, March 19, 2021

'US's ignorance during talks goes viral' – *China Daily*, March 22, 2021

looks more and more likely each day, with the recent China–US high-level strategic dialogue in Alaska (between US Secretary of State, Antony Blinken, and US National Security Advisor, Jake Sullivan, and two of China's top diplomats, China's Foreign Minister, Wang Yi, and Director of the Office of the Central Commission for Foreign Affairs of the Chinese Communist Party, Yang Jiechi) quickly descending into a verbal clash.[19]

But public recrimination does not change the reality that unless someone wants to open Pandora's box and head into a military confrontation with China, the nations of the Indo-Pacific need to learn to live with an emboldened Beijing. And we in New Zealand need to deal with this new superpower that has different values and a markedly different political system to our own.

The above is one set of realities that we need to take on-board. A second set of realities that is equally, if not more, important from a security perspective has to do with how we can best secure our defence requirements over the short/medium/long-term in the currently deteriorating security environment in the region. Here, my argument is that we need to think harder about how we can work more closely with those powers with whom we have existing defence relationships. This line of thinking leads in only one direction: New Zealand needs to seek observer or associate status with the Quad powers in the Indo-Pacific, namely the US, Australia, India and Japan via participation in the Malabar series of maritime exercises.

Implications for New Zealand

The interconnected global system means the consequences of crises and conflicts in distant regions do not stay localised—they cascade outwards to affect us.

The events in Ukraine since February/March 2014 (after

19 Nikkei Asia, "How it happened: Transcript of the US-China opening remarks in Alaska."

Russia annexed Crimea) were a sharp reminder of this, as tit-for-tat sanctions between Russia and the European Union resulted in a glut of dairy products on the international market. This significantly decreased dairy prices and reduced New Zealand's export income. Furthermore, it torpedoed a once-promising economic relationship between Wellington and Moscow by forcing New Zealand to put a free trade agreement with Russia on hold indefinitely.[20]

The implications for New Zealand's interests as a result of a conflict between the US and China would be far worse. Consider that a third of the world's shipping carrying over USD 3.4 trillion in trade each year passes through the South China Sea.[21] A crisis or conflict over the multiplying number of disputes between Washington and Beijing would immediately compromise New Zealand's shipborne trade to China and the security of our citizens in the region placed at risk. And if the Cold War taught us anything, it's that crises—and "accidents"—between competing superpowers *will* occur, and actors on either side can lose control.

Meanwhile, Biden's intention to consult with allies and friends on the US's strategy for China is welcome news in Wellington. But Washington is signalling it expects more in return out of its allies to challenge China. This will include New Zealand, given our status in the *2017 National Security Strategy* as a key US partner 'contributing to peace and security across the [Indo-Pacific] region'[22], the fact we are designated a Major Non-NATO Ally (MNNA),[23] and that we are part of the Five Eyes alliance.

In short, Wellington will be invited to provide (so far undefined) contributions to assist in the containment of China's rise as a military power. Furthermore, we need to recognise that, in the event of a future US-China military clash in the Indo-Pacific, Washington could ask New Zealand to provide a military contribution to a US-led or UN-led coalition effort.

China, for its part, has immense economic leverage over New Zealand that it could choose to exercise were we to align too closely with Washington or join a more robust response to counter its expanding influence. After all, Beijing has already dished out considerable economic pain to Australia (costing Australian exporters AUD 5–6 billion) in response to what Beijing said was Australia's 'rash participation in the US administration's attempts to contain China' and damaged South Korea's tourism industry in 2017 when Beijing limited travel to Korea in protest at Seoul allowing a US missile defence system on its territory.[24]

Managing relations

To balance its relations, New Zealand has adopted an asymmetric hedging strategy, aligning with Washington on some aspects of security and military cooperation, while maintaining a margin of difference through both the use of a messaging strategy that stresses New Zealand's 'independent' foreign policy credentials and the current absence of a working security treaty with Washington.[25] The former signals ambiguity to Beijing over how tight the alignment is, allowing room for New Zealand to work at ensuring the continuance of high levels of trade with China.

It is an optimal strategy, allowing Wellington to benefit from ties with both so long as neither Washington nor Beijing imposes serious costs on Wellington for sustaining positive ties with the other. But the decline in US–China relations threatens the foundation beneath Wellington's hedging strategy—it raises the prospects that either Washington or Beijing will compel New Zealand to take steps that are viewed as hostile to the other power's interests.

It is clear that New Zealand has an interest in a stable and secure Indo-Pacific region. Intensifying competition between the US and China is at odds with this; it threatens the foundation of New Zealand's strategy.

Diplomacy to address the US–China dispute would clearly be preferable to New Zealand. Unfortunately, working against this it appears that an air of fatalism and inevitability has taken hold.

But no future is set in stone—countries, even small ones, have agency and can seize opportunities to push for change, especially as military

20 Duver, "Dairy: June Quarter 2019."; Radio New Zealand, "PM says not right time to sign deal with Russia."
21 Congressional Research Service, *U.S.-China Strategic Competition in South and East China Seas: Background and Issues for Congress*.
22 White House, *National Security Strategy*, 46.
23 US Department of State, "Major Non-NATO Ally Status."
24 Handley, "China warns Australian economy could 'suffer further pain' after reported export ban."; BBC News, 'South Korea tourism hit by China ban."
25 Steff and Dodd-Parr, "Examining the immanent dilemma of small states in the Asia-Pacific: the strategic triangle between New Zealand, the US and China," 90-112; Ross Smith, "When Hedging Goes Wrong: Lessons from Ukraine's Failed Hedge of the EU and Russia," 588-597.

STRATEGIC LIBERALISM: CORE PRINCIPLES AND OBJECTIVES

- Anti-determinism (a new Cold War, for example, is not inevitable given active diplomacy and fortunate circumstance).
- Global interest; common interest; human interest.
- Encourage those partnerships that reflect core underlying interests and values.
- Non-exclusionary; open and transparent activities.
- Avant-garde; encouragement and utilisation of new thinking.
- Best practise; dissemination of expertise and knowledge.
- System-transcendent; approaches that seek to overcome security dilemmas.
- Diplomacy and rapprochement; working to create diplomatic confidence-building.
- Polylateralism (inclusion of relevant non-state actors in diplomacy).
- Maximalism; strive for ambitious goals that maximise common interests.

solutions to disputes with China in the Indo-Pacific are exceedingly unattractive on a whole variety of grounds. This article now turns to strategic liberalism as a framework that can guide New Zealand's approach to US–China competition.

What is strategic liberalism?

The two words that comprise the phrase strategic liberalism are not a contradiction in terms. Its prescriptions are strategic in that they improve the security position of states, and liberal in that it requires cooperation between them. The textbox outlines its core principles.

Recognising that overall security is reduced when states take aggressive unilateral decisions in the realm of strategic military affairs, strategic liberalism opens space for a new cooperative approach: one in which states can seek security without intentionally decreasing the security of others.

It is consistent with the principles espoused in Hon Nanaia Mahuta's inaugural speech to the diplomatic corps in February 2021. In it, she said that international 'outcomes will be stronger and more enduring if they are built through dialogue, shared understanding, and taking account of a range of diverse perspectives', that we 'can offer a mature approach to dialogue aimed at progressing regional and global priorities', and that Wellington has 'a deep stake in the wider Indo-Pacific region's stability. We share the common ambition of Peace and Prosperity for the region'.[26]

It also dovetails with then-Minister of Foreign Affairs Rt Hon Winston Peter's comments in June 2018 that 'Small thinking leads to small outcomes... It is not a time for intellectual timidity. It is a time for original thinking... Creative syntheses and challenging old verities is needed more than ever so be bold and take risks in your work'.[27]

In short, strategic liberalism embodies the view that greater security requires states to

26 Mahuta, "Inaugural Foreign Policy Speech to Diplomatic Corps."
27 Rt Hon Winston Peters, "Next Steps."

work together and envisions a wellspring of "new thinking" to contribute to regional security by transcending security dilemmas.

With the new Biden US administration in power, there is a window for innovation given President Biden has accompanied his critiques over China's human rights violations by noting there are 'different norms that each country and their leaders are expected to follow'. In effect, Washington is signalling that it does not seek to prevent dialogue between allied states and China.[28]

Strategic liberalism and New Zealand

Strategic liberalism assumes that strategic futures are inherently indeterminate and that we need not repeat the tragic mistakes of the past; a 21st century Cold War with the attendant risks is not inevitable.

It encourages New Zealand to emphasise "open polylateralism": commitment to partnerships based on core interests and values in international affairs and open multilateral architectures that do not exclude other states or non-state actors. This is not an academic point: closed multilateral and security architectures generate feelings of insecurity amongst others, generating pressure to form countervailing alliances.

Overcoming security dilemmas[29] is a key objective of strategic liberalism, and the US–China competition has all the hallmarks of this dynamic. This is a dynamic where two states have genuine defensive intentions but, nonetheless, perceive their opponents to be aggressive and offensive. To defend themselves, they are compelled to enhance and expand their military forces, acquire territory, and forge and deepen alliances that are practically indistinguishable from a state bent on conquest. A tit-for-tat spiral of action and reaction commences, heightening tensions and increasing the chances of conflict even though no state desires it. Fears and mistrust intensify on both sides and a net decrease in security occurs.

Security dilemmas are fundamentally tragic and self-defeating. This is especially the case in an interdependent international system where security is indivisible, and states can best improve their positions by working with one another. If both sides can acknowledge their joint predicament, the principles and assumptions of strategic liberalism offer the potential to change the equation through programmatic steps to reassure one another and transform both states' view of the other's intentions. Through ambitious diplomacy, strategic liberalism can open up new avenues to build confidence, blunting the fears held on both sides and dampening the cycle of negative tit-for-tat behaviour.

28 Sevastopulo, "US vs China: Biden bets on alliances to push back against Beijing."

29 The literature on security dilemmas is extensive. Among others, see Jervis, "Cooperation under the Security Dilemma," 167-214; Jervis, *Perception and Misperception in International Politics*, 58-113; Glaser, "The Security Dilemma Revisited," 171-201; Taliaferro, "Security Seeking under Anarchy: Defensive Realism Revisited," 128-61; Tang, "The Security Dilemma: A Conceptual Analysis," 587-623.

ACTION PLAN - ADDRESSING GREAT POWER COMPETITION

1. Fund a new institution to:
   a. facilitate cooperation in the Indo-Pacific based on the principles of strategic liberalism; and
   b. up-skill New Zealand government staff as well as personnel from relevant non-government organisations on Great Power Competition.
2. Offer to provide a neutral location for US–China confidence-building discussions over the South China Sea and other security-related issues. This could include an offer to host a US-China high level summit at the Waitangi Trust Treaty Grounds supported by Royal New Zealand Navy (RNZN) ships off Waitangi with other New Zealand Defence Force assets in support.
3. Seek New Zealand observer or associate status in the Indo-Pacific Quad grouping and RNZN participation in the Malabar series of maritime exercises in the Indo-Pacific theatre.

A path forward

An inexorable change in the global and regional balance of power is taking place between China and the US, and it is the thousands of small decisions and changes in interpretation of the other state's intention that will determine the future stability of the Indo-Pacific region as to whether a cooperative or aggressively competitive mode of behaviour prevails.

Therefore, as it relates to US–China tensions, a maximalist objective via the framework is for New Zealand to adopt a facilitator or "circuit breaker" role in diplomacy between the US and China to disrupt their spiralling security dilemma. To this end, a three-pronged action plan is contained in the textbox above. Each prong is intended to be mutually complementary.

Point 1 would require time to develop and embed. New intellectual and material investment would be required, and relevant research, training, and teaching capacity developed. The objective would be to create a New Zealand-based, specialised Centre of Excellence, able to work with other existing expertise at academic and government institutions in New Zealand working on different aspects of Indo-Pacific geopolitics and economics.[30]

The institution would seek to train New Zealand government (NZG) staff on the history of Great Power Competition and the emerging dynamics of the contemporary US–China confrontation. This could include residential or full day training sessions for NZG staff as part of its ambit. A related objective would be developing specialists in the history, culture and politics of the US–China relationship, as well as the relations between other emerging and significant great powers, such as India and Japan in the Indo-Pacific. The research and training agenda could usefully include efforts to understand how China might

30 Existing centres of research and teaching in New Zealand that address aspects of Indo-Pacific geopolitics and economics include the Asia New Zealand Foundation, as well as the China Contemporary Studies Centre and the Centre for Strategic Studies (both at Victoria University of Wellington).

CHARLES KUPCHAN'S IDEAS ON GREAT POWER REASSURANCE

1. States should take steps to initiate cycles of positive action-reaction processes.
2. Arms control and modifying military postures and capabilities can send signals of peaceful intent and a desire for mutual accommodation.
3. Withholding power and influence where a state has a preponderance of power (foregoing short-term gains of primacy) is an investment in stability over the long term.
4. Stronger parties are capable of making initial openings and concessions, given their relative strength, and provide some insulation should weaker parties not reciprocate.
5. Mutual deterrence is an indirect form of relationship management; it creates a stable basis for accommodation and rapprochement to take place.
6. States seek *security* rather than conquest. As such, states can overcome hostility, mutual distrust and security dilemmas through rapprochement programs aimed at reducing fear and facilitating co-operation.

LEFT ABOVE Exercise Malabar 17 November 2020. USS *Nimitz* (CVN 68) followed by the guided-missile cruiser USS *Princeton* (CG 59). Image courtesy of Elliot Schaud/US Navy.

LEFT BELOW Waitangi Treaty Grounds. The flagstaff marks the spot where the Te Tiriti o Waitangi / Treaty of Waitangi was signed in 1840. The flagstaff was donated to the Treaty Grounds by the RNZN in 1934 and replaced in 1947. The flagstaff is 34 meters tall and is cared for and maintained by the Navy. Image courtesy of Gary Blake/Alamy.

seek to reform global institutions and the "international rule of law" as it gains greater influence and power, and how this might affect New Zealand's interests and values.

Point 2 has already been suggested by a number of commentators, but it's worth briefly elaborating: the objective of such talks would be to move toward a reassurance programme between the US and China that includes incremental efforts in both military and non-military realms, centred on reciprocal restraint, trust-building, and creating a cycle of cooperation.

Admittedly, there are risks with this aspect of the action plan. A well-meaning diplomatic effort, but one that leaves New Zealand looking incompetent, insensitive and misguided, could harm our brand and our interests. It would, therefore, be remiss if we did so without adequate preparation and careful pre-emptive diplomacy.

Point 3 may appear to be at odds with the strategic liberalism agenda, but it is included to address one of the strategic realities of the region. New Zealand's security ultimately rests upon free and open access at sea and is facilitated by the ability of navies to work with each other. Military cooperation, as evidenced by the Malabar series of naval exercises, helps to build confidence as well as contributing to regional peace and security. It would be in New Zealand's immediate security interests, this article argues, to seek associate or observer status in both the Quad arrangements between the US, India, Japan and Australia and the Malabar series of naval exercises in the Indo-Pacific region. In time, and depending on circumstances, China could also be invited to observe these exercises to reduce miscalculation and misinterpretation.

With respect to Points 1 and 2, Wellington could draw upon the literature by Charles Kupchan on great power reassurance, where initial signals act as feelers and require a corresponding reaction to induce further steps.[31] The most significant signals involve

31 Kupchan, *How Enemies Become Friends: The Sources of Stable Peace*.

a state opting to unilaterally decrease or reassign its forces and engage in joint arms control efforts to modify military postures and capabilities in a way that decreases the ability of states to challenge the status quo.[32]

Arguably, the US and China's powers afford them capacity to offer concessions in specific areas where they have a relative advantage compared to the other, and historical cases of successful rapprochement show that it is usually the stronger party that is most capable of making the initial opening that can lead to better relations.[33] This suggests that in an area like the South China Sea, the onus is on Beijing to bring something forward to accommodate the interests of the various other parties in the region.

A strategic liberalism framework would ensure an "outside the box" and "no issues off the table" conceptual approach. This is critical. Conceptual alignment between the US and China over the makeup of the future multilateral and institutional architecture in the region is required—and it's currently lacking.

An inclusive and sustainable peace that contributes toward an emerging world order founded on great power cooperation between the US and China is the ultimate goal. If New Zealand can play any small part in this, it should seek to do so. Here, a caveat is in order: while getting US–China diplomacy underway is the central cog to a broader regional peace, it is imperative that it eventually evolves into a broader regional process. An outcome where the US and China "solve" their most significant clashes of interest but shunt aside or ignore the interests of other states is at odds with New Zealand's interests. It is critical to avoid a return to atavistic great power "spheres of influence"—it would be seen as an abandonment of any intention of creating an inclusive and stable order in the region, leaving smaller powers to go it alone and pursue their interests in increasingly tense and competitive sub-regions.

Importantly, Kupchan recognises that cooperation between democracies and non-democracies is possible. He holds that assuming otherwise not only reduces the chance

32 Montgomery, "Breaking Out of the Security Dilemma: Realism, Reassurance, and the Problem of Uncertainty," 151-185.

33 There is a rich theoretical literature on the emergence of rapprochement, security communities and international society. See: Bull, *The Anarchical Society*; Buzan and Little, *International Systems in World History: Remaking the Study of International Relations*; Buzan, *From International to World Society? English School Theory and the Social Structure of Globalisation*; Deutsch, "Backgrounds for Community: Case Studies in Large-Scale Political Unification"; Adler and Barnett, *Security Communities*; Kacowicz, Bar-Siman-Tov, Elgström, and Jerneck, *Stable Peace Among Nations*; Boulding, *Stable Peace*; Rock, *Why Peace Breaks Out: Great Power Rapprochement in Historical Perspective*; Cronin, *Community Under Anarchy: Transnational Identity and the Evolution of Cooperation*.

for immediate collaboration but 'discourages non-democracies from remaining open to mutual accommodation and the exchange of concessions – steps critical to advancing reconciliation and programmatic cooperation'.[34] An approach to US–China relations that emphasises ideological differences all but guarantees that deep forms of cooperation will remain out of reach.

Conclusion

The negative trajectory of US–China relations should be of immense concern to New Zealand, and even though President Biden suggests the US and China 'need not have a conflict', he admits there is likely to be 'extreme competition'.[35] This reflects a bipartisan position in US politics.[36]

As such, US–China competition is a new structural reality of international relations. No state, no matter how geographically remote, is free from its implications. The stakes involved are high. In an interdependent world, New Zealand's interests will be affected in the event of a serious conflict or crisis between the two Pacific superpowers. But, short of that, the trajectory toward ever more intense levels of competition makes New Zealand's hedging strategy more difficult to sustain; we are likely to find ourselves pulled toward both greater economic dependency with China and more cooperation on security issues with the US in the Indo-Pacific.

At some point, the balance could tip too far in one direction or distant events force New Zealand to make decisions in favour of one party that hurts its relations with others. It is recognised that a direct military confrontation could embroil us in a coalition or UN-organised response.

This article has made a case that the principles of strategic liberalism offer a conceptual foundation to guide New Zealand foreign policy going forward, and a three-pronged approach to enhancing our contribution to peace and stability in a new era of US–China Great Power Competition has been offered.

But even short of major diplomatic breakthroughs, these efforts could at least slow the speed at which US–China ties are deteriorating and create new stabilising mechanisms to underpin it. It is also essential to recognise that rapprochement is often a long-term and iterative process. Progress could be slow and halting, and it could take a decades-long effort to move the region toward a more normal state of stability, but it is a goal New Zealand should do its utmost to support.

34 Kupchan, *How Enemies Become Friends: The Sources of Stable Peace*.
35 Macias, "Biden says there will be 'extreme competition' with China, but won't take Trump approach."
36 Herb, Fox and Mattingly, "Republicans and Democrats have found one thing they can all rally around: Curbing China's influence."

DR REUBEN STEFF

SENIOR LECTURER IN POLITICS, UNIVERSITY OF WAIKATO

Dr Reuben Steff is a Senior Lecturer at the University of Waikato, where he teaches courses on New Zealand foreign policy, international relations and global security.

His academic research covers great power competition, New Zealand and US foreign policy, the implications of artificial intelligence for the global balance of power and small states, and the intersection between nuclear deterrence theory, ballistic missile defence and the security dilemma. He is the author of four books: *Emerging Technologies and International Security: Machines, the State and War* (Routledge 2020), *US Foreign Policy in the Age of Trump: Drivers, Strategy and Tactics* (Routledge, 2020), *Security at a Price: The International Politics of U.S. Ballistic Missile Defense* (Rowman & Littlefield, 2017) and *Strategic Thinking, Deterrence and the US Ballistic Missile Defense Project: From Truman to Obama* (Routledge, 2014).

He also has a number of journal articles published in the *Journal of Strategic Studies*, *The Pacific Review*, *Contemporary Security Policy*, *Defense and Security Analysis*, *New Zealand International Review*, *National Security Journal*, and the *Australian Journal of International Affairs*.

GOOD STRATEGY AND BAD STRATEGY

In this article, John Martin provides the reader with an analytical basis for understanding the characteristics of good and bad strategy.

The term strategy should mean a coherent response to an important challenge. Unlike a standalone decision or goal, a strategy is a logical, consistent and mutually reinforcing set of analyses, concepts, policies, arguments, and actions that respond to a high stakes challenge.[1]

Note: The Author's emphasis: strategy involves all of these things; it is not just a vision or a generalised direction of travel. It involves careful diagnosis of the problem or problems, choices over where to concentrate action and resources, the definition of a timetable, actions and responsibilities, the policies that will apply and a sketch of the underlying concept.

LEFT
Celestial navigation is practiced by officers on watch during HMNZS *Wellington*'s transit to the Kermadec Islands. Image courtesy of NZDF.

Introduction

As a leader, one of your most important responsibilities is to understand, and then do something about, the significant challenges to progress in your team or organisation. A good leader will identify the one or two most critical issues and then concentrate action and resources on them, turning problems into opportunities.

There has been a lot of strategy written recently. You will have seen it; you may even have been involved in developing and implementing it. You probably have a strategy for your department, ship, business unit or your approach to relationship management. In his book, *Good Strategy/Bad Strategy*,[1] Rumelt suggests that the term strategy is both frequently used and poorly applied. He argues that it has become a buzz word—another box to tick as corporate documentation is refreshed or the outpourings of a corporate communications team. Strategy has become a popular business artefact, tending to describe the decisions made by high-level structures or officials, or used as a label to characterise a "big-picture" direction. The use of strategy in this context is not necessarily wrong, but it does dilute the term when considering strategy development at both national and organisational level and how important it is to get it right.

Over the next couple of years, New Zealand will need to develop a set of new strategies to address how we will meet nation-wide challenges such as climate change and decarbonisation, economic atrophy as we reach maximum capacity and efficiency in our land-based economy, the increasing militarism in the Asia Pacific region, and the erosion of the international rules-based framework upon which we rely to protect our interests.

Additionally, our long term record suggests we don't make good strategy as a nation. Our approach to solving problems historically seems to be beset with short termism, compromise, lack of ambition and an erosion of national confidence. Whatever the reason, we get distracted from having big thoughts about ourselves as a country and working out how to advance our interests. We overlook the truth that problems, when thoughtfully addressed, can often end up being opportunities.

Firstly, what is strategy?

In its publication *Getting Strategy Right (Enough)*, the Royal College of Defence Studies (RCDS) defines strategy as a 'course of action that integrates ends, ways and means to meet policy objectives'.[2] Henry Mintzberg[3] offers an interesting slant on strategy by suggesting that it can be interpreted as:

- a plan to establish direction through intentions;
- a ploy, where feints and manoeuvers are employed to create advantage;
- a pattern, where strategy provides stability through set plans, convergence and achievement of consistency;
- a position—which makes us consider other organisations within their own environment, how they protect themselves or counter competition; and
- a collective context—how we consider common goals within a collective.

Robert Kaplan[4] suggests that the purpose of strategy is to achieve alignment and focus in an organisation. In the area of national strategy, this means how to deliver long-term objectives using the full resources of the state. Strategy aids development of the effective use of resources to achieve goals. Its articulation creates a shared sense of purpose and direction, unifying and channelling effort.

But there is no one single definition that takes precedence over another. Context will determine which is the most useful to you in any particular case.

In some ways, none of these definitions seem entirely adequate. They play down the ambition, scope and scale of strategy required at the national level. Strategy, I suggest, entails the integration of the complete capacity of the state, organisation, or coalition of interests to achieve an overall aim. Strategy also requires a clear understanding of what is *fundamental to the survival of the nation and, therefore, must be met with all the nation's resources*. Decisions will be needed about what is discretionary and what is not. This increased scope seems coincident with the top tiers

1 Rumelt, *Good Strategy/Bad Strategy*.

2 Royal College of Defence Studies, *Getting Strategy Right (Enough)*.

3 Mintzberg and Quinn, *The Strategy Process: Concepts, Contexts, Cases*.

4 Kaplan, *The Strategy-Focused Organization*.

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DILBERT © 2010 Scott Adams, Inc. Used by permission of ANDREWS MCMEEL SYNDICATION. All rights reserved.

of the RCDS's hierarchy of military activity. This lists grand, national and military strategy as those areas that require the engagement of all the elements of national power.

In the New Zealand Defence Force (NZDF) (Doctrine Cell, 2017),[5] the levels of strategy are defined as:

- Grand strategy: This is the responsibility of government and covers the executive decisions regarding the use of national power including the mobilisation of non-military and military resources to meet the aim. NZDDP-D, 1.30, describes the National Security Strategy as 'coordinating the instruments of national power in pursuit of national policy aims to secure New Zealand's interests'.
- Military strategy: This is the responsibility and focus of Headquarters NZDF and expresses how the NZDF will contribute to the government's strategic objectives. NZDDP-D, 1.33–1.34 describes the Defence Security Strategy as 'adapting those objectives and responsibilities allocated to Defence into outcomes and pertinent outputs necessary to meet the Government's requirements'
- Operational: At the operational level, the joint operational headquarters plans and executes major operations and campaigns in support of the strategy.
- Tactical: At the tactical level, the campaigns and operations take place and are the responsibility of commanders in the field or component commanders.

So, why is all of this important?

As an essential element of national power, the operation of the nation's military forces is not a trifling thing. Strategic purpose should be at the heart of all military endeavours.

For example, the strategy that drives the NZDF's approach to delivering the national security goals is set out in Defence White Papers, the most recent of which was published in 2016. This forms the heart of Defence departmental planning and commits the country to the expenditure of resources and courses of action that have long-term consequences.

The process of strategy development

If we are to assess strategy, then an understanding of underlying process is useful. Johnson and Scholes suggest that the development of strategy requires the conduct of three discrete but interrelated activities: analysis, choice and implementation.[6] Likewise, Rumelt describes strategy as consisting of three elements.[7]

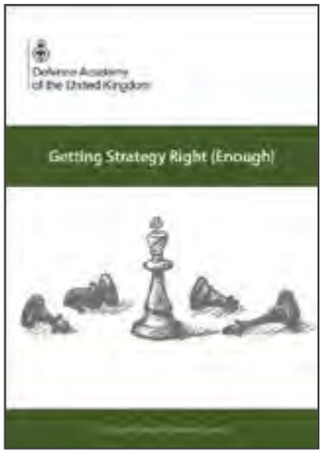
These three stages mirror the steps followed by Defence (the Ministry of Defence and the NZDF) in developing the 2016 Defence White Paper. In that case, the strategic analysis was covered in both the environmental assessment and discussed within the draft White Paper itself, as was the implementation. The process of determining strategic choice was conducted across agencies (Treasury, Ministry of Foreign Affairs and Trade, Department of the Prime Minister and Cabinet, and others) with decisions being made by Cabinet before returning to be outlined within the final White Paper.

Assessing strategy

Once you gain an understanding of the structure and fundamentals of good strategy, you will develop an ability to identify good as well as bad strategy.

The bar for good strategy is set by the circumstances as they relate to the nation or organisation. The RCDS[8] suggests five standard criteria for assessing strategy. These are:

- **Acceptability.** At the heart of strategy



5 NZDF, *New Zealand Defence Doctrine (NZDDP-D)*.

6 Johnson & Scholes, *Exploring Corporate Strategy*.
7 Rumelt, *Good Strategy/Bad Strategy*.
8 Royal College of Defence Studies, *Getting Strategy Right (Enough)*.

DESCRIBING STRATEGY

JOHNSON & SCHOLES		RUMELT	
Strategic Analysis	Environment, culture and stakeholder expectations, resources and national capability/capacity.	Diagnosis	A clear description of obstacles or challenges.
Strategic Choice	Identifying strategic options, evaluation of options, selecting the way forward.	A Guiding Policy	The approach to dealing with the challenges identified in the diagnosis.
Strategy Implementation	Managing strategy, organisation design/ structure, allocation of resources.	Coherent Action	Feasible coordinated policies, commitments of resources and actions designed to carry out the guiding policy.

LEFT ABOVE
Getting Strategy Right (Enough). Image courtesy of the UK Defence Academy's Royal College of Defence Studies.

LEFT BELOW
Good Strategy/ Bad Strategy. Image courtesy of Penguin Random House.

development is the generation of wide support for the analysis, acceptance of the options and choices made, as well as support for the implementation of the strategy.

- **Suitability.** The suitability of the strategy requires a clear understanding of what is fundamentally important and must be met with the required resources.
- **Feasibility.** The feasibility of strategy depends on the honest acknowledgement of the challenges faced while providing an approach to overcoming them.
- **Sustainability.** The requisite resources are identified, prioritised and applied. Arguably, when this criteria is applied by the organisation that is required to execute it, it represents the sum of the other criteria.
- **Adaptability.** The strategy must be responsive to developing challenges, changing circumstances, amendments to the plan and changes in ambition.

Bad strategy

Bad strategy is more than just a poorly-written piece of corporate or departmental documentation. Instead of solving a problem, bad strategy can make it worse, setting in motion actions and events that can be contrary to the interests of the organisation and that can divert energy, develop misplaced confidence, and delay/hinder the addressing of key challenges. Lacking detailed analysis or clear and courageous diagnosis, the strategy has poor foundations. Without hard choices being made, resources will not be identified, less important work stopped, or the necessary organisational course alteration implemented.

Bad strategy is characterised by one or more of the following: critical issues are not identified or are covered up with jargon; the overuse of buzz words, textual padding and aspirational but irrelevant pictures; no hard choices are made about what effort is needed and where; no proximate goals are identified; the plan, if there is one, is not coherent; no timescale, action plan or responsibilities are outlined; and the opportunities and desired end state are oversold.

Bad strategy also ignores one of the basic attributes of effective strategy: the application of strength against weakness and the search for coherence across all the elements of the plan.

Good strategy is pretty simple.

Ask yourself:

Analysis: the honest acknowledgement of the challenges faced	• Is there a good understanding of the underlying problem (or opportunity), including the environment in which the problem/opportunity sits? • Is there wide support for the analysis?
Choice: a clear understanding of what is fundamentally important and therefore must be met with the required resources	• Is there a central guiding argument or policy which addresses the: – need; – resources; and – capabilities? • Are choices made that support the implementation of the strategy? • Do the choices made allow the strategy to be feasible?
Implementation: resources are identified, prioritised and applied	• Is there a coherent plan of action to get from here to there using: – the resources; and – capabilities? • Is the plan responsive to developing challenges, changing circumstances, amendments to the plan and changes in ambition?

Bad strategy is also pretty simple.

Ask yourself:

Are there key components missing?	The problem and obstacles were not fully assessed or honestly confronted.
Is there another focus?	Clarity of purpose is fundamental. The purpose may be more about goal setting, organisational development, signalling intent, or listing performance measures. But it needs to be more than that. It needs to address the fundamental question that faces all organisations: what are we trying to achieve, and why, and how?
Have hard decisions been made?	Hard choices about resources were not made and actions are not stipulated.

Bad strategy focuses attention on the ultimate goal, but forgets that there will be intermediate way points along the journey. One of the most overlooked elements in effective strategy is the identification of proximate goals that are achievable and which represent progress and points to celebrate along the way.

To avoid one of the most common traps in strategy writing, try not to oversell the end goal. If you are thinking about domain dominance, for example, then you need to think again. Over-selling erodes confidence, believability and trust.

Conclusion

Tāu mahi e te ringa whero![9]
(Fit work for the hand of a chief)

As a leader, your key role is to ensure that your organisation and country progresses. You can only do that by focusing on critical challenges and then overcoming them. You may choose to develop a strategy to do that. Given the wide range of strategy that is commonplace, it is useful to understand that there is a difference between organisational and national strategy. If you are dealing with strategy that involves the elements of national power, such as the NZDF, then the stakes are high and the consequences long-term.

National strategy matters. It involves a substantially different level of ambition, scope or scale and it requires the integration of the complete capacity of the state, organisation, or coalition to achieve the overall aim. It also entails a clear understanding of what is fundamental to the survival of the nation and therefore must be met with the resources of the nation. It will require decisions about what is discretionary and what is not.

Understanding the key components of strategy allows it to be assessed and critiqued. The purpose of critiquing strategy is to learn how to do the next iteration better. By asking whether the strategy is founded on an honest analysis, if clear choices have been made and resources applied, and a high-level plan of action is present, one can get an idea of the coherence of the strategy.

The cost of developing sub-optimal strategy is not just the waste of staff resources involved. It is a diminution of energy, confusion, and misplaced confidence that progress is being made in the desired direction.

Finally, remember that developing and implementing strategy is a group activity. One person can lead, but it requires a person who can develop the confidence and trust of others to encourage the effective group work that all strategy entails. Moreover, as the title of the RCDS publication suggests, it requires the ability to acknowledge that right enough is often good enough and that, since circumstances and contexts change and often not for the better, an ounce of action now trumps a pound of deliberation later.

9 Brougham & Reed, *The Raupō Book of Māori Proverbs*.

JOHN MARTIN ONZM

Having represented New Zealand around the world, John seeks to add value by supporting the development of a New Zealand that is a worthy place for the generations that follow. He does this by working with several organisations, supporting senior decision makers in the corporate, government and not-for-profit spheres. A member of the Advisory Board of Statistics New Zealand, a member of the Blake Leadership assessment panel, Executive Director of the Independent Review of the Mycoplasma bovis Programme on behalf of Dairy NZ, Beef+Lamb NZ and Ministry for Primary Industries, John is also the Executive Director of the New Zealand Oceans Foundation and fellow of the Centre for Defence and Strategic Studies, Canberra. He is a member of the Institute of Directors. John has been described as offering a useful bridge between two quite different worlds or hierarchies: the universe of experience, and the universe of imagination–a description his family has often pondered! John shares his life and dreams with Sue.

DEFENCE POLICY AND THE **REDISCOVERY** OF STRATEGY

IMAGE

UK PM Boris Johnson leaving 10 Downing Street to deliver the *UK Integrated Review* to Parliament, 16 March 2021. Image courtesy of Alamy.

In this article, **Adam Norrie**, Ministry of Defence, discusses the need for New Zealand to adopt a more deliberate and proactive approach—a strategy—to protect and promote New Zealand's national security interests.

Disclaimer: the views advanced in this article are those of the author, and not necessarily those of the Ministry of Defence.

Abstract

Defence policy fundamentally concerns the application of the military instrument in support of a state's national security interests. In New Zealand, the Minister of Defence is politically responsible for defence policy matters, with the Secretary of Defence as the Minister's principal policy adviser.

New Zealand has enjoyed a relatively benign strategic environment for much of the past 30 years, and in response to that environment, New Zealand adopted a risk management-centred approach for its national security and defence policies. Today, New Zealand faces a much more challenging strategic environment that will likely require Defence (the New Zealand Defence Force (NZDF) and the Ministry of Defence) to adopt a more deliberate and proactive approach—a strategy—to protect and promote New Zealand's national security interests.

Defence policy responsibilities in New Zealand

Within the Westminster system in place in New Zealand, the authority to raise and commit armed forces is an exercise of the Crown prerogative, which sits with the Executive on behalf of the Crown.[1] This authority underpins the principle of civilian control of the military and ensures responsibility for defence policy ultimately rests with Cabinet. Much of this application of the Crown Prerogative has been codified in legislation, particularly by the Defence Act 1990, which provides the basis for the organisation and conduct of New Zealand's defence establishment.[2]

The Defence Act establishes the Minister of Defence's control over the NZDF and political responsibility for defence policy matters, both individually and as part of Cabinet collectively. This political responsibility spans a wide range of policy matters, including strategic defence policy settings,[3] defence capability decisions, and decisions to commit the military internationally and domestically.

The Defence Act also establishes the Secretary of Defence as the principal civilian adviser to the Minister and as responsible for the formulation of defence policy

1 While the Governor-General nominally exercises command over the armed forces, in practice this is on the advice of ministers and Cabinet.
2 New Zealand's defence establishment comprises the Ministry of Defence and the New Zealand Defence Force. This formal separation into two agencies is unusual internationally.
3 Here "strategic" refers to the high-level policy settings that guide Defence's overall activities.

advice, in consultation with the Chief of Defence Force.[4] Accordingly, the Secretary of Defence has the principal responsibility, in consultation with the Chief of Defence Force, for the generation and provision of defence policy analysis and advice to the Minister of Defence, other ministers and Cabinet more generally.

In developing this defence policy advice, the Secretary of Defence is supported by the Deputy Secretary for Defence Policy and Planning, who leads the Ministry's Defence Policy and Planning Division. This division is in turn made up of three branches: (i) Policy Branch, which provides strategic and thematic defence policy advice and leads the Ministry's engagement with the broader national security sector; (ii) International Branch, which provides policy advice on offshore developments and international defence operations, and supports or leads international defence engagements; and (iii) Development Branch, which provides advice on the defence capability investment portfolio and individual capability investment decisions.

Consultation with the NZDF is crucial across all of these activities to ensure the Minister of Defence receives fully considered and developed policy analysis and advice. Similarly, consultation with the full range of national security sector agencies, international partners and others helps to ensure that defence policy advice draws on a broad range of perspectives.

Defining, developing and delivering defence policy

While *responsibilities* for the development and delivery of defence policy might be relatively well established within New Zealand, the same cannot necessarily be said for the nature of defence policy itself.

Relevant academic literature does not readily provide a standard definition for "defence policy". Most of the literature on defence policy addresses states' defence policies (taking either a descriptive, analytical or prescriptive approach), rather than providing a more general approach to defence policy as a theoretical concept. Where defence policy as a concept is treated academically, it is often in contrast to, or in combination with, other forms of public policy, notably national security policy and foreign policy.

Even defence policy practitioners and others in the wider New Zealand national security sector do not necessarily agree on a definition of defence policy. Some useful working definitions can, however, be found in New Zealand and international defence doctrine, such as:

> *Defence policy establishes the ends of military strategy and shapes the structures and capabilities of Defence's contribution to national security objectives within resource and other constraints.*[5]

The above definition, which has much in common with descriptions from close partners' own doctrines,[6] provides three key ideas:

(1) Defence policy sets the objectives for military activity and provides boundaries for that activity;

(2) Military (or defence) strategy is separate from, and subordinate to, defence policy; and

(3) Defence policy is fundamentally one element of overall national security policy.

This definition arguably captures the core purpose of defence policy, but is also unhelpfully narrow, particularly for small states like New Zealand that use their militaries to deliver—or support the delivery of—a broad range of public functions that are not necessarily national security functions. A broader definition of defence policy could recognise that no aspect of public policy is completely independent and that successfully developing and implementing policy requires broad input, consultation and coordination. Such a broad definition suggests that the

SO WHAT IS STRATEGY?

There are many different understandings of "strategy" and many different perspectives on the relationship of strategy to policy.

In this article, we use "strategy" to mean the overall approach (the "ways") that will be taken to deliver the policy objectives (the "ends") and determine the required capabilities and resources (the "means"). But, in practice, this relationship is neither linear, unidirectional nor single-threaded. There are many potential combinations of strategy and capability that could deliver a set of policy objectives, and the setting of policy objectives must have regard for what is achievable.

Good strategy should provide a coherent, compelling and achievable "theory of victory", but this theory should be grounded in practical and deliverable reality.

4 Per the Defence Act 1990, section 24(2)(b) "[…] the Secretary shall have the following functions: […] to formulate advice, in consultation with the Chief of Defence Force, on defence policy."

5 Paragraph 1.25, *New Zealand Defence Doctrine* (NZDDP-D) (Fourth Edition), November 2017.

6 See, for example, United Kingdom Joint Doctrine Publication 0-01, *UK Defence Doctrine*, 5th Edition, November 2014.

scope of defence policy includes:

- establishing the policy objectives in whose achievement Defence is to play a role, particularly those for which Defence is to play a leading role (the "ends");
- setting out the strategy by which Defence will contribute to achieving those policy objectives, alongside other tools of statecraft (the "ways"); and
- describing how the Defence enterprise should be organised, equipped and resourced to deliver on that strategy (the "means").

In short, this definition can be captured as: policy objectives; strategy; capability; and resourcing.

Clarity of definition is important—particularly for practitioners—to inform the development and presentation of defence policy, but any particular definition should only ever be treated as a framework to inform thinking. In practice, any definition will be imperfect, and any particular policy development activity should be bespoke to the situation. Good policy practitioners should have access to a broad library of theoretical frameworks and analytical approaches to draw from. Defence policy practitioners should also have a sound practical understanding of the utility and value, as well as the limitations, of the military instrument.

As with other public policy areas, the development and delivery of defence policy advice varies widely in actual practice. In some cases, the defence policy process can involve highly structured and resource-intensive activities; this is typically the case for formal statements of government's strategic defence policy settings, such as defence white papers and defence capability plans. Similarly formal (if less extensive) processes are usually followed for the development of advice in relation to offshore deployments and individual capability projects, both of which typically require Cabinet consideration.

At the other end of the spectrum are activities such as the provision of defence policy comments on other agencies' own policy work, and informal policy briefings to ministers and others. In between these two extremes are activities such as: the preparation of formal speeches by senior Defence officials; formal Defence policy discussions with international partners; and the preparation of formal policy papers to the Minister of Defence on particular issues of significance for New Zealand's defence policy.

An important element in the development of defence policy advice is to understand the current state: this includes existing plans, operational postures and activities, capabilities and force structure, and broader national security policy settings. In most cases, defence policy processes are incremental and iterative, and even "larger" pieces of policy such as defence white papers must have regard for what has gone before. While defence policy settings can be changed over short time frames, their implementation—particularly in terms of capability sets—can take many years.

Broad consultation is a critical part of developing robust analysis and advice. The Ministry of Defence regularly undertakes such consultation with the wider defence enterprise, other government agencies, and sometimes international partners, academics and/or the public, in preparing defence policy advice.

Across all these activities, the nature and extent of the processes followed and the resources applied can contribute to greater assurance of the quality of the analysis and advice. But there is never a guarantee that any piece of policy analysis or advice will be completely "right". Defence policy is fundamentally about how a state should apply its military instrument in support of its national security, but the future is always uncertain and "the enemy gets a vote".

Previous defence policy practice in New Zealand: responding to the benign strategic environment

For most of the 30 years since the end of the Cold War, New Zealand has enjoyed a strategic environment that has been—as much as could reasonably be expected in terms of New Zealand's national security interests—the best of all possible worlds. Within this Panglossian "benign strategic environment", the international rules-based system, based on liberal democratic values and principles, has provided a strong foundation for collective action by states on a wide range of issues.[7] This strongly suited New Zealand's long-standing commitment to multilateral

7 Here "strong" should not be read as completely unchallenged. The ability of the international rules-based system to provide for collective action was challenged by a range of events, including the civil wars in Libya and Syria.

approaches and support for multilateral institutions, particularly the United Nations system.

This has not meant, of course, that New Zealand's national security interests have been completely unchallenged. But it has meant that threats (and other events) have tended to materialise in ways that could be addressed on a case-by-case basis, or be more or less discretionary in terms of New Zealand's responses, or both.

In responding to this strategic environment, New Zealand adopted an approach to its national security that centred on risk management, with the national security sector placing much less emphasis on the deliberate and proactive promotion of New Zealand's national security interests.[8,9]

The sector, including Defence, has still engaged in forward-planned activities, but these activities have been typically framed in terms of the "reduction" pillar of the "4 Rs" approach to risk management.[10]

The adoption of this risk management-centred approach has been reflected in and reinforced by the architectures, systems, processes and tools used by the national security sector and, arguably, in the culture of the sector as a whole. The sector has placed much less emphasis on deliberate and proactive strategy as an element of national security policy.

New Zealand's defence policy settings have strongly reflected this overall risk management-centred approach, but generally have done so without explicitly describing that this was a conscious choice or discussing potential alternative approaches. Indeed, the idea that strategy formed a distinct and deliberate element of defence policy has been largely absent;[11] changes in the strategic environment and government priorities have been translated directly into adjustments to the contingent tasks that Defence has been expected to be able to deliver as required,[12] with consequent changes to force structure and capability plans.[13]

This approach to national security as primarily risk management has coincided with and amplified two other trends.

First, the adoption of the "all hazards, all risks" approach has broadened the scope of national security activity to include responding to a much wider range of threats and hazards to New Zealand and New Zealanders, albeit largely those that manifested domestically (many of these issues could be considered as principally human security or environmental security challenges). This approach has enabled the mechanisms, developed to respond to more traditional national security issues, to be used to support effective responses to this wider range of challenges.

Second, over this period the public sector has appeared to have increasingly viewed the international aspects of national security and defence policies as primarily elements of New Zealand's foreign policy (meaning that Defence is primarily a tool to achieve foreign policy objectives). This view is in contrast with the definition given earlier, where defence policy is fundamentally a direct aspect of national security policy.

Both of these trends have served to reduce the perceived opportunity space available to defence policy as (i) a distinct area of public policy and (ii) a vehicle for the deliberate

8 This risk-centred approach to national security is set out in the *National Security System Handbook*. Per the Handbook's paragraph 2: "[…] government requires a resilient national security machinery - which is well led, strategically focused, coordinated, cost-effective, accountable, *geared to risk management*, and responsive to any challenges that arise." [Emphasis added.]

9 In the conceptual framework outlined by Peter Layton ("An Australian National Security Strategy: Competing Conceptual Approaches," 103-120), New Zealand's approach to national security could perhaps best be described as "risk management" with elements of "opportunism" (both means-centred approaches), rather than "grand strategy" (an ends-centred approach).

10 The "4 Rs" approach to risk management involves Reduction, Readiness, Response and Recovery (*National Security System Handbook*).

11 The *Defence White Paper 2016* uses the word "strategy" only in relation to organisation issues (workforce and estate), and the *Strategic Defence Policy Statement 2018* uses "strategy" only in relation to other states' own strategies.

12 The risk-centred approach is usefully captured in paragraph 178 of the *Strategic Defence Policy Statement 2018*: "Together, the Defence priorities and principal roles describe Government's expectations for the Defence Force's ability to operate. Government's decisions about where to deploy the Defence Force and types of missions to be undertaken within these priorities and roles will be determined in practice by local, national, and global events."

13 In practice, this translation was done using analytical tools such as the defence planning scenarios, but the choice of these tools was itself determined by the risk management-centred approach.

LEFT ABOVE
2020 Defence Strategic Update. Image courtesy of the Australian Government.

LEFT BELOW
Global Britain in a Competitive Age: the Integrated Review of Security, Defence, Development and Foreign Policy. Released by the UK Cabinet Office on March 16, 2021.

and proactive promotion of New Zealand's national security interests.

The return of history and the rediscovery of strategy

Today, New Zealand faces a strategic environment that is much more challenging than previous decades and deteriorating faster than had been anticipated even a few years ago. Australia's *2020 Defence Strategic Update*[14] and the United Kingdom's recently published *Integrated Review of Security, Defence, Development and Foreign Policy*[15] both paint a picture of a much more challenging world, with increasing strategic competition and growing impacts from climate change intersecting with myriad new, emerging, and ongoing issues. Of particular note, Canberra now judges it cannot rely on a ten-year strategic warning time for major conventional attack against Australia.

These challenges are playing out across the globe, including in New Zealand's immediate neighbourhood. New Zealand's national security interests are now, and will be increasingly subject to, active strategic and long-term challenges. The unipolar moment is over, and in many respects, the world is now returning to a more historically typical situation in which multiple states are actively contesting for global and regional influence.

In this much more challenging environment, effectively protecting and promoting New Zealand's national security interests is likely to require a more proactive approach, in addition to responding to discrete events. Again, both the *2020 Defence Strategic Update* and the *Integrated Review* signal more proactive approaches for Australia and the United Kingdom.

An effective New Zealand response will necessarily encompass all elements of statecraft, including defence, and will need to do so in a way that properly frames both the problem and the response. The conceptual models in use will matter enormously in determining how New Zealand approaches its environment.

The Ministry of Defence is now starting to more consciously interrogate Defence's overall approach to understanding, developing and contributing to defence and national security policy, particularly by seeking to better understand strategy as an element of overall defence policy. This rediscovery of strategy will be important as Defence likely faces increasing demands, and hard choices may need to be made by Government about where, when and how to employ the NZDF in support of New Zealand's interests.

These choices could involve reprioritising defence operations (geographically or thematically), operating in different ways (and with different permissions), or changing the NZDF's capability mix. But all these choices would ideally be grounded in an overall defence policy that provides a coherent, compelling and explicit strategy through which Defence will contribute to promoting and protecting New Zealand's national security.

14 Department of Defence, *2020 Defence Strategic Update*.
15 Cabinet Office, *Global Britain in a competitive age: The Integrated Review of Security, Defence, Development and Foreign Policy*.

ADAM NORRIE

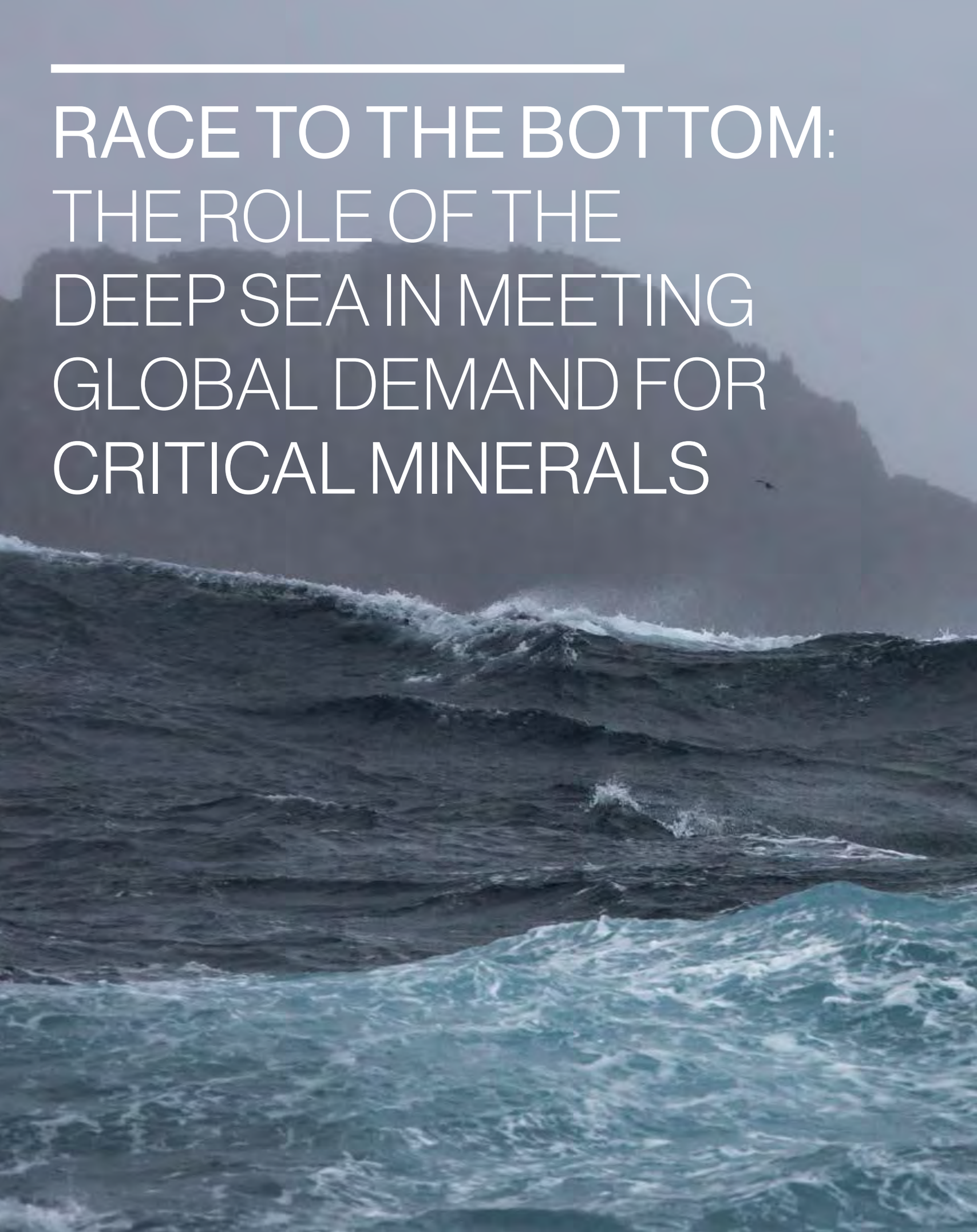
MANAGING PRINCIPAL, STRATEGIC POLICY, MINISTRY OF DEFENCE

Adam leads the Ministry of Defence's Strategic Policy Team, which works on a range of Defence policy issues, with a particular focus on Defence strategy, as well as on a range of cross-cutting national security issues such as counter-terrorism.

Adam was a lead author for the *Strategic Defence Policy Statement 2018*, with particular responsibility for developing updated defence policy settings to align with the Government's priorities and New Zealand's evolving strategic environment.

Before joining the Ministry of Defence, Adam held a range of analytical, policy and coordination roles across New Zealand's broader national security sector, with a particular focus on intelligence assessment and policy.

Adam holds a PhD in theoretical physics from the University of Otago.



RACE TO THE BOTTOM: THE ROLE OF THE DEEP SEA IN MEETING GLOBAL DEMAND FOR CRITICAL MINERALS

In this article, **Commander John Sellwood** explores the role of the deep sea in meeting global demand for critical minerals; the maritime security implications are also briefly examined.

IMAGE

Storm waves at Snares Islands New Zealand, 3 December 2014. Image courtesy of Alamy.

Introduction

The deep sea is one of the most forbidding environments on earth and familiar to most people only at second-hand. It is hard, therefore, to appreciate the significance of the minerals that are found on the deep seabed and below. So it might help if we focus our attention on events that took place in an industrial park in San Jose, California, in September 2020. After delivering his annual report to shareholders, Elon Musk, the mercurial CEO of Tesla, hosted a special session for investors and journalists, the curious and the bewildered alike, on an exciting new direction for his vehicle business. His presentation wasn't about autonomous driving (that was the topic the previous year) and it didn't reveal a new model of car, after the fashion of Steve Jobs launching iPhones. Instead, he talked about batteries. Hidden away in the chassis of the vehicle, where they are inaccessible to their owners, batteries would seem a prosaic facet to highlight in the otherwise sleek image Musk has cultivated for Tesla. But batteries really matter to Tesla and its customers, because, while Tesla is in the business of selling cars, it is also attempting to reshape how we use energy. To do that, Tesla is drawing on the bleeding edge of materials science, literally and figuratively leaving no stone unturned in the search for the building blocks of a technological revolution.

The characters of societies are partly defined by how they turn raw materials into useful products. The processes at the apex of modern technology sample liberally from across the periodic table, making use of rare and exotic elements in order to harness their unique properties. Because these crucial materials are finite in quantity, the question of how to secure enough of them is going to become more pressing over time. Mining small parts of the seabed could be one of the answers to that question. This article aims to raise awareness of the drivers relevant to the future of deep sea mining in order to help frame the choices New Zealand could face about

BELOW
Tesla Giga-battery factory under construction in Berlin-Brandenburg July 6, 2021. Eventual installed capacity 250 GWH (cf Manapouri 820 MWH). Image courtesy of Alamy.

the mineral resources in the maritime domain. An exhaustive treatment of the technical and social aspects of deep sea mining would fill volumes; this account is necessarily a simplification. Accordingly, to start at the most basic level of analysis, the story of deep sea mining is about demand and supply.

Demand

The demand for minerals is inextricably tied up with wider scientific and technological progress. As scientists and engineers have unveiled the properties of the entire periodic table, the uses to which we can put rare and exotic elements have multiplied. The magnetic and electrical properties of elements like neodymium, gallium and indium are vital to the operation of everything from smartphones to Lockheed Martin F-35 Lightning II multirole combat aircraft. The lock-step improvements in utility and availability of modern technology has relied on a steady stream of critical (commonly metal-bearing) minerals.

Underlying the technological acceleration that began in the Industrial Revolution is an ever-broadening ability to harness energy. While burning hydrocarbons has been the mainstay of energy generation, the problem of harvesting the abundant, diffuse and intermittent energy provided by the sun is gradually yielding to human ingenuity. Solar power is the fastest growing form of installed energy generation in the United States (US),[1] and off-shore wind turbines, now being built on a gigantic scale, easily compete with natural gas for market share. The rise of renewable energy begins to look inevitable in light of both its emerging cost advantage and the well-understood downsides of burning hydrocarbons.

The fact that renewable energy does not come to us in an already-concentrated, easily-stored and transported form, as hydrocarbons do, means that batteries will be one of the central technologies of the renewable transition. There will almost certainly be a range of battery technologies developed in the coming decades, and basic chemistry and physics tell us which metals are most likely to be in demand. Highly-reactive metals like lithium and sodium are obvious candidates and they will almost certainly need to be alloyed with metals like cobalt, nickel and manganese. As demonstrated by the level of interest in Elon Musk's views on anode chemistry, the race to perfect the next generation of batteries is already well underway.

Beyond the immediate question of how to build the battery storage required, the renewable transition involves a much broader expansion of electrical infrastructure. We will collectively need many more solar panels, wind turbines, geothermal plants, wave energy harvesters and hydroelectric dams. The World Bank has undertaken a detailed analysis of plausible scenarios and expects that the renewable transition will lead to production increases for key minerals ranging from 500–1000% over coming decades.[2] For example, cobalt and lithium are expected to see some of the most significant rises in demand due to the need to radically increase production of batteries, but so will aluminium, which has broad applicability as a

1 Office of Energy Efficiency and Renewable Energy, *Solar Energy in the United States*.

2 The World Bank, *Minerals for Climate Action: The Mineral Intensity of the Clean Energy Transition*.

structural element in everything from solar panels to geothermal power plants.

The energy system we need to build is more material-intensive than the system it is replacing. That is the trade-off inherent when we move from drawing on the stocks of energy-dense hydrocarbons to capturing the diffuse flow of renewable energy. Concentrating these flows requires infrastructure that is more extensive than the current configuration. To put it simply, in order to stop burning hydrocarbons, we will need to dig up more minerals. If we wish to maintain the living standards we have now and if we want to endow future generations with an energy system that will power a better world, it is incumbent upon us to think through where we are going to get the raw materials we will need.

New Zealand can, of course, always leave the mining of the earth's crust to others: African nations, China, Canada, the US, Australia and other countries. But doing so leaves us vulnerable to potential supply chain disruptions and is also at least questionable on moral grounds; is it more ethically acceptable, for example, to import phosphate mined in the contested territory of the Western Sahara and incur the carbon footprint involved in international shipping than to extract the higher quality phosphate to be found on the Chatham Rise?

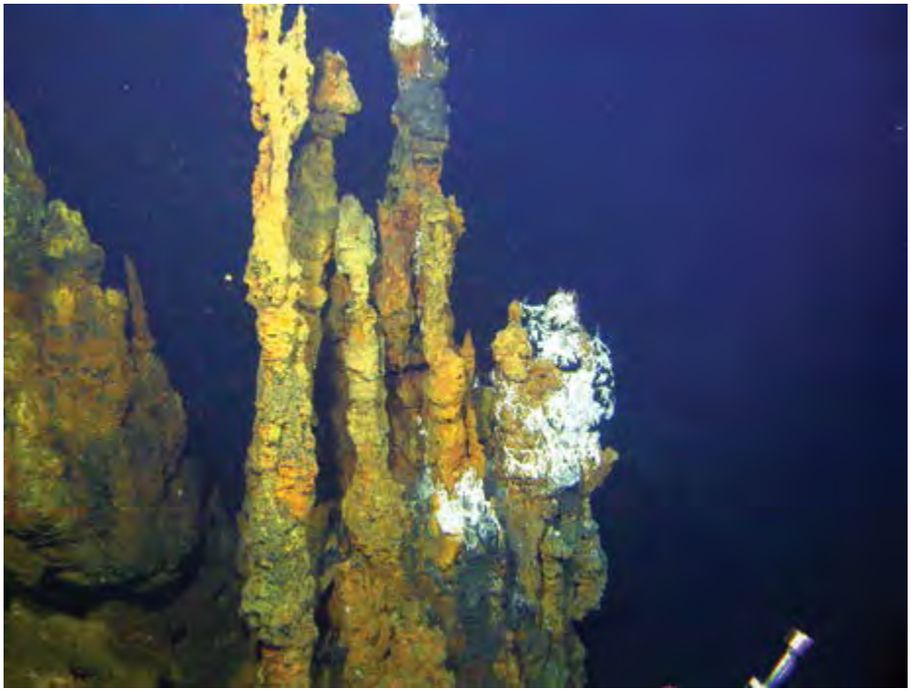
Supply

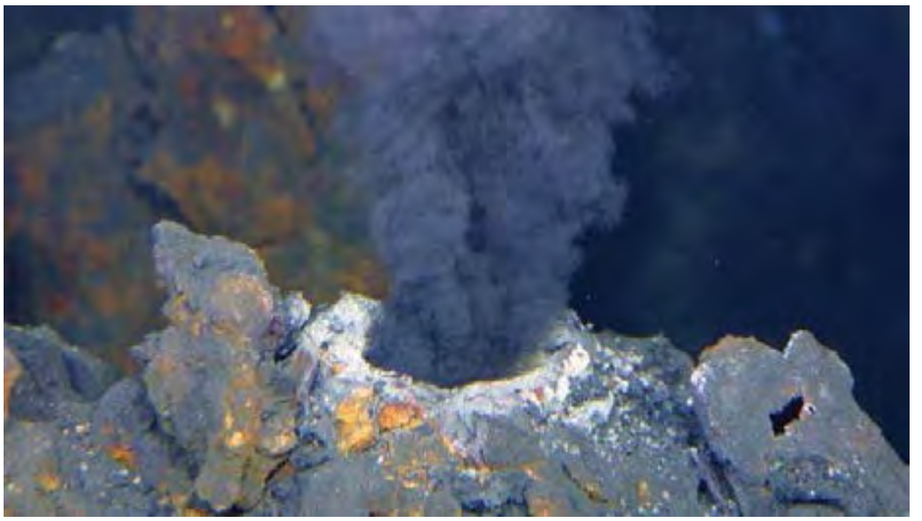
At the most trivial level of analysis, the answer to the question of where we will get the raw materials for the renewable transition is "the earth's crust". To break that down a bit further, we can divide the earth's crust into two categories: continental crust (the continents and shallow seabed of the continental shelf) and oceanic crust (the deep seafloor). Oceanic crust is formed at the volcanic ridges and arcs and collides with the thicker, lighter rock of continental crust, either accreting on the continental margins or being consumed in the mantle. While continental crust is less prevalent than the enormous expanses of seafloor, it is disproportionately rich in minerals.

But the deep sea is not completely devoid of mineral wealth. The long, slow processes of sediment accumulation and the precipitation of dissolved elements in seawater lead to unusual formations like polymetallic nodules (potato-shaped lumps containing manganese, nickel and copper) and cobalt-rich crusts. In areas of volcanism such as the Kermadec arc, massive sulphide deposits, rich in metals, are formed through hydrothermal action. The full extent of the resources contained in these different formations is still little understood. But what is known suggests that the sea-floor contains total quantities of some minerals that dwarf their dry-land equivalents.[3]

Evaluating sheer abundance is not enough to explain where mining actually occurs. We must also account for the amount of work required to extract and refine the minerals. For example, copper was one of the first metals to be widely exploited because it could be found on the surface in ores that required only simple forging. By contrast, the so-called rare earth elements (REEs) are only

3 US Geological Survey, *Mineral Commodity Summaries 2020*.





ABOVE
A cluster of extinct chimney spires, all ~2 m high. However, the partially obscured chimney on the left-hand side is up to 5 m tall. The white material visible on some of the spires is bacterial mat. Image courtesy of GNS Science.

BELOW
Active (lower) and extinct (upper) hydrothermal vent chimneys observed on the seafloor at Brothers volcano, located on the Tonga-Kermadec Ridge, 340 kilometres north east of the Bay of Plenty. The black smoker vent (in the lower image) sits atop a 1- to 2-m-high sulphide mound with a vent temperature measured at 292°C. Black smokers derive their name from the process where shallow hot magma, rich in sulphide, heats sea water drawn into the hydrothermal system around the submarine volcano, and pushes through the vent and comes into contact with colder sea water. Iron rich sulphide and other minerals solidify out of the hot fluid as they cool, turning the water black and forming chimney-like structures. The field of view is ~0.5 m. Image courtesy of GNS Science.

found in low concentrations, in conjunction with other elements, requiring complicated refining processes that produce large amounts of waste. Mineral deposits that allow the greatest return for the smallest outlay will generally be exploited first. But that can only be true within the bounds of our current knowledge; a hitherto unknown discovery might be waiting just around the corner, including in the deep sea.

The viability of mining prospects must also take into account the prevailing security conditions. Cobalt is an instructive example. The purest deposits of cobalt are found in the Democratic Republic of Congo (DRC) and production is dominated by artisanal mining, where digging is mostly done by hand. Eastern DRC has been wracked by conflict for decades, and the cobalt mines are a significant source of income for local warlords, who are insensitive to slavery-like working conditions and widespread environmental damage. The riskiness of this source of supply was almost certainly on Elon Musk's mind when he announced on 'Battery Day' that Tesla would be moving their battery chemistry away from relying on cobalt (even though Tesla has also been working on a cobalt-rich ultra-long-life battery).

Mining companies take into account the regulatory environment when they evaluate prospects. Mining is fraught with environmental risk that governments must balance with the economic gains they are seeking. Many western countries have seen their mining industries dwindle; responding to public pressure for better environmental standards,

NEW ZEALAND'S OCEAN GOVERNANCE REGIME

The New Zealand maritime domain is governed through two types of legislative regime: those that regulate the effects of activities and those that regulate the activities themselves. The Resource Management Act 1991 and the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012 are the principal legislative instruments for regulating effects in the maritime zone. A permitting regime is run by local bodies in the case of coastal activities and by the Environmental Protection Agency and Environment Court for offshore activities. Additionally, area protection can be afforded through designation of maritime protected areas.

Fisheries, shipping and hydrocarbon exploration are governed through specific legislative instruments, for example, the Quota Management System for fisheries and the Maritime Transport Act for shipping.

The range of agencies and organisations that have responsibilities for ocean governance is necessarily wide, including central government departments such as the New Zealand Customs and Ministry for Primary Industries, and local authorities such as councils and ports. Alongside those with formal authority are those with advisory roles such as iwi groups and industry bodies.

There is no single agency responsible for setting national policy that would apply to New Zealand's entire maritime domain. Developing an oceans policy was attempted in the early 2000s by the Clark Labour Government but was abandoned by the incoming National Government following the 2008 election. There is currently no overarching statement of national goals and objectives to guide the various parties that have an interest in the maritime domain. A recent report from the Office of the Prime Minister's Chief Science Advisor recommended that the government 'Develop a bold Oceans Strategic Action Plan for 2040 to protect and manage Aotearoa New Zealand's territorial sea and EEZ, with a clear integrative framework to prioritise, coordinate, implement and measure outcomes to achieve 100% sustainably managed oceans'[1].

1 Office of the Prime Minister's Chief Science Advisor, "Recommendations".

DEEP SEA MINING IN THE PACIFIC

The nations of the Pacific are responsible for the regulation of seabed extractive activities within their Exclusive Economic Zones (EEZs), as all sovereign nations are under the provisions of the United Nations Convention on the Law of the Sea (UNCLOS) (apart from the United States, which has not ratified UNCLOS). Pacific Island governments have shown a willingness to advance the prospect of deep sea mining. The South Pacific Community (SPC), with European Union support, has been working with 15 Pacific Island nations to develop regulatory frameworks for deep sea mining and four have so far enacted deep sea mining legal regimes: Tuvalu, Fiji, the Cook Islands and Tonga. Hundreds of exploration licenses have been issued across the Pacific, even in the absence of fully developed legal regimes, but only Papua New Guinea (PNG) has so far issued a mining license.

In addition to activities inside their EEZs, Pacific Island nations are able to use membership in the International Seabed Authority (ISA) to sponsor exploration by private companies in the so-called 'Area' (the seabed equivalent of the high seas). To date, Kiribati, Tonga, Nauru and the Cook Islands have secured allocations in the Eastern Pacific region known as the Clarion-Clipperton Zone through the ISA. Companies are restricted to exploration at present until ISA member nations can agree on a code of conduct for mining in the Area.

The most active deep sea mining companies in the Pacific have been Nautilus and DeepGreen Metals. Nautilus held the license for mining the Solwara prospect in PNG and a range of exploration permits across the region, but the failure of Solwara has tipped the company into bankruptcy and its future is up for grabs. DeepGreen has recently merged with Sustainable Opportunities Acquisition Corporation in a multi-billion dollar deal to form The Metals Company. DeepGreen's history in the Pacific, close links with national leaders such as Baron Waqa of Nauru and advocacy at the ISA position The Metals Company to be a leading proponent of seabed extractive industry in the region.

regulatory regimes tightened just as other jurisdictions were aggressively opening new prospects. The REE industry is illustrative of this; the US has significant deposits of REEs at Mountain Pass in California, but the difficulties of complying with California law meant the mine was shuttered. At the same time, China was moving to dominate REE production, eschewing the protections for mining communities that are now standard in the West.

New frontier provinces will inevitably be opened to mining as the demand for minerals increases. But we cannot be certain that these are going to be yet more removed from our daily lives. Given just how critical minerals such as lithium, cobalt and nickel are going to be for all of us, we should expect nation-states to want to have a degree of security in their supply. That is likely to see western countries reverse the trend of mining going offshore to foreign jurisdictions. The US is pushing to reopen REE mining in the continental US and has struck a deal with an Australian company to begin mining in Australia to supply a Texas refiner; the aim being to lessen dependence on Chinese supply. In an environment where countries are willing to pay a strategic premium to secure a reliable supply of critical minerals, deep sea mining will be on the agenda.

Deep sea mining

The technical hurdles to extracting minerals from the deep sea are formidable. The long distances, extreme pressures at depth and salinity all take their toll. The closest anyone has gotten to actually mining the deep seabed (as opposed to dredging) was at a 600 metre-deep site in Papua New Guinea (PNG). Nautilus, the Canadian company permitted to mine the Solwara prospect, had the bespoke mining equipment constructed and was slated to begin production before the venture collapsed amid recriminations from locals and the PNG government.

...the alternative to deep sea mining is not no mining; rather *it is to mine the terrestrial environment more intensively*.

Despite Nautilus' failure, the state of technical knowledge has nonetheless advanced as a result. But it has also sharpened the debate about whether to allow deep sea mining at all.

One of the manifest uncertainties about deep sea mining is the effect it could have on the surrounding environment. As there has only been exploratory extraction to date, trawler fishing provides one of the few ways to forecast the effects of industrial scale extraction from the deep seabed. Equally, the argument that the mining of mineral-rich nodules lying loose on the deep seabed can be done by low-impact suction rather than dredging remains to be proven.

But the alternative to deep sea mining is not no mining; rather *it is to mine the terrestrial environment more intensively*.

New Zealand's situation

New Zealand is geologically and geographically unusual. Ninety six percent of New Zealand's "land mass" is underwater; the New Zealand islands are the uppermost parts of an undersea continent, dubbed Zealandia by geologists at GNS Science (GNS). This drowned land includes major underwater vulcanism, and extensive areas of abyssal plains feature within our Exclusive Economic Zone (EEZ). Cobalt-rich crusts and massive sulphide deposits

ABOVE International Ocean Discovery Program vessel *Joides Resolution* departing Honolulu May 9, 2009. Image courtesy of IODP.

Note: New Zealand is an associated funding partner of the IODP through the Australian-New Zealand-IODP Consortium (ANZIC). The three most recent IODP research voyages to New Zealand have been to: the Ross Sea, the Hikurangi Subduction Zone and the Brothers arc (all in 2018).

CURRENT STATUS OF THE RESERVED AREAS WITH THE INTERNATIONAL SEABED AUTHORITY[1]

Reserved areas available with the International Seabed Authority

Polymetallic nodules contractors	Original reserved areas (sq. km)	Remaining reserved areas (sq. km) (as of 2019)	Final area allocated to contractors (sq. km)
Government of India – MOES	150,000	150,000	75,000
Deep Ocean Resources Development Co. Ltd. (DORD) (Japan)	150,000	123,901	75,000
Institut français de recherche pour l'exploitation de la mer (IFREMER) (France)	155,440	139,677	75,000
Yuzhmorgeologiya (Russian Federation)	132,328	87,531	75,000
China Ocean Mineral Resources Research and Development Association (COMRA) (China)	150,000	118,518	75,000
Interoceanmetal Joint Organization (IOM) (Bulgaria, Cuba, Czechia, Poland, Russian Federation and Slovakia)	150,000	93,898	75,000
Government of the Republic of Korea	150,000	68,008	75,000
Federal Institute for Geosciences and Natural Resources of the Federal Republic of Germany (BGR)	72,744	31,766	77,230
UK Seabed Resources Ltd I (United Kingdom)	58,280	0	57,720
Global Sea Mineral Resources NV (GSR) (Belgium)	71,937	0	76,728
UK Seabed Resources Ltd II (United Kingdom)	74,904	74,904	74,919
Total	**1,315,633**	**888,218**	**811,597**

Reserved areas allocated to developing countries

Contractor	Sponsoring State	Reserved areas allocated (sq. km)
Tonga Offshore Mining Limited	Tonga	74,713
Nauru Ocean Resources Inc.	Nauru	74,830
Marawa Research and Exploration Ltd.	Kiribati	74,990
Ocean Mineral Singapore PTE Ltd.	Singapore	58,280
Cook Islands Investment Corporation	Cook Islands	71,937
China Minmetals Corporation	People's Republic of China	72,745
Total	**888, 218**	**427,495**

Editor's note: *By way of comparison, the land area of the South Island of New Zealand is 150,437km². So the seabed areas assigned to Tonga, Nauru, Kiribati and the Cook Islands is around one half of the area of the South Island for each of them.*[2]

1 International Seabed Authority, *Current Status of the Reserved Areas with the International Seabed Authority*.
2 Te Ara, "Story: Natural environment."

IMAGE

Illustration of deep seabed black smokers courtesy of Norwegian University of Science and Technology Oceans' Pilot programme on deep-sea mining. Image courtesy of Associate Professor Steinar Løve Ellefmo at steinar.ellefmo@ntnu.no.

WIDER IMPLICATIONS OF SECURING ACCESS TO CRITICAL MINERALS

In a March 2021 paper by Dwayne Ryan Menezes, founder and managing director of the London-based Polar Research & Policy Initiative, titled *The Case for a Five Eyes Critical Minerals Alliance*,[1] the following paragraphs describe the New Zealand approach to securing access to critical minerals:

'Although companies from New Zealand do not appear to have been as active as their British, Canadian, American and Australian counterparts in critical minerals projects... New Zealand has an increasingly outward-looking mining sector and growing technical expertise in critical minerals research, and would be a strategic partner in any Five Eyes Critical Minerals Alliance. In 2017, minerals and petroleum contributed NZD 2.4 billion to New Zealand's GDP, with mineral exports valued at NZD 873 million.[2] In November 2019, New Zealand issued its 2019–2029 Minerals and Petroleum Strategy that laid out the link between the importance of the minerals and energy sector and commitments to transition to a low emissions economy:

"As countries transition to low emissions economies, where low emissions technologies like electric vehicles and solar panels become more prevalent, the demand for clean-tech minerals such as cobalt and lithium is projected to increase dramatically. There may be opportunities for New Zealand to meet this domestic and global demand for clean-tech minerals... As the energy system transforms, we also need to make sure we have the minerals (such as rare earth elements) necessary to produce the technology we need to power the future.."[3]

The 2019 strategy also pointed out that while New Zealand does not have a list of critical minerals yet, it was committed to developing such a list.

In recent years, New Zealand's Ministry of Business, Innovation and Employment (MBIE) commissioned GNS Science – which leads New Zealand's largest minerals research programme – to undertake regional studies to evaluate the potential prospectivity of clean-tech minerals.[4] Its 2018 and 2019 studies indicated lithium potential in the central North Island and the Hohonu Range on the West Coast of the South Island, Nickel and Cobalt potential in Nelson-Tasman-Marlborough and Southland regions, and rare earth elements potential on the West Coast.[5] MBIE also funded the New Zealand Institute of Minerals to Materials Research (NZIMMR), established in Greymouth in 2018, that is spearheading the research to support the government's goal of encouraging a REE-based industry in New Zealand.[6] On 26 February 2021, GNS New Zealand participated in a Critical Minerals Forum organised by the Geological Survey of Canada, Geoscience Australia and the US Geological Survey.[7] In the private sector, a New Zealand chemical engineering company, Fenix NZ Ltd, which specialises in minerals processing and metal recovery by implementing the design, development, construction and installation of hydrometallurgical circuits, played a key role in the development of USA Rare Earth's rare earth and critical minerals mineral processing facility in Wheat Ridge, Colorado, alongside its US partners, USA Rare Earth, Inventure Renewables and Resource Development Inc.[8,9]'

1 Menezes, *The Case for a Five Eyes Critical Minerals Alliance: Focus on Greenland*.
2 Ministry of Business, Innovation and Employment, *Responsibly Delivering Value: A Minerals and Petroleum Resource Strategy for Aotearoa New Zealand: 2019-2029*.
3 Ibid.
4 GNS Science, "Minerals."
5 Ministry of Business, Innovation and Employment, *Responsibly Delivering Value: A Minerals and Petroleum Resource Strategy for Aotearoa New Zealand: 2019-2029*.
6 NZIMMR, "Rare Earth Elements."
7 Australian Institute of Geoscientists, "Critical Minerals Forum: Geoscience to support critical minerals discovery."
8 USA Rare Earth LLC, "Critical Materials in the USA: Round Top Rare Earth / Lithium Project, Texas."
9 USA Rare Earth LLC, "USA Rare Earth Successfully Completes Phase I Rare Earth Separation and Processing Test Work."

are known to exist and have been extensively studied by GNS, and there are likely many other deposits hidden in our submerged continental rock. The New Zealand seabed is already of interest to commercial operators. Two companies have recently sought permission to extract iron sands and rock phosphate from the South Taranaki Bight and Chatham Rise respectively (and they were preceded by Neptune Minerals, who sought to mine massive sulphides in the Kermadec arc). Both had permit applications rejected by the Environment Court and both are working on reapplications. It is unlikely they will be the last to test the appetite of the New Zealand government to allow mineral extraction from the seabed.

We are not alone in having an extensive and potentially prospective maritime environment though. Our Pacific neighbours are of great interest to the nascent deep sea mining industry. Commercial entities associated with the Cook Islands, Tonga, Nauru and Kiribati have all signed agreements with miners to explore Eastern Pacific high seas blocks apportioned by the International Seabed Authority (ISA). For small island states, deep sea mining promises much-needed economic diversification, a drawcard that could outweigh the risks that might be introduced.

New Zealand has an interest in seeing our Pacific neighbours avoid the downsides of deep sea mining. The operative question is where any given venture falls on the spectrum from professionally-run economic boons with minimal environmental impact, through to fraudulent or ill-judged schemes that could have negative economic and environmental effects. To hope to have a salutary effect on the deep sea mining industry in the Pacific, *New Zealand will need to develop significant additional scientific and technical knowledge in order to be a credible interlocutor for Pacific Island governments and communities.*

Maritime security implications

Our closest security partners, Australia, Canada, the United Kingdom and the US, are already well advanced in their thinking about critical mineral supply. Canadian and Australian miners, backed largely by US and British capital, are scoping as many options as they can to increase the autonomy and security of the supply chains that are vital to maintaining strategic advantage over competitors. At an Indo-Pacific conference in Perth in August 2020, Australian Defence Minister Linda Reynolds drew attention to the "critical importance" of REE supply and demand issues, reinforcing the messages of the 2019 Critical Minerals Strategy for Australia policy paper.[4]

With some standout exceptions, such as Buckley Systems, Scott Technology and Rocket Lab, New Zealand is less invested in the manufacturing industries that require the full range of critical minerals than our partners. But we are no less dependent on the final products. Our security will be enhanced by supporting efforts to ensure global supply chains are reliable, resilient and protected against state coercion.

New Zealand will need to develop significant additional scientific and technical knowledge in order to be a credible interlocutor for Pacific Island governments and communities.

4 Australian Trade and Investment Commission, *Australia's Critical Minerals Strategy*.

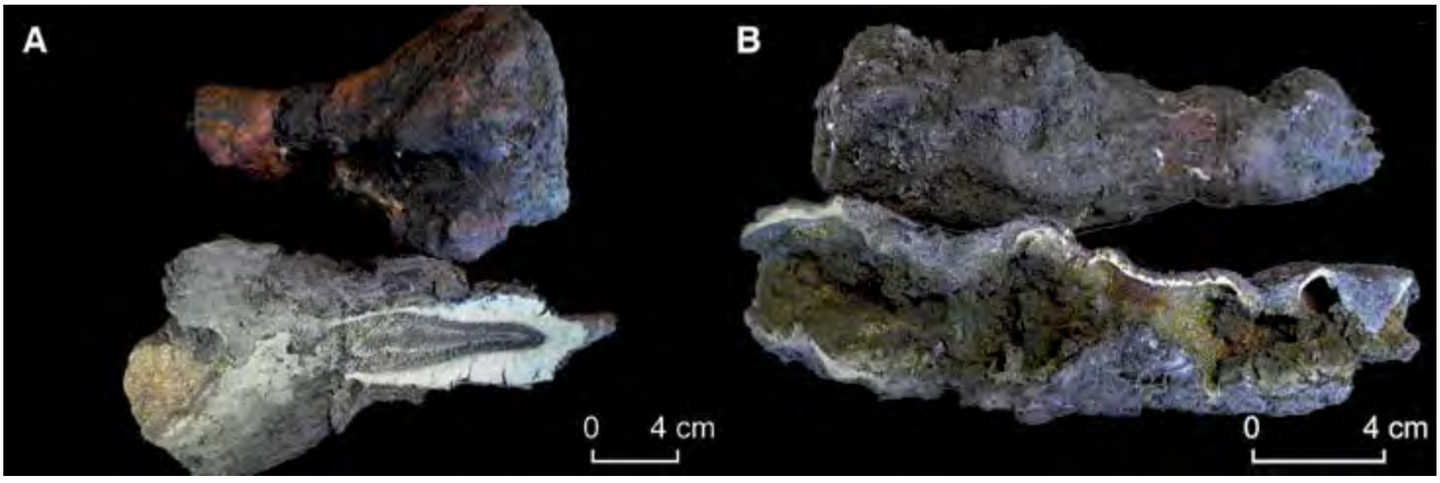
AN ADDITION BY GNS SCIENCE

GNS Science Te Pū Ao (GNS) is New Zealand's national institute of geological and nuclear sciences. As a Crown Research Institute (CRI), GNS is strongly mission-led and focused on accelerating economic, environmental and social benefits from New Zealand's natural resources. In 2017, we published a landmark paper identifying Te Riu-a-Māui/Zealandia as Earth's eighth continent[1] and recognised that New Zealand now shoulders continental scale challenges, opportunities and stewardship responsibilities for a large area of the South Pacific. In concert with these responsibilities, scientific research has a crucial role in determining how successfully New Zealand manages understanding global-scale environmental change, improving predictive capability for hazards and disasters, and identifying new sustainable resources. For over 20 years, GNS has been studying massive sulphide mineralisation (copper-zinc) along the Kermadec arc, which was the catalyst for similar studies by other nations on submarine volcanic arcs around the world. In a low-carbon future, there will be continuing demand for a sustainable, secure supply of energy and critical element and material resources.

For over four decades, GNS Science has coordinated national marine geoscience research initiatives, collaborated with government agencies, universities, CRIs, Māori and other providers, and has led international initiatives. Participation with Australia in the global International Ocean Discovery Program (IODP)[2] enabled New Zealand to grow capability, leverage co-funding and bring to New Zealand significant new knowledge and critical thinking, as well as additional scientific infrastructure and equipment. For example, numerous research voyages have been completed along the arc of hydrothermally active seafloor volcanoes stretching from New Zealand to Tonga, where volcanic activity functions as a natural laboratory concentrating metals in the sub surface. IODP scientific ocean drilling at Brothers submarine volcano in 2018 was a landmark initiative that is providing groundbreaking results, better defining the subseafloor locations and mechanisms under which critical elements are formed.

GNS Science is committed to improving knowledge of New Zealand's critical elements and materials distribution as it is essential for the mapping of supply chains and enhancing understanding of supply constraints and demand patterns. Our 2050 vision is that Aotearoa New Zealand's critical elements security and climate mitigation could be integrated with an energy strategy to meet broad environmental, political and economic goals.

1 Mortimer et al, "Zealandia: Earth's Hidden Continent," 27-35.
2 The Australian New Zealand IODP Consortium.



ABOVE
A. "Leg of Lamb" chimney 851-1B collected from a larger chimney complex that was venting ~300°C fluids, at a depth of 1665 m. This chimney grew over a ~4 year period, with evidence for "magmatic" fluids having deposited Cu and Au, the latter with concentrations up to 71 parts per million (ppm).

Editor's note: *By way of comparison, in the mining industry, gold at as small a concentration as 0.5 parts per million (ppm) can be economically mined given a large enough mining area to support the cost of development.*

B. Example of Cu-Au-rich mineralisation at Brothers, collected from a chimney venting 294°C fluids at a depth of 1656 m. Gold in this sample is 60 ppm. Chalcopyrite lines the chimney interior and is surrounded by a zone of grey sphalerite + pyrite, with white barite near the exterior.

Images courtesy of GNS Science.

Given that deep sea mining will introduce new risks to the maritime domain, we will also need to reconsider the means we have to maintain good order at sea. The most obvious needs are for:

- monitoring;
- ensuring compliance for licensed operators; and
- deterring any unlicensed activity.

At one extreme of the possible futures, where the economic and technological stars align to make deep sea mining broadly viable, we might expect to see the mineral-extraction equivalent of distant water fishing fleets. In any case, the challenge of how to regulate deep sea mining would be aided by having the ability to flexibly operate throughout the maritime domain, both enforcing our own laws where necessary and contributing to the maintenance of international law and order on the high seas. That would include enforcing whatever codes of conduct and international laws are agreed to by the ISA to cover exploration and mining activities on the international deep seabed.

Conclusion

Transitioning our energy systems away from hydrocarbons is going to be a massive undertaking, but the technological and economic drivers that are already in place mean that the transition will almost certainly gather pace over time, until it is effectively self-sustaining. However that will only be the case if we can be assured of the ready availability of the necessary raw materials, including critical elements. The supply side of the equation will only be solved if we critically evaluate all of the options for securing the mineral resources that will be required for the renewable transition.

The balance we will need to strike is between the government's determination to decarbonise on the one hand and aversion to expanding mineral extraction on the other. The two motivations are already in conflict and will need to be reconciled. Moreover, renewable energy technology is already a piece on the game-board of strategic competition and New Zealand cannot afford to ignore the desire to forge secure supply chains that is already animating our closest security partners.

In order to make better decisions about the role deep sea minerals could play in New Zealand's future, we will need to better understand the state of the resource base, the environmental science, the regulatory options and the security implications of deep sea mining. By doing so, we will increase our chances of making strategically sound decisions and make ourselves a better partner for those who seek our help.

COMMANDER JOHN SELLWOOD, RNZN

Commander John Sellwood has served in the Royal New Zealand Navy since 2003 in a range of command, staff and training roles, including being deployed on operations. In 2014, he was the dux of the NZDF Advanced Command and Staff College and in 2020 was the United States Naval War College's Senior Level Course Distinguished Graduate, the first international officer to have done so in the College's history. A Wellington resident, Commander Sellwood enjoys reading widely, running around the hills and harbour, and family life with his wife and two children.

CREATING A **GREEN HYDROGEN** FUTURE FOR NEW ZEALAND

In this article, Beca's Energy Transition Lead, **Shane Gowan**, and Energy and Manufacturing Manager, **Phil Robson**, discuss the use of hydrogen and why it is seen as a potential low-carbon replacement for fossil fuels.

IMAGE

Pictured here is the Ballance Agri-Nutrient plant at Kapuni. Ballance is partnering with Taranaki-based Hiringa Energy to produce green hydrogen for urea production and as transport fuel. NZD 20 million has been provided through the Provincial Growth Fund to kick-start this project. Image courtesy of MarkBellringer.co.nz, July 14 2021.

Introduction

There is no doubt that the need to keep global warming to no more than 1.5 degrees celsius above pre-industrial levels (in accordance with the Paris Agreement) has become a global political imperative that is driving research and investment into decarbonising primary energy. We must move away from our reliance on fossil fuel-derived energy sources. The need to decarbonise our energy in order to meet carbon reduction goals dictates that low or no carbon replacements for energy sources such as coal, diesel, petrol, jet fuel and, ultimately, natural gas need to be found.

Through the creation of a world-scale green hydrogen industry in New Zealand, we have the opportunity to develop energy independence, as well as develop new and significant export markets. However, to achieve this, a coordinated national energy strategy is required, to ensure the availability of sufficient renewable electricity to create green hydrogen, and do so at a price that attracts the necessary capital investment for production, storage and distribution facilities. This will require strong leadership with a vision to make the timely changes needed to enable New Zealand to lead the world in decarbonisation.

New Zealand is in the enviable position of having our electricity generated by predominantly renewable sources (approximately 80% is generated by a combination of hydroelectric, geothermal, solar and wind). But this alone is not enough for the country to meet its carbon reduction commitments, even with the Government target of 100% renewable electricity generation by 2030.

One of the key challenges we face in reducing and ultimately eliminating fossil fuel-based energy sources is that a high-intensity energy source that is carbon-free needs to be commercially viable and available at scale. Hydrogen as a replacement for fossil fuels, in a wide variety of applications, is now being seen as the leading candidate to play this role.

The New Zealand Government has developed a vision and accompanying strategy to achieve 'an affordable, secure, and sustainable energy system that provides for New Zealanders' wellbeing in a low emissions world.'[1]

The work programme associated with this vision and strategy comprises eight workstreams, one of which examines the opportunities that green hydrogen presents in helping New Zealand move toward a low-carbon future.

The website introducing the green hydrogen vision paper produced in 2019 states that 'Green hydrogen has the potential to play a significant role in our energy system and could play an important role in decarbonising parts of our economy.'[2]

Hydrogen and green hydrogen

So why is hydrogen and, in particular, green hydrogen so attractive as an alternative energy source?

Hydrogen is the most abundant element in the universe. It is present on Earth not as molecular hydrogen itself but most commonly as the water molecule (H_2O), or attached to carbon in the form of various hydrocarbon substances including coal, natural gas and crude oil. Therefore, hydrogen in its basic form needs to be manufactured.

An advantage of hydrogen is that on a weight basis i.e., energy per kg, it is relatively energy intensive. In fact, when measured in this way, it has double the energy intensity of natural gas, which means that it is a versatile energy source. Hydrogen is produced in significant quantities on a global scale with current demand for pure hydrogen estimated at around 70 million tonnes per year, mostly for use in the production of refined oil products and chemicals manufacture.

Ninety-five percent of hydrogen produced today is manufactured through steam reforming of natural gas or coal gasification. Carbon dioxide (CO_2) is a by-product of these processes. Only a small portion of this CO_2 is captured for use in products such as fizzy drinks, with the remainder being emitted into the atmosphere.

As this hydrogen is then used as part of an industrial process, it is defined as grey hydrogen. If the CO_2 is captured by the most common method, carbon capture and sequestration (CCS)—where the CO_2 is stored in underground geological formations— then the hydrogen is designated blue hydrogen. So, what is green hydrogen? It is hydrogen that is

1 Ministry of Business, Innovation and Employment, "Energy strategies for New Zealand."
2 Ministry of Business, Innovation and Employment, "A vision for hydrogen in New Zealand."

ABOVE
Hydrogen ship. Image courtesy of Beca.

produced without the emission of CO_2. By splitting a water molecule into hydrogen and oxygen through electrolysis, where the electricity used is renewable, the hydrogen produced is classified as green.

Potential applications of green hydrogen

With hydrogen being relatively energy intensive, it is also versatile in its potential uses. The current and potential applications of hydrogen are discussed below with technologies in varying stages of development, roll-out and implementation.

Industrial process applications

Grey hydrogen, the most common form produced today, is used predominantly in the manufacture of industrial products, such as ammonia that in turn is used as a feedstock in fertiliser, methanol production, and the production of refined petroleum fuels and in the chemicals industry.

The production of ammonia, where hydrogen is reacted with atmospheric nitrogen to produce ammonia (NH_3), is a pre-cursor to most modern-day nitrogen-based fertilisers. This application accounts for over half of the hydrogen produced globally today.

Maritime transport

Ammonia has other potential applications as a high intensity energy source, including its use as a potential maritime transport fuel.

Maritime transport is estimated to account for 2–3% of global CO_2 emissions, according to the body that regulates the maritime industry, the International Maritime Organization (IMO). In 2018, its delegates agreed to reduce

CURRENT OUTLOOK FOR HYDROGEN OR AMMONIA-BASED FUELS IN NAVAL SHIPS

- The current outlook for the use of hydrogen or ammonia-based fuels in naval ships looks more uncertain. Ammonia as a fuel can be considered for retrofitting into conventionally powered diesel ships but the costs involved at present appear to outweigh the advantages. There are of course specialty applications of hydrogen, including in-air independent propulsion systems (AIP) for submarines. Germany has been a leader in this field for many years.
- The German Navy 212A class submarines and the Italian Navy Todaro class have AIP propulsion systems as an adjunct to their main diesel plant. The AIP systems use a Seimen's proton exchange membrane (PEM) and compressed hydrogen fuel cells. AIP comes into its own where slow, silent running is required.
- For safety reasons, it is notable that in the Type 212, the AIP fuel and oxidiser is stored in tanks outside the crew space between the pressure hull and the outer light hull to minimise fire and explosion concerns.
- The gases are piped through the pressure hull to the fuel cells when the submarine is running on its electrical AIP systems. Greece and the Republic of Korea's navies are among those licensing this system.

emissions by 50% from 2008 levels by 2050.[3] Global shipping companies, such as Maersk, are making carbon-neutral commitments like net-zero CO_2 emissions from their operations by 2050. To achieve their goals, these companies need to be transitioning to the use of new carbon-neutral fuels and supply chains. Shipowners and industry analysts say they expect ammonia to play an important role in decarbonising cargo shipping. There are, however, significant challenges that need to be overcome for this potential to be realised. One challenge is that ammonia's energy density by volume is half that of diesel, so ships would need to store double the amount of ammonia. The other factor is that, at the present time, there has not been a green ammonia supply chain established, and no ships of any size have yet been developed that are powered by either direct combustion of 100% ammonia or by using electricity generated by ammonia fuel cells.

There are, however, a handful of interesting development projects that aim to overcome these challenges. Finland's Wärtsilä, a smart technologies solutions provider for the marine and energy markets, is planning to begin long-term, full-scale testing of ammonia in a marine four-stroke combustion engine in Stord, Norway, sometime this year. Meanwhile, Germany's MAN Energy Solutions and Korean shipbuilder Samsung Heavy Industries are part of a project to develop the first ammonia-fuelled oil tanker by 2024. Also by 2024, the *Viking Energy* is poised to become the first vessel propelled by ammonia fuel cells. The *Viking Energy* is an offshore supply vessel chartered by Norwegian energy company Equinor (formerly Statoil) and is currently powered by liquified natural gas. The vessel is being retrofitted with a 2MW ammonia fuel-cell system.

Although ammonia is an exciting development in low-carbon maritime propulsion systems, revamping the global shipping fleet will be extraordinarily expensive when the cost of retrofitting existing vessels, coupled with the cost of ammonia generation and distribution infrastructure, is taken into consideration. However, industry experts do predict that green ammonia will be produced at large volumes over the next decade, and a report generated by the international consultancy, DNV, predicts that ammonia could make up 25% of the maritime fuel mix by mid-2050.[4]

Land transport

There are several alternatives to using petrol and diesel, with the most widely

3 International Maritime Organization, "UN body adopts climate change strategy for shipping."

4 DNV, *Energy Transition Outlook 2019*.

ABOVE
Hydrogen plane. Image courtesy of Beca.

used application, particularly for domestic vehicles, being Battery Electric Vehicles (BEVs). There is no question that the uptake in the use of BEVs is rapidly increasing but as of 2019, less than 1% (0.4%) of the total New Zealand vehicle fleet were full electric and 1.4% were petrol/diesel hybrid.[5] As the range and battery performance from a charging perspective of BEVs improves, it is expected that the percentage of the entire national fleet that are either full electric or hybrid will increase. However, there is, at the present time, a cost premium associated with moving away from fossil fuel powered vehicles.

The use of fuel cell electric vehicles (FCEV) is also an option. FCEVs utilise an electric motor to drive the vehicle in the same way as BEVs. However, the electricity is generated by the fuel cell rather than stored in a battery pack. Hydrogen fuel cell technology has been developed over the last 20 years, with companies such as Toyota and Hyundai now producing domestic FCEVs. Toyota estimates that around 10,000 of their FCEV, the *Mirai*, have been sold globally, and Hyundai estimates that a similar number of their FCEV, the *Nexo*, have also been sold. In New Zealand, the use of FCEVs is in its infancy with no FCEV currently available for sale.

In certain applications, the use of FCEVs will have some advantages over BEVs, for example, recharge time; a full charge of hydrogen takes approximately 15 minutes or less. However, the growing infrastructure associated with BEVs suggests that, certainly in the short- to mid-term, battery powered electric cars will be the dominant form of non-carbon emitting passenger vehicles.

Given that the large proportion of passenger car journeys are short in nature, and with an ever-increasing electric charging network being established, the benefits of an FCEV having fast charge time and long-range do not become a compelling enough reason to favour fuel cell technology over battery at the present time.

However, if the vehicle has a high degree of utilisation (i.e. less opportunity to sit idle and be charged) over a longer range and is required to transport a large weight of goods, then current battery technology becomes more of an issue.

5 Te Manatū Waka Ministry of Transport, *Annual fleet statistics 2019*.

In the heavy transport space where large trucks are transporting heavy loads over long distances with short turnaround times, the size of the batteries required to give the necessary range and energy to haul large loads, and the time to charge these batteries makes them an impractical solution. In this situation, hydrogen fuel cell technology becomes much more compelling.

Another application of FCEV technology that has gained significant momentum in the United States is the use of hydrogen fuel cells in forklifts. In very large logistics centres where forklifts are required to operate with a high degree of utilisation, the cost of hydrogen infrastructure, and that associated with retrofitting existing forklifts, can be justified. The advantage of hydrogen fuel cells in this particular application is that the vehicles are in constant use, so a rapid recharge time is important, and the scale of the operation means the cost of the infrastructure to generate, store and distribute the hydrogen can be absorbed and is cost-effective.

It is estimated that there are over 50,000 hydrogen fuel cell-powered forklifts in the United States. As an example, in 2018, Walmart alone had 6,600 forklifts powered by hydrogen fuel cells.

Air transport

Air transport is possibly one of the harder modes of transport to decarbonise. Battery technology has potential application in aircraft operating over short distances and with limited payload, however, power to weight ratios will need to be improved with battery technology developments.

Hydrogen is a realistic option to decarbonise air transport. Research is underway for 100% hydrogen gas turbines as well as fuel cell-powered aircraft, although it is expected to be decades before commercial aircraft could be operating on 100% hydrogen. Liquid and gas hydrogen storage offers opportunities and challenges. The airline industry is quite rightly risk-averse when trialling new fuel systems. However, they have shown support for decarbonised fuel through trialling bio jet fuel, with flights by early-adopter airlines using blended fuel, and, in 2018, the first flight powered with 100% bio jet fuel took place.

Process heat

Industrial plants create process heat through the combustion of predominantly fossil fuels. To reduce the reliance on carbon-emitting fuel, there is a move toward the use of biomass, electricity, and potentially green hydrogen. For industrial applications that require low to medium temperature heating, electric boilers/heat pumps can be used, but when higher-grade heat is required, an alternate to natural gas or coal is required. The replacement of coal-fired boilers with biomass is occurring, with Fonterra converting two of their sites to burn either wood pellets or co-fire on wood biomass. An example of a potential application of hydrogen is that it could be blended with, or ultimately replace, the use of natural gas.

Energy storage

As we move toward a future powered by renewable energy, the challenges of supply and

BELOW
Hydrogen truck. Image courtesy of Beca.

demand of energy will need to be balanced. For example, wind blowing at times when there is limited demand could create excess supply. An option is using electrolysis to harness the "spare" capacity to create green hydrogen that could then be stored for future use when demand is greater than supply. Hydrogen, if stored in a depleted gas field, for example, and then transmitted through the existing natural gas pipeline network in the North Island, could provide valuable dry-year energy resilience.

Replacing natural gas

Repurposing existing natural gas pipeline networks to transmit either a blend of natural gas and hydrogen or 100% hydrogen is being investigated by a number of countries. It is possible to blend small amounts of hydrogen into existing natural gas systems with only minor changes to infrastructure and end user appliances, if changes are required at all. As an example, in Germany, gas transport grid operators have proposed to realise a 5,900km hydrogen pipeline backbone by retrofitting existing gas pipelines and connecting hydrogen production to industrial demand with salt cavern storage. In the Netherlands, a similar program has been proposed that would cost €5–6bn (NZD8–10bn); a quarter of the cost of building a new dedicated hydrogen pipeline.

Green steel

Steel is essentially a refined form of iron. Making steel

BELOW
Hydrogen train. Image courtesy of Beca.

produces large quantities of CO_2 through the use of coal as a "reductant", where iron ore is stripped of oxygen. Steel can also be made using natural gas rather than coal, in a process known as "direct reduction". In 2018, every tonne of steel produced emitted on average 1.85 tonnes of carbon dioxide, which equates to approximately 8% of global carbon dioxide emissions.

The replacement of natural gas with green hydrogen in the direct reduction process is currently being explored by a number of companies, with an example being the HYBRIT project in Sweden, where a fossil-free sponge iron pilot facility was commissioned in August 2020.

The challenges associated with green hydrogen

Currently, green hydrogen production is only a fraction of global hydrogen production, but the exponential investment in this form of energy indicates that it will play a significant role in addressing our future energy needs. However, there are challenges associated with the development of green hydrogen, which will need to be overcome if the potential of this form of energy is to be realised.

Safety

Hydrogen has been produced and managed safely across a wide range of industries, including oil refining and chemicals manufacturing for decades, and these industries have developed systems, processes, and technical specifications to manage hydrogen safely. That said, hydrogen is a flammable gas that needs to be stored at either high pressure or low temperature, and it has the potential to explode if not managed appropriately. However, it is non-toxic and, because it is 14 times lighter than air, it will disperse in open air rapidly, reducing the risk of ignition. There is no doubt though that there are negative perceptions associated with hydrogen due in part to the 1937 Hindenburg disaster. This perception will need to be addressed as the use of hydrogen grows.

Technical challenges—storage and transport

Hydrogen is a tricky substance to store and to transport. Because it is the lightest element, storing and transporting any significant quantity generally involves having to compress the gas to a very high pressure or dropping its temperature to a level where it liquefies. To be in a fully liquid state at atmospheric pressure, hydrogen needs to be cooled to -253 degrees celsius. Storing large quantities of hydrogen will involve the manufacture of expensive and complex high-pressure storage vessels. There is also a phenomenon associated with high-pressure hydrogen transportation through pipelines called hydrogen embrittlement, which occurs as a result of the hydrogen diffusing into the metal and causing cracking. Some materials are not as susceptible to this issue as others.

Cost

The two key cost elements associated with the production of green hydrogen are the cost of the electricity required to drive the electrolysis process (the largest single-cost contributor) and the capital costs associated with the purchase of production equipment, including electrolysers and compressors.

It is estimated that the current cost of green hydrogen generation, depending on the application of the hydrogen, ranges from \$7/kgH_2 to over \$10/kgH_2. For hydrogen to be produced at cost parity to conventional fuels, the production cost would need to reduce considerably.

In a report produced in 2020 on Green Hydrogen Cost Reduction, the International Renewable Energy Agency (IRENA) stated that:[6]

> *'**In addition to regulations and market design, the cost of production is a major barrier to the uptake of green hydrogen.** Costs are falling - largely due to falling renewable power costs – but green hydrogen is still 2-3 times more expensive than blue hydrogen... and further cost reductions are needed.'*

In the New Zealand context, the cost of our renewable electricity will have the largest single impact on green hydrogen production cost. As the scale of electrolyser manufacture increases globally, and research and development efforts continue to improve the efficiency of electrolyser design, it is expected that the cost of the electrolysers themselves will reduce considerably. A reduction in the cost of electrolysers of over 40% may be achievable by 2030.[7]

6 IRENA, *Green Hydrogen Cost Reduction: Scaling up electrolysers to meet the 1.5°C climate goal.*
7 Ibid.

Government policies and regulations that create the environment that promotes investment in the production of green hydrogen are also a critical factor in enabling the acceleration of a green hydrogen industry.

Markets and offtake agreements

The final challenge that New Zealand will face, which encompasses all the challenges we have discussed so far, lies with our ability to compete on a global stage. It is anticipated that green hydrogen will be a globally traded commodity, and, if New Zealand is to participate in this market, then the hydrogen produced in our country will need to be price competitive. New Zealand has signed a memorandum of cooperation with Japan and a letter of intent with South Korea; both countries are heavily reliant on imported energy. The opportunity to export our excess green hydrogen exists, but we will be competing in a global market, so the hydrogen that we produce will need to be cost competitive. Australia, for example, has also signed a cooperation agreement with Japan and a letter of intent with South Korea.

Green hydrogen—a global view

Although hydrogen has been manufactured and used as an energy source for decades, the current enthusiasm for its use as a low-carbon energy alternative is receiving unprecedented global focus. This interest in green hydrogen exists because of the relatively recent realisation that we have to move away from our reliance on fossil fuels if we are to realise carbon reduction targets associated with limiting the effects of climate change.

There is still very heavy reliance on the use of diesel and petrol across the transportation spectrum, with cars, trucks, trains, ships and aircraft still reliant on burning fossil fuels. Natural gas plays a dominant role in process and domestic heating applications.

Europe and the United Kingdom in particular, have embraced a green hydrogen energy future and are already investing heavily in a number of significant green hydrogen projects.

The European Union (EU) sees hydrogen as an important element of their commitment to meet their Paris Agreement decarbonisation goals. This transition will radically transform how the EU generates, distributes, stores, and consumes energy.

The European Commission's hydrogen strategy is based on a hydrogen eco-system in which there is a significant installation of clean hydrogen generation in the form of renewable hydrogen electrolysers. The initial goal is to build at least 6GW of electrolyser capacity by 2024, which would produce up to 1 million tonnes of renewable hydrogen per annum. This would increase to at least 40GW of renewable electrolysers producing up to 10 million tonnes of renewable hydrogen by 2030.[8]

The International Energy Agency (IEA) World Energy Balances that contain detailed data on the supply and consumption of energy for 150 countries indicates that in 2018, the Asia Pacific region derived 47.8% of its total energy from coal with another 25.2% coming from oil.[9]

This means that less than a quarter of the region's energy is derived from lower carbon sources, with 11.3% of the energy coming from natural gas, generally imported in the form of LNG. Green hydrogen is seen as a potential replacement for these high-carbon sources of energy with many of the region's governments setting ambitious targets to develop green hydrogen economies.

Green hydrogen in Australia

Closer to home, Australia is also excited about the development of a green or clean hydrogen economy. The reason that Australia describes hydrogen as clean is that they are also investigating the potential associated with blue hydrogen production (generated from natural gas or coal through reforming with carbon capture). With an abundance of solar and wind generation capacity and potential greater generating capacity, Australia sees a significant opportunity in the development of a green hydrogen economy from both a domestic perspective but also as a significant export commodity.

The Australian economy is heavily dependent on significant LNG and coal export markets. However, as the world moves towards decarbonisation, Australia's dependence on the revenue gained from these two resources is likely to wane and

8 European Commission, *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: A hydrogen strategy for a climate-neutral Europe*.

9 International Energy Agency, "Estimated supply changes in the Asia Pacific region, 2019 and 2020."

a replacement commodity will be required, which is where clean hydrogen becomes an exciting alternative.

In 2019, the Council of Australian Governments Energy Council released *Australia's National Hydrogen Strategy*, a document that describes the pathway for Australia to build a hydrogen industry. This strategy discusses the acceleration of the commercialisation of hydrogen. It focuses on the development of a strong domestic hydrogen sector that in turn will support the development of an export industry, with the aim of Australia becoming a significant player in a global hydrogen market.

This strategy is based on the development of hydrogen generation at scale in the form of strategically located hydrogen hubs, constructed in regions where clusters of hydrogen users are situated, making the development of large-scale hydrogen generation more economically feasible; the development of these hubs has commenced. With a significant number of clean hydrogen projects proposed or underway, investment in the development of a clean hydrogen industry in Australia certainly seems to be growing rapidly. In terms of government funding alone, it is estimated that AUD 370 million has been committed to advancing Australia's hydrogen industry since the government released its national strategy.[10]

At the Sustainable Energy Council World Hydrogen Summit 2021, energy ministers from South Australia and Queensland provided a clear direction and support for the development of green hydrogen projects, focusing on an export market. Both state representatives outlined the opportunity in their jurisdictions and compelling reasons why green hydrogen made sense. These reasons included market adjacency to Asia, existing infrastructure available to support an export industry and experience in large scale development projects in other industries that have been successful.

The Australian Renewable Energy Agency (ARENA), established in 2012, is an independent agency of the Australian government that manages Australia's renewable energy programs and is involved in many development and trial projects associated with the establishment of a clean hydrogen industry in Australia. As of June 2020, there were over 30 projects funded by ARENA alone. As well as the ARENA funded projects, a number of private projects have been announced recently. A snapshot of these projects follows:

Murchison renewable hydrogen project

Announced in 2020, this project is to be constructed near the town of Kalbarri in the mid-west of Western Australia with the aim of providing hydrogen for export to Asian markets, including Japan and South Korea. The facility is being developed by Hydrogen Renewables Australia and will feature electrolysers from the German firm Siemens. The facility will be powered by up to 5,000MW of solar photovoltaic and onshore wind and has secured the backing of the Danish investment firm Copenhagen Infrastructure Partners.

10 Australian Trade and Investment Commission, "Australian green hydrogen attracts major investment from Japanese giants."

Bulwer Island refuelling station

BOC Gas is to install a 220kW electrolyser, supplied by ITM Power, and an associated solar array to produce renewable hydrogen at its Bulwer Island site in Queensland. The electrolyser will have the capacity to produce up to 2,400kg of renewable hydrogen per month to power hydrogen FCEVs as well as supplying BOC's existing customers.

Hydrogen Energy Supply Chain Project

This substantial project in Victoria commenced in 2019 and is a partnership between Kawasaki Heavy Industries, J-POWER, Iwatani Corporation, Marubeni Corporation, Shell and AGL. During the pilot phase of this project, brown coal will be gasified in a plant that has been constructed in the Latrobe Valley to produce hydrogen-rich syngas, which is then purified, transported to the Port of Hastings to be liquefied, then loaded onto a specialised tanker for transportation to Japan. One of the aims of the project will be to capture the CO_2 generated by the gasification process.

Stanwell green hydrogen export hub

Government-owned Stanwell Corporation has joined with Japan's largest hydrogen supplier Iwatani Corporation to progress the development of a green hydrogen export hub situated in Gladstone, Queensland.

A New Zealand context

New Zealand's hydrogen journey can probably be best described as "in its infancy" when compared to the substantial amount of investment occurring globally and even when compared to our cousins across the Tasman. But there is no question that there is considerable interest and even passion behind the development of a green hydrogen future in New Zealand.

One of the eight core elements of the Government's renewable energy strategy is examining current and future opportunities for the development of green hydrogen to assist in decarbonising New Zealand's economy. This is described in detail in the document produced by the Ministry of Business, Innovation & Employment (MBIE) in 2019, which discusses the Government's vision to harness the potential of green hydrogen to help achieve a sustainable and resilient energy future for our country, as well as having the potential to grow an export market.

These goals are ambitious but achievable, and the development of a green hydrogen industry will play a part in helping us meet these reduction targets.

There are a number of projects currently in development in New Zealand. A snapshot of these projects follows:

Hiringa Energy refuelling network

Hiringa Energy are a Taranaki-based organisation with a mission to supply New Zealand with zero emission hydrogen. One of their core projects is the establishment of a hydrogen refuelling network. The first phase involves the development of eight refuelling stations across the North and South islands, with construction on the first station planned to start in 2021. The network will be used to help New Zealand decarbonise heavy transport

CLIMATE CHANGE COMMISSION ADVICE

Ināia tonu nei: a low emission's future for Aotearoa

On the 31st of January 2021, He Pou a Rangi, the Climate Change Commission, released its 2021 draft advice for consultation report. In this document, the Climate Change Commission states that meeting Government goals of net zero emissions of long-lived gases by 2050, and to reduce biogenic methane emissions by 24–47% by 2050, is possible. On 9 June 2021, the Minister for Climate Change, Hon James Shaw, tabled the final advice of the Climate Change Commission in Parliament.

Beca strongly supports the goals in the Climate Change Commission's advice and agrees that meeting them will require action across all sectors of the economy. This includes increasing the number of electric vehicles on our roads, which has the potential for battery as well as fuel cell vehicles and increasing the amount of renewable energy that is generated, stored and utilised.

The Commission's advice places emphasis on the production and use of low emissions fuels such as bioenergy and hydrogen[1] as a low emissions fuel and states that both bioenergy and hydrogen hold promise. The Commission's analysis indicates that these fuels have significant potential for reducing emissions in transport, space and process heat, and industrial processes. It also observes however that New Zealand needs to better understand their potential and that government has a role in facilitating this.

1 Climate Change Commission, *Ināia tonu nei: a low emission's future for Aotearoa*, 284-286.

by using hydrogen-fuelled (FCEVs) heavy vehicles with similar payload, range, and refuelling characteristics as conventional vehicles.

Ports of Auckland Hydrogen Demonstration Project

The Ports of Auckland have committed to the construction of a hydrogen production and refuelling facility at the Waitematā port. The facility will be used to fuel port equipment as well as buses and cars. Auckland City Council, one of the partners in the project, has recently acquired a hydrogen FCEV bus which has commenced service. The bus will be refuelled at the port.

Ballance Agri-Nutrients and Hiringa Energy joint venture

This project, which has funding from the Provincial Growth Fund, will see the production of green hydrogen at the Ballance Kapuni ammonia-urea plant, with an industrial-scale electrolyser powered by four wind turbines producing a total of 16MW. The green hydrogen will be used as both a feedstock into the ammonia-urea plant and as a zero-emission transport fuel as part of the Hiringa Energy distribution network.

FirstGas Natural Gas network study

Firstgas is the owner and operator of New Zealand's high-pressure natural gas transmission system. It has recently issued a report summarising the outcomes of a feasibility study carried out to assess the potential of blending hydrogen with natural gas and of using the existing natural gas pipeline network to transport the hydrogen blend throughout the North Island. From 2030, hydrogen will be blended into the natural gas network with the intent being conversion to a 100% hydrogen grid by 2050. This exciting project describes the staged installation of strategically placed, large-scale hydrogen generation facilities across the North Island.

Tuaropaki Trust green hydrogen

This 1.5MW facility will be able to produce up to 250Nm^3 per hour of hydrogen, powered by electricity from the trust's adjacent 112MW Mokai geothermal station near Taupō.

Tuaropaki is developing the project through Halcyon Power, a joint venture with Japanese multinational Obayashi Corporation. The joint venture aims to pilot geothermal-powered hydrogen production, develop domestic and export markets for the fuel, and work toward implementing a hydrogen supply chain for New Zealand and Japan.

The New Zealand Battery Project

Dry year energy resilience is an important aspect of New Zealand's energy future. Our dependence on hydroelectricity means that in a dry year, when hydro storage lakes run low, energy resilience is provided from fossil fuel generation. The New Zealand

Battery Project aims to provide advice on the feasibility of using non-fossil fuel alternatives for energy resilience. The use of pumped hydro schemes at Lake Onslow and other locations will be evaluated with other potential energy storage solutions, such as "overbuilding" renewables, biomass, green hydrogen, or indicative large-scale demand interruption.

The New Zealand Battery Project will evaluate these options as comparators against pumped hydro.

The New Zealand Hydrogen Council

In 2018, the New Zealand Hydrogen Council was established as a collaboration of private and public sector organisations. It aims to guide and support the creation of a low-emission hydrogen industry in New Zealand.

The Chief Executive of the Council, Dr Linda Wright, sees a significant opportunity for New Zealand to progress the decarbonisation journey through the development of a green hydrogen industry, but to do so will require a collaborative approach between government and the private sector. An important next step in this journey will be the construction and operation of a green hydrogen manufacturing facility.

'The development of green hydrogen in New Zealand is a transformational change opportunity for New Zealand and represents an opportunity to invest in both current and future technology solutions. Increased funding in research and development will ensure that New Zealand is at the forefront of generating solutions to the challenges associated with Green Hydrogen production. This is a New Zealand Inc opportunity and will need a collaborative approach from both the government and private enterprise for us to make green hydrogen a reality.'[11]

What role does green hydrogen play in our energy future?

There is no question that green hydrogen presents us with a unique opportunity to reduce and even eventually replace our reliance on fossil fuels, while potentially creating an opportunity for energy independence. We will, however, need to start thinking about energy creation differently. Fossil fuels have provided us with abundant, relatively cheap energy; they have created wealth and helped build the society we enjoy today. If we are to meet our climate change commitments, we need to understand that we will be creating and using energy differently in the future.

The production of green hydrogen as an energy source is relatively expensive and inefficient when we compare the process to refining fossil fuels such as diesel, however, the fundamental issue is that if we are going to meet our decarbonisation goals, alternatives to our reliance on energy intensive fossil-fuel energy sources must be found. Green hydrogen has potential to be part of our future energy landscape, but there are some commercial and technical challenges that need to be overcome, such as the cost of producing green hydrogen, particularly given New Zealand's current wholesale electricity price and the technical challenges associated with storing and transporting hydrogen.

So, if New Zealand is going to make the production (and export) of green hydrogen a reality, we need to address the following issues:

The production cost of green hydrogen will need to be competitive on a global scale

Electricity makes up the largest single component of the cost to produce green hydrogen, followed by the cost associated with purchasing key plant equipment such as electrolysers.

For the year ending March 2020, the average industrial electricity cost in New Zealand is cited by MBIE at NZD135.9/MWh.[12] This compares to Australian prices, which, in the first quarter of 2021, ranged from AUD27/MWhr in Victoria to AUD53/MWhr in South Australia, with solar and wind generation contributing 17% of the total National Energy Market.[13]

If we look further afield and compare ourselves to Norway, which has a similar population and a large hydro generation capacity with a trading market across northern European markets, a view on their spot market (3rd March 2021) showed the price was approximately €33(NZD 55)/MWh.

Looking further into the cost of green hydrogen production, the global view is that, at a cost of USD 2/kg, hydrogen will be a competitive energy replacement for natural gas. In fact, the federal government in Australia have a target of 'H_2 under $2'(USD). If we

11 In conversation with the authors, March 15, 2021.

12 MBIE, "Energy prices".

13 Australian Energy Regulator, "Wholesale statistics".

investigate MBIE's hydrogen supply and demand modelling tool,[14] with a base case cost of electricity at NZD 61/MWh, we won't be approaching a hydrogen production cost of USD 2/kg until the latter half of the 2040 decade. This may see New Zealand missing out on playing a significant role in the global hydrogen trade.

Support for continued and accelerated research and development to remove technical barriers

New Zealand is proud of its innovation culture, and New Zealanders have an opportunity to accelerate our actions to reduce emissions by applying that innovation. As a country, we need to harness our hunger for pushing the boundaries and use it to accelerate the use of technologies that might get us to our goals faster and more sustainably.

By combining near-term emerging technology with our passion for innovation, New Zealand can accelerate decarbonisation of the economy, with green hydrogen being an important part of this journey.

Clear and consistent direction and policy that supports decarbonisation and provides support for industry to take up green hydrogen as an energy source

In a report prepared by the IEA for the G20 summit held in Japan in June 2019, where the input from MBIE was acknowledged, the IEA stated that five smart policy actions are required. They are to:

- establish long-term signals to foster investor confidence;
- stimulate commercial demand for hydrogen in multiple applications;
- help mitigate salient risks such as supply chain complexity;
- promote research and development, and knowledge sharing; and
- harmonise standards and remove barriers.

These policy actions are surely applicable to New Zealand.

A coherent national energy strategy that encompasses all aspects of New Zealand's energy landscape, with input from energy generators, distributors, retailers, and users

The Climate Change Commission's *Draft Advice*, s 2.6,[15] states that 'all New Zealanders, businesses, industries, communities, and regions will need to play their part in addressing' climate change.

The executive summary of the *Draft Advice*[16] affirms that 'transformational and lasting change across society and the economy' is needed.

Beca believes that it will be important to consult widely with a range of stakeholders, including private enterprise in addition to the currently proposed contributions from central government, local government, and iwi. To establish a robust national energy strategy that includes the development of a green hydrogen industry, we need representation from both public and private enterprise.

Summary

We know that as a country we need to act if we are going to meet our climate change goals. Part of the change that needs to occur lies with how we generate, distribute and utilise energy. Green hydrogen has the potential to play a significant part in helping New Zealand reach its decarbonisation goals. As well as directly replacing fossil fuels in a number of applications, green hydrogen also offers indirect decarbonisation solutions in the production of low-carbon or "green" materials such as steel and ammonia.

Beca believes that the development of a green hydrogen industry in New Zealand represents an exciting opportunity for domestic and export applications. However, there are a number of hurdles that will need to be overcome if we are to make a green hydrogen future a reality.

The most important challenges to overcome include:

(i) the completion of the Government's work on creating a national energy strategy;

(ii) within this strategy, or alongside it, finding ways to break the price barrier imposed by current New Zealand wholesale electricity prices and their potential effect on green hydrogen production "at scale"; and,

(iii) addressing capacity issues around the availability of both the fresh water and the renewable electricity requirements of an "at scale" green hydrogen domestic and export-oriented industry.

14 Ministry of Business, Innovation and Employment, "Modelling Project and modelling tool".

15 Climate Change Commission, *2021 Draft Advice for Consultation*.

16 Climate Change Commission. *Executive Summary: 31 January 2021 Draft Advice for Consultation*.

We may well find that the answer to both the price and the availability of electricity lies in the direction that has been taken in Australia, namely investment or co-investment by both government and industry in large-scale wind and solar farms.

Beca looks forward to participating in the national conversation that is required around these issues. In particular, we are ready to detail our thoughts on what "at scale" means in the context of a truly viable green hydrogen industry, oriented toward both our domestic and national resilience requirements and those of a new export industry.

There are also national security implications that need exploring in the context of New Zealand's national resilience and independence from imported fuels, and the creation of a new export industry based on meeting the growing needs of North Asian energy markets.

Editor's Note: *The questions of scale raised above, and of the national resilience and the security implications that arise should Australia and New Zealand emerge as important energy partners of North Asian economies, will be addressed in a follow-on article that is planned for this Journal in our next issue.*
In the meantime, it would appear that the European Union, the UK and Australia are all moving much quicker than New Zealand to seize the opportunities offered by the emergence of a global market for green hydrogen.

New Zealand has a number of natural advantages that it can exploit, should it wish, to join these early movers. These advantages include an abundance of renewable electricity from wind and solar and an unlimited supply of fresh water. But the price at which these commodities can be brought to market appears to be the defining issue that government and industry will need to address together before significant progress can be made in realising the green hydrogen vision.

SHANE GOWAN

GLOBAL ENERGY TRANSITION LEAD FOR BECA

Shane has over twenty-five years' experience in mechanical engineering, asset and project management, consulting and senior leadership roles, across a number of industrial sectors within a global environment. His more recent experiences include head of asset management for a global resources company, senior operating and asset management roles in the Resources and Oil and Gas sectors and General Management roles in a global consulting environment.

His current role with Beca includes the leadership of Beca's Industrial business in New Zealand and the Pacific with responsibility for a group of over 200 industrial specialists in nine locations. He is also Beca's Global Energy Transition Lead involved in helping clients move towards a low-carbon future.

PHIL ROBSON

LEAD FOR ENERGY & MANUFACTURING AS PART OF BECA'S INDUSTRIAL BUSINESS

Phil has 30+ years experience in project and programme delivery. This includes involvement in energy-based projects encompassing traditional oil and gas, renewable electricity generation and, more recently, a focus on future energy including hydrogen and biofuel, both liquid and gas. His leadership roles have been within EPC contractors, equipment manufacturers and consulting organisations across a number of global regions.

Phil currently leads Energy & Manufacturing as part of Beca's Industrial Business, supporting clients in delivering the right projects to meet their business needs.

THE INDO-PACIFIC CONCEPT: IMPLICATIONS FOR NEW ZEALAND'S MARITIME SECURITY

In this article, **Captain Dave McEwan** discusses the evolution of New Zealand's approach to the Indo-Pacific, including the possibility of New Zealand seeking observer or associate status in the Indo-Pacific Quad grouping of nations.

IMAGE

Japanese Maritime Self Defense Force Takanami class destroyer *JS Onami* during Exercise Malabar 2020 November 3 in the Indian Ocean. Image courtesy of Alamy.

Abstract

Beginning with the publication of the *Strategic Defence Policy Statement* in July 2018, New Zealand ministers and officials have now begun using the term "Indo-Pacific" much more frequently in their official statements. This raises the question whether it would be timely for New Zealand to seek an invitation to join the Indo-Pacific Quadrilateral Security Dialogue (Indo-Pacific Quad) grouping of nations, perhaps as an associate member or observer. Similarly, it raises the question whether the New Zealand Defence Force (NZDF) should seek an invitation to participate in Exercise Malabar and also in Exercise Milan. With the acquisition of HMNZS *Aotearoa* and the return to service of the upgraded frigates HMNZ Ships *Te Kaha* and *Te Mana*, the Royal New Zealand Navy (RNZN) has the sustainment capability to participate in both exercises. Participation would provide operational benefits for the Navy and its two sister services, as well as reinforce New Zealand's bilateral defence relationship with India and its broader security relationships with its major defence partners and allies.

Introduction

This article is presented in four parts. Part One introduces the Indo-Pacific concept and New Zealand's response to it; Part Two examines the implications for New Zealand's maritime security including whether New Zealand, or possibly the Pacific QUADS, should seek associate or observer status in the Indo-Pacific Quad. By way of additional background to this, Part Three outlines India's Look East and Act East policies and the creation of India's Andaman and Nicobar Islands Joint Command, and Part Four provides an update on the Indian Navy, including its sponsorship of the Milan and Malabar series of naval exercises in which New Zealand could participate (if an invitation is forthcoming) as a means of augmenting the bilateral defence and foreign policy relationship with India and our other defence and security partners.

The article is based on academic work undertaken in 2019–2020 while completing a Master of Strategic Studies degree at Victoria University of Wellington under the sponsorship of the NZDF Advanced Command and Staff Course (Joint) in Trentham. It also draws on the author's involvement in Exercise Milan in 2014 and 2018, and his association with the Indian Navy in Exercise Mahi Tangaroa in 2016.

Part One

The Indo-Pacific concept

Australian academic Rory Medcalf writes that the Indo-Pacific is 'both a place and an idea. It is the region central to global prosperity and security. It is also a metaphor for collective action. If diplomacy fails, it will be the theatre of the first general war since 1945. But if its future can be secured, the Indo-Pacific will flourish as a shared space, the centre of gravity in a connected world.'[1]

The Indo-Pacific concept was first outlined in a speech by Japan's Prime Minister Abe Shinzō to the Indian Parliament in 2007 titled 'Confluence of the Two Seas'. Recalling that it was 50 years to the day since his grandfather Nobusuke Kishi became the first Japanese Prime Minister to visit India, Abe spoke of the 'Indian and Pacific Oceans...bringing about a dynamic coupling as seas of freedom and prosperity [in] a broader Asia'. He reminded his audience that as maritime states, both India and Japan had 'vital interests in the security of sea lanes, especially those shipping routes most critical for the world economy'.[2] Nine years later, this initial idea was followed up between Abe and Indian Prime Minister Narendra Modi during a bullet train excursion held as part of a bilateral summit in November 2016. Here they agreed that India and Japan should work closer together on issues such as defence, diplomacy, economics, education, technology and energy, noting that they were working in an arc of the world called the Indo-Pacific.

An important element in the concept as developed by Japan and endorsed by India was the notion that the Indian and Pacific Oceans comprised 'the union of two free and

1 Medcalf, *Contest for the Indo-Pacific: Why China won't map the future*.
2 Abe, "Confluence of the Two Seas." The title of the speech was borrowed from the title of an ancient book by Mughal prince Dara Shikoh, dated 1655.

RIGHT
Map of India and the Indian ocean showing the location of the Andaman and Nicobar Islands. Image courtesy of Alamy.


AFGHANISTAN
KABUL
ISLAMABAD
Kargil
Leh
Srinagar
Jammu
Amritsar
Shimla
Chandigarh
Dehradun
PAKISTAN
Delhi
NEW DELHI
Bareilly
Jaisalmer
Agra
Jaipur
Lucknow
Kanpur
Gorakhpur
Jodhpur
Gwalior
Kota
Jhansi
Allahabad
Benares
Patna
Udaipur
Gandhinagar
Bhopal
Jabalpur
Ranchi
Okha
Vadodara
Indore
Rajkot
Porbandar
Surat
Nagpur
Raipur
Daman
Silvassa
Bhubaneswar
Paradip
Mumbai
(Bombay)
Pune
Sholapur
Vishakhapatnam
Hyderabad
Kakinada
Vijayawada
Panaji
(Panjim)
Guntakal
ARABIAN
SEA
Bangalore
Chennai
(Madras)
Pondicherry
Calicut
Coimbatore
Kavaratti
LAKSHADWEEP
Cochin
Madurai
Tuticorin
Trivandrum
Thiruvananthapuram
SRI
LANKA
COLOMBO
LACCADIVE SEA
Bay of
Bengal
INDIAN
OCEAN
Andaman
Islands
Port Blair
ANDAMAN AND
NICOBAR ISLANDS
Nicobar
Islands
INDONESIA
CHINA
NEPAL
KATHMANDU
BHUTAN
THIMPHU
Gangtok
Itanagar
Tinsukia
Dispur
Kohima
Shillong
Imphal
Agartala
Aizawl
BANGLADESH
DHAKA
Kolkata
(Calcutta)
Haldia
BURMA
NAYPYIDAW
Indus
Ganges
Brahmaputra
Ghaghara
Son
Narmada
Mahanadi
Godavari
Krishna
Kolidam

EXTRACT FROM US DEPARTMENT OF DEFENSE INDO-PACIFIC STRATEGY REPORT JUNE 2019:[1]

'Since the Washington Declaration in 2012, the United States and New Zealand continue to deepen and broaden their defense relationship. The U.S.-New Zealand defense partnership will remain focused on building maritime security presence, capabilities, and awareness; cooperation to develop expeditionary defense capabilities; and sharing information to enable security cooperation and to prepare to respond to a range of contingencies. New Zealand contributes forces to coalition operations in Iraq and Afghanistan, to three United Nations peacekeeping missions, and to UNSCR enforcement operations.

Besides these global contributions, New Zealand plays a critical role as a regional leader promoting stability, building capacity, and responding to crises and contingencies in the Pacific Islands, such as natural disasters. In 2018, New Zealand announced the "Pacific Reset," its new whole-of-government policy to engage in the Pacific Islands, building capacity and resilience in response to a range of threats. By collectively stepping up in partnership with Pacific Island nations and other likeminded allies and partners, New Zealand's Pacific Reset directly complements DoD's efforts in the Indo-Pacific and our efforts to renew engagement in the Pacific. The overlap in our respective strategies creates synergies, as we collectively step up to pool our resources and respond to the Pacific's need for greater investment, infrastructure, and capacity building efforts that match the region's highest-priority needs.'

1 US Department of Defense, *Indo-Pacific Strategy Report: Preparedness, Partnerships and Promoting a Networked Region*.

open oceans' whose sea lanes are critical to the world economy.[3]

The concepts behind a "free and open Indo-Pacific" took fuller, and more confrontational, form with the release by the United States (US) Department of Defense of its *Indo-Pacific Strategy Report* in June 2019.[4]

The following is an extract from the opening message by the US Acting Secretary of Defense:

> *'The Indo-Pacific is the Department of Defense's priority theater. The United States is a Pacific nation; we are linked to our Indo-Pacific neighbors through unbreakable bonds of shared history, culture, commerce, and values. We have an enduring commitment to uphold a free and open Indo-Pacific in which all nations, large and small, are secure in their sovereignty and able to pursue economic growth consistent with accepted international rules, norms, and principles of fair competition. The continuity of our shared strategic vision is uninterrupted despite an increasingly complex security environment. Inter-state strategic competition, defined by geopolitical rivalry between free and repressive world order visions, is the primary concern for U.S. national security. In particular, the People's Republic of China, under the leadership of the Chinese Communist Party, seeks to reorder the region to its advantage by leveraging military modernization, influence operations, and predatory economics to coerce other nations. In contrast, the Department of Defense supports choices that promote long-term peace and prosperity for all in the Indo-Pacific. We will not accept policies*

3 Abe, "Address by Prime Minister Abe Shinzo at the Opening Session of the Sixth Tokyo International Conference on African Development (TICAD VI)"

4 US Department of Defense, *Indo-Pacific Strategy Report: Preparedness, Partnerships and Promoting a Networked Region*.

ABOVE
Japanese Prime Minister Abe Shinzō and Indian Prime Minister Narendra Modi in bullet train, November 2016. Image courtesy of *Times of India*.

or actions that threaten or undermine the rules-based international order – an order that benefits all nations. We are committed to defending and enhancing these shared values.'

New Zealand's response to the Indo-Pacific concept

New Zealand has been relatively slow to adopt the term "Indo-Pacific". Until recently, it has favoured the more familiar term "Asia Pacific". That said, "Indo-Pacific" has now freely entered the public discourse of New Zealand ministers and officials. Writing in the *Asia Pacific Bulletin*, David Scott, Indo-Pacific analyst for the NATO Defense College Foundation, traces the New Zealand timeline as follows:[5]

- July 2018. New Zealand Ministry of Defence's (MoD) Strategic Defence Policy Statement notes that New Zealand's '"Indo-Pacific partners reinforcing the rules based order"[6] are Australia, India, Japan and the United States.
- August 2019. A press release from the New Zealand Minister of Foreign Affairs affirms New Zealand's intent to engage 'with our regional partners on the challenges facing the Indo-Pacific'.
- September 2019. Following a meeting between New Zealand Prime Minister Jacinda Ardern and Japanese Prime Minister Abe Shinzō, a joint statement is issued recording that the two leaders reiterate 'their commitment to working proactively together to maintain and

5 Scott, "New Zealand picks up on the Indo-Pacific."

6 Ministry of Defence, *Strategic Defence Policy Statement 2018*.

promote a free and open Indo-Pacific region for ensuring a free, open and rules-based international order'.

- January 2020. New Zealand Minister of Defence Ron Mark visits Washington D.C. for a meeting with US counterpart Mark Esper. He notes that the main focus of their meeting was 'to discuss challenges that New Zealand and the United States share in the Indo-Pacific region'.
- February 2020. New Zealand Minister of Foreign Affairs Rt Hon Winston Peters meets his Indian counterpart, Minister of External Affairs, Subrahmanyam Jaishankar and agrees that India and New Zealand share 'a common strategic interest in the Indo-Pacific region'. In a speech to the Indian Council of World Affairs titled 'The Indo-Pacific: from Principles to Partnerships', Rt Hon Minister Peters reflects on the 'emergence of the Indo-Pacific as a strategic concept' and notes that 'New Zealand has direct interests in the Indo-Pacific's security'.
- Also in February 2020, New Zealand Prime Minister Jacinda Ardern, meeting with Australian Prime Minister Scott Morrison, noted in a joint media statement following their talks their 'mutual effort to support an open, inclusive and prosperous Indo-Pacific region'.

David Scott sums up his analysis by observing that, given New Zealand's 'invocation of the Indo-Pacific in its dealings' with Japan, India, the United States and Australia (the 'Quad' grouping established in November 2017), 'there may be closer New Zealand involvement with the Quad mechanism, which would be welcomed by all current Quad members'.

There have been numerous other public references by New Zealand Ministers to the Indo-Pacific in the period following David Scott's analysis.

For example, on the 20th of April this year, in a joint statement by New Zealand Minister of Defence Hon Peeni Henare and Minister of Foreign Affairs Hon Nanaia Mahuta announcing the deployment of a Royal New Zealand Air Force (RNZAF) P-3K2 Orion maritime patrol aircraft to provide further support to United Nations (UN) Security Council sanctions on North Korea, the ministers noted that:

> *'New Zealand's latest Orion deployment reflects the Government's commitment to collective security in the Indo-Pacific region.'*

Consistent with prior deployments, the RNZAF aircraft will be based at United States Air Force Kadena Air Base, Okinawa, Japan. Its maritime surveillance patrol flights will be over international waters in North Asia.[7]

On the 22nd April 2021, New Zealand Minister of Foreign Affairs Hon Nanaia Mahuta, meeting with her Australian counterpart Minister for Foreign Affairs Hon Marise Payne, issued a statement saying, in part, that:

> *'New Zealand and Australia stand together in facing a challenging global environment. Ministers discussed the importance of promoting our shared interests in an open, resilient and prosperous Indo-Pacific. They reaffirmed their intent to work together to preserve the liberal international order that has underpinned stability and prosperity in the region, and to foster a sustainable regional balance where all countries – large and small – can freely pursue their legitimate interests.'*[8]

And earlier, on the 4th February 2021, in her first foreign policy speech as Minister of Foreign Affairs, Hon Nanaia Mahuta referred to the Indo-Pacific in these terms:

> *'New Zealand has a deep stake in the wider Indo-Pacific region's stability. We share the common ambition of Peace and Prosperity for the region, including through greater economic integration, and adherence to its institutions and norms.'*[9]

Part Two

The Indo-Pacific concept and New Zealand's maritime security: should New Zealand or the Pacific QUADS seek associate or observer status with the Indo-Pacific Quad?

New Zealand's current defence focus under the Pacific Reset is with its commitments toward its immediate Pacific neighbours. The details are set

7 Mahuta and Henare, "New Zealand to provide further support to UN North Korea Sanctions."

8 Mahuta, "Strengthening Trans-Tasman Ties: Australia-New Zealand Foreign Minister Consultations."

9 Mahuta, "Inaugural Foreign Policy Speech to Diplomatic Corps."

out in a 2019 publication by the MoD/NZDF, titled 'Advancing Pacific Partnerships'.[10] This publication details various elements of the Pacific regional security architecture including, in the area of maritime security and defence, the following:

(i) annual South Pacific Defence Ministers Meeting (SPDM);

(ii) annual South West Pacific Heads of Maritime Forces Meeting (SWPHMFM);

(iii) Forum Fisheries Agency (FFA); and

(iv) the Pacific Quadrilateral Defence Coordination Group (Pacific QUADS).

The Pacific QUADS brings together defence and security agencies from Australia, France, New Zealand and the US, with a focus on human security, environmental security, transnational and organised crime, and humanitarian assistance.

The immediate question, in the context of this article, is whether it would be timely to suggest that New Zealand, or the Pacific QUADS as a group, move to seek associate or observer status with the Indo-Pacific Quad. In effect, this would mean a broadening of our focus on New Zealand's maritime security. With our current focus on the South West Pacific, Pacific Reset I would evolve into Pacific Reset II. This new reset would feature an expanded focus for maritime security in which the Indo-Pacific would be added to the South West Pacific as an area of particular economic and security interest to New Zealand.

As two of the members of the Pacific QUADS are already members of the Indo-Pacific Quad, an alternative might be for the Pacific QUADS to seek associate or observer status in the Indo-Pacific Quad.

The arguments in favour of a New Zealand association with the Indo-Pacific Quad are straightforward. Firstly, as noted in numerous ministerial statements, New Zealand has an interest in reinforcing the rules-based international order and freedom of navigation and shipping throughout the Indo-Pacific and the South West Pacific, the two geographic areas most important to the free and uninterrupted flow of New Zealand exports and imports by sea. Secondly, New Zealand's security relationships are tied most closely to two members of both the Indo-Pacific Quad and the Pacific QUADS (Australia and the US). We also share similar values with the other two members of the Indo-Pacific Quad (India and Japan) and the Pacific QUADS (France).

China may voice concerns in the event of New Zealand announcing a decision to seek associate or observer status in the Indo-Pacific Quad, but all countries are entitled to seek their security wherever they can find it. The Indo-Pacific Quad grouping is aimed toward navies learning how to operate safely and more effectively together. Indian academic Jagannath Panda, a Research Fellow and Coordinator for East Asia at the Manohar Parrikar Institute for Defence Studies and Analyses, New Delhi, has examined this issue in relation to India's relationships with China.[11] He concludes that it is in India's strategic interests to foster a "Quad Plus" grouping:

'A "Quad Plus" proposition compliments New Delhi's 'inclusive' Indo-Pacific construct. India's Indo-Pacific vision has been poised between the "free and open" Indo-Pacific outlook that the US and its allies would like to promote and India's 'inclusive' notion of not being confined to particular maritime boundaries. New Delhi would like to enhance a 'free, open and inclusive Indo-Pacific' with the cooperation of the Quad partners acknowledging the centrality of ASEAN [Association of Southeast Asian Nations], and an inter-continental attachment between maritime Asia and Africa. Such an inclusive proposition is primarily drawn on a juxtaposition of idealist and realist notions of strategic thinking.

'The idealist notion would imply India's non-disengagement from China in a realpolitik world. The realist notion implies autonomous navigation, freedom of maritime movement in the Indian Ocean region and India's emergence as a maritime power by keeping its commercial and strategic interest alive from the west coast of Africa to the South China Sea.'

Interestingly, in the same reference as the above, Jagannath Panda cites New Zealand, South Korea and Vietnam as already being members of the Quad Plus:

'The Quadrilateral Security Dialogue, also referred to as the Quad, is a strategic consultation framework between the US, Australia,

10 Ministry of Defence, *Advancing Pacific Partnerships*.

11 Panda, "India and the 'Quad Plus' Dialogue."

LEFT
An Indian Naval Air Arm MIG 29-K Fulcum fighter participating in a USS *Nimitz* flypast during Exercise Malabar in November 2020. Image courtesy of US Navy.

Japan and India which has experienced an expansion during the current coronavirus pandemic, with the involvement of New Zealand, South Korea and Vietnam. This conjectural alliance, which predictably ended up being referred to as the 'Quad Plus' in international strategic circles, confirms a process of strategic alignments in the Indo-Pacific, but without conforming completely to the 'alliance framework' that the US would like to promote in the region.'

So far as this author is aware, New Zealand is not a formal member of any Quad Plus grouping, although it appears that there may have been informal Zoom meetings of health officials from New Zealand, Vietnam and South Korea with Indo-Pacific Quad health officials discussing COVID-19 management issues.

Nonetheless, there have been arguments for New Zealand to seek at least associate or observer status in the Indo-Pacific Quad, including in an article by Dr Reuben Steff elsewhere in this Journal.[12] Noting that one of the strategic realities faced by New Zealand in the region is that its security ultimately rests upon free and open access at sea, and that this security is facilitated by the ability of navies to work with each other, Steff argues that military cooperation as evidenced by the Malabar series of naval exercises helps to build confidence as well as contributing to regional peace and security. He then notes that *'It would be in New Zealand's immediate security interests... to seek associate or observer status in both the Quad arrangements between the US, India, Japan and Australia and the Malabar series of naval exercises in the Indo-Pacific region.'*

12 Steff, "Strategic Liberalism."

This argument is both timely and appropriate. It would put New Zealand's maritime security concerns on a larger canvas than the South West Pacific as well as associate New Zealand more directly with the security concerns of its principal security partners. An association with the larger Indo-Pacific would, of course, not be new for New Zealand. The RNZN and RNZAF have a long history of involvement in the Indian Ocean, participating in numerous security and other operations including anti-piracy patrols and protection of shipping in support of UN sanctions and Security Council resolutions.

Summing up Parts One and Two

The argument for New Zealand to seek an invitation to join the Indo-Pacific Quad makes sense on a number of policy and strategic levels. It also makes sense at the operational level. Working with traditional partners Australia and the US in the Indian Ocean would not be difficult. Developing the necessary military interoperability with India and Japan would require more thought and preparation. As noted above, New Zealand already has experience in conducting air operations from Japan in the context of RNZAF patrols against North Korea as part of UN sanctions enforcement. For the RNZN, there are the beginnings already of a worthwhile relationship with the Indian Navy through Ex Milan and Ex Mahi Tangaroa in 2016 and various port visits by the RNZN and the Indian Navy to each other's ports. In addition, both the Indian Air Force and the RNZAF will soon be operating a similar airframe for long-range maritime patrol and reconnaissance—the Boeing P8 Poseidon—which could offer complementary basing options and interoperability opportunities during exercises such as Malabar.

To explore these possibilities further, Parts Three and Four of this article look in more detail at India's developing policy and military capability settings.

Part Three

India's Look East/Act East policies and the creation of India's Andaman and Nicobar Islands Joint Command

With the final dissolution of the USSR in December 1991, India's largest trading and defence partner at the time, India began a search for new friends and international relationships. In 1994, the first significant results of this search were announced. Prime Minister Narasimha Rao launched a "Look East" policy to take advantage of the rising economic strength of the East Asian "tiger" economies. India also intensified its diplomatic engagements in Southeast Asia, and, by December 1995, it was admitted as a full dialogue partner in ASEAN.

In November 2014, 20 years after the Look East policy was enacted, Prime Minister Narendra Modi announced at the East Asian Summit that the "Look East" policy had become an "Act East" policy. Although no specifics were announced, it was apparent that India was looking to enhance its position as a leader in Asia, expanding its strategic interests and influence. This was particularly the case in the Indian Ocean region, where India sought recognition of its emerging great power status appropriate to its growing economic and military strength.

PARTICIPATION BY THE AUTHOR IN EXERCISE MILAN 2014 AND 2018

In late 2013, I received a call advising me I had been selected to be the RNZN representative at Exercise (Ex) Milan to be held at Port Blair, commencing in early February 2014.

Milan (a Hindi word derived from a Sanskrit expression meaning "a coming together") draws on the bilateral and multi-lateral relationships formed by the littoral nations of the Indian Ocean Naval Symposium (IONS). The Symposium consists of 32 nations grouped into four sub-regions, namely South Asia, West Asia, East Africa, Southeast Asia, and Australia. It also includes IONS observer nations such as New Zealand. The Milan series of biennial naval exercises have been held at Port Blair since they were first instituted in 1995.

It is held at the Indian Armed Forces only joint theatre command situated at Port Blair on the Andaman and Nicobar Islands.

Having read the pre-exercise documents, I boarded the first of many flights to reach the Andaman and Nicobar Islands. Stepping off the plane, I was instantly assaulted by oven-like temperatures, accentuated by the noise and chaos of a remote location situated in the tropical waters of the Bay of Bengal. Thankfully, my hosts were there, and with impressive precision, I was whisked through customs and transported to my accommodation.

The exercise itself, typically held in February or March, features a seminar involving academic and military presentations and a table-top exercise based on a humanitarian aid and disaster relief (HADR) scenario as well as social events and sporting fixtures between participating nations.

Of note, several nations, including Australia and Singapore, deploy maritime assets to the exercise which, on conclusion of the shore phase, shifts to a two-day sea phase designed to enhance interoperability between units and further develop core mariner skills in a collaborative, learning environment.

Ex Milan 2014 proved immensely enjoyable and professionally rewarding; it was a well-coordinated exercise, and my hosts were extremely gracious with their hospitality. Engagement with my Indian Navy and Indian Air Force counterparts offered me a great appreciation of the pride they take in the capabilities they generate and operate. The HADR table-top exercise highlighted why the capability was so important, as evidenced by the Boxing Day tsunami of 2004 that devastated the coastal areas of the Andaman and Nicobar Islands, with more than 2,000 people losing their lives and approximately 40,000 people left homeless.

I left Port Blair with fond memories and numerous professional insights. Roll ahead four years and I was once again asked to represent the RNZN at Ex Milan 2018. Following the familiar series of long-haul flights and interesting airport transits, I arrived in Port Blair, ready to be assaulted by the heat and chaos of a bustling tourist town that also plays host to a significant military presence by way of the Andaman and Nicobar Command (ANC).

Ex Milan in March 2018 was no less impressive in conduct and content than Milan 2014, except it seemed to be hotter. Apart from noticing the increased temperature, I observed marked improvements to the wharf and base facilities since my last visit in 2014. The infrastructure looked fresh and modern, and it also featured a newly arrived floating dry dock which, according to the Indian Ministry of Defence website,[1] is capable of docking ships with a 7 metre draught and a displacement of 8,000 tonnes.

Interaction with my hosts also highlighted an increased sense of purpose and readiness of the ANC to deploy a range of air and surface maritime capabilities in response to a HADR event, or to conduct general maritime operations, including the amphibious delivery of land forces, in the littoral spaces surrounding the Andaman and Nicobar Islands.

Overall, Ex Milan 2018 was as enjoyable and professionally rewarding as Ex Milan 2014. I departed Port Blair, impressed with the obvious uplift in the support infrastructure for the Indian Navy and its Naval Air Arm and the evident development of the "joint culture" within the ANC.

1 Ministry of Defence (India), *Annual Report 2018-19*.

India–US ties have improved markedly since the launch of the Look East/Act East policies. In May 2018, United States Pacific Command was renamed United States Indo-Pacific Command (INDOPACOM), and, in the US Defense Department's *Indo-Pacific Strategy Report* of June 2019, India is described as a 'Major Defence Partner' of the US.[13]

India's Andaman and Nicobar Islands Joint Command

The Andaman and Nicobar Islands became a union territory of India on 1 November 1956. Situated at the junction of the Bay of Bengal and the Andaman Sea, and commanding the northern approaches to the Straits of Malacca, the islands have a population of 380,000. The capital is Port Blair. The first Indian military installation was naval base INS Jarawa, commissioned in 1964. In October 2001, a unified theatre and joint command was established at Port Blair. The Commander-in-Chief of the Andaman and Nicobar Command (CINCAN) is a three-star appointment rotated by service. The current commander is Indian Army Lt Gen Ajai Singh.

India has been steadily upgrading its military infrastructure in the Andaman and Nicobar Islands. The airfield on Great Nicobar Island has been extended to accommodate long-range maritime patrol and reconnaissance aircraft, and the naval base at Port Blair has also been significantly expanded and upgraded.

The facilities in the Andaman and Nicobar Islands and the Joint Command arrangements represent a physical expression of the Indian government's determination to be able to exert a security and strategic presence in the Indian Ocean as well as the ability, should it be required, to project power through the Straits of Malacca and into the waters of East Asia.[14]

Part Four

Update on the Indian Navy including the Milan/ Malabar series of naval exercises

Following independence and the partition of India on 15 August 1947, the Royal Indian Navy was left in a depleted state, with ships and personnel divided between the newly independent Dominion of India and Dominion of Pakistan. At its outset, it had only 32 vessels and 11,000 personnel.

On becoming a federal republic in 1950, the Royal Indian Navy was re-titled the "Indian Navy". With the assistance of senior officers seconded from the Royal Navy, together with its own emerging leadership, the Indian Navy began to rebuild. It has now become an extremely capable blue water navy with an impressive array of modern capabilities.

The Indian Navy has approximately 66,100 active duty personnel and a further 55,000 reservists.[15] The Coast Guard has 12,600 personnel. For some years, India has ranked among the top five countries for defence spending. As of 2021, it was ranked third in defence spending after the US and China (India - USD 72.9bn, Russia - USD 61.7bn, UK - USD 59.2bn, and Australia -

13 US Department of Defense, *Indo-Pacific Strategy Report: Preparedness, Partnerships and Promoting a Networked Region*.

14 Rajendram, *India's new Asia-Pacific strategy: Modi acts East*.

15 International Institute of Strategic Studies, *The Military Balance*.

IMAGE

Port Blair harbour showing new floating dry dock with an Indian Navy base in the distance, March 2018. Image courtesy of Alamy.

EXERCISE MALABAR

Begun in 1992 as a bilateral maritime exercise between India and the US, Exercise Malabar has since grown to be a quadrilateral, joint and combined exercise of significance with participants including India, the US, Japan and, as of 2020, Australia, representing the four member nations of the Quad. The aim of Exercise Malabar is to demonstrate interoperability and coordination in support of a free, open, and inclusive Indo-Pacific.

What once started as a passing or PASSEX-style activity, which reflected India's Look East policy and an improving post-Cold War relationship with America, has become a three-day exercise that involves Carrier operations, Anti-Surface and Anti-Submarine Warfare operations, Boarding operations, Search and Rescue demonstrations and day and night Underway Replenishment operations. First held off India's Malabar Coast, the exercise area of operations has since alternated between the Philippine Sea, Japan, the Bay of Bengal and the Arabian Sea.

Dates for the annual Malabar exercises vary but, in recent years, have tended to fall in the 3rd or 4th quarter of the year.

ABOVE
INS *Vikramaditya* participates in Malabar 2020 in the North Arabian Sea. Image courtesy of Elliot Schaudt/ US Navy.

USD 7.5bn. New Zealand's 2020 budget was NZD 3.29bn).[16, 17]

Maritime capability

Today, the Indian Navy boasts an extensive array of maritime capabilities. It has 27 principal surface combatants, including an aircraft carrier (INS *Vikramaditya*, modified Kiev class), 13 destroyers (Delhi, Kolkata and Shivalik classes), 13 frigates, and 170 patrol and coastal combatants. It operates 19 landing craft of various types and a further 40 logistics and support vessels, including four fleet tankers. Its principal amphibious vessel is L41 *Jalashwa* (ex-USS *Trenton*).

The Indian Navy has 17 submarines in service. One of these is a nuclear-powered attack submarine, SSN 1 *Chakra* (Russian Akula II class), one is a ballistic missile submarine (an Indian-built Arihant class), while 15 are conventionally-powered attack submarines derived from various foreign classes (the French Scorpène class, Soviet Kilo class and German Type 209/1500 class).

Maritime air is also a significant part of the Indian Armed Forces capability with the Indian Naval Air Arm[18] equipped with two squadrons of MiG-29K/ KUB Fulcrum fighter aircraft that operate from the carrier INS *Vikramaditya*; and six squadrons of long-range maritime patrol aircraft, including the Boeing P-8I Neptune, Ilyushin Il-38SD, and Dornier 228. The Indian Naval Air Arm operates some 109 rotary wing aircraft, including the Kamov Ka-31 (AEW variant), the Kamov Ka-28 (Anti-submarine Warfare (ASW) variant), the SA 316B Alouette III and the venerable Sea King (ASW and medium transport variants).

Combat capability

Over many years, the Indian Armed Forces have

16 SIPRI, "World military spending rises to almost $2 trillion in 2020."
17 Grevatt, "New Zealand announces major increase in defence spending."

18 International Institute of Strategic Studies, *The Military Balance 2020*.

developed an impressive combat capability. Among a myriad of weapon systems is the BrahMos missile: a medium-range ramjet supersonic cruise missile co-developed with Russia that can be launched from submarine, ships, aircraft or land. As of late December 2020, air, land and naval versions of this missile were being tested at various sites in India.[19] The land-launched and ship-launched versions are already in limited service. A hypersonic version of the missile, BrahMos-II, is presently said to be under development with a planned speed between Mach 7–8 to boost aerial fast-strike capability. The testing and deployment phase of this missile system is thought to be at least 4–5 years away still.

The Indian Navy is also equipped with the Prithvi III missile: a two-stage surface-to-surface missile. The missile can carry a 1000kg warhead to a distance of 350km, a 500kg warhead to a distance of 600km or a 250kg warhead to a distance of 750km.

A variant of the Prithvi III, the Dhanush, is a short range ship-based ballistic missile (SRBM) that has been developed for the Indian Navy. It is capable of carrying conventional as well as nuclear warheads with a payload of 500kg–1000kg and can strike targets at an estimated range of 150–400km. Dhanush has been certified as seaworthy but requires a hydraulically stabilised launch pad.[20]

Networked capability

The Indian Navy is implementing a new strategy to move from a platform-centric force to a network-centric force by linking all shore-based installations and ships via high-speed data networks and satellites.

India's first exclusive defence satellite, GSAT-7, was fabricated by the Indian Space Research Organisation (ISRO) to serve for at least seven years, providing UHF, S-band, C-band and K_u-band relay capacity. Its K_u- band allows high-density data transmission, including both audio and video. This satellite also has a provision to reach both smaller and mobile terminals.

GSAT-7 has a footprint of 3,500–4,000 kilometres over the Indian Ocean region, including both the Arabian Sea and the Bay of Bengal. This enables the Navy to operate as a network-centric force, making real-time networking available to all of its operational assets at sea and on land.

Exercises

The Indian Navy participates in a series of bi-lateral and multi-lateral exercises with a variety of countries, including the US, UK, Russia, Japan, Singapore, Australia, Brazil, South Africa, Thailand, Indonesia, and Bangladesh. The most notable maritime training activity is Exercise Malabar, which began as a bilateral exercise with the US in 1992 and expanded to include Japan in 2015. Australia joined in 2020, thereby creating an exercise involving all four current Indo-Pacific Quad nations.

Links to the RNZN

Links between the Indian Navy and the RNZN go as far back as the beginning

19 *The Economic Times*, "Indian Navy successfully test-fires naval version of BrahMos missile."
20 Missile Defense Project, "Dhanush."

ABOVE
Exercise Malabar fleet photo November 2020. Image courtesy of US Navy.

of the Indian Navy in 1950. The INS *Delhi*, a Leander class light cruiser built for the Royal Navy in 1933, was the former HMS *Achilles*, which was commissioned into the New Zealand Division of the Royal Navy and subsequently the RNZN from 1941 onwards. Upon return to the Royal Navy at the end of the Second World War, she was sold to the Royal Indian Navy to be recommissioned as HMIS *Delhi*. In 1950, she was renamed INS *Delhi* and remained in service until decommissioned at Bombay on 30 June 1978.

In a notable gesture of friendship and generosity, before INS *Delhi* was broken up, the Indian Navy offered to save the Y or quarterdeck gun turret for display by the RNZN. As a result of this thoughtful gesture on the part of the Indian Navy, the Y gun turret with its twin Mk.21 6 inch guns from HMNZS *Achilles* now sits at the main entrance to Devonport Naval Base.

INS deployments to New Zealand ports

In July 2006, the Indian Navy's missile frigate INS *Tabar* visited Devonport. In 2016, the Indian Navy again demonstrated its blue water capability through the deployment of INS *Sumitra* (Saryu class OPV) to New Zealand, where she participated in Exercise Mahi Tangaroa, a Maritime Security Experts Working Group exercise, led by the RNZN and held in the inner Hauraki Gulf. On completion, INS *Sumitra* attended the RNZN International Naval Review.

New Zealand ships have also been regular visitors to Indian naval ports, including the frigates HMNZ Ships *Waikato* and *Canterbury* while under operational command of the RN during the Falklands War. HMNZS *Te Mana* visited Bombay in the early 2000s. During the Second World War, HMS *Leander* operated out of Colombo and Bombay when assigned to duties as part of the East Indies Station's 4th Cruiser Squadron, beginning in May 1940. At the time, HMS *Leander* was a part of the New Zealand Division of the Royal Navy; the RNZN not coming into separate being until 1 October 1941. On 22 February 1941, HMS *Leander* departed Bombay and, five days later on the 27th, encountered and sunk the fast 3,600 tonne Italian motor vessel and merchant raider *Ramb I*. This was the New Zealand Division's first success in the Indian Ocean in WWII.[21]

Conclusion

The most obvious argument for a closer relationship between the RNZN and its partner navies, the Royal Australian Navy, the United States Navy, the Japan Maritime Self-Defence Force (JMSDF) and the Indian Navy, is that working alongside our larger and more capable allies and partners is both a valuable learning exercise and a highly visible reinforcement of New Zealand's foreign and defence policies. Three of the above navies have their beginnings in the Royal Navy, while Japan also looked to the Royal Navy for many of its earliest traditions. The forerunner to the JMSDF was the Imperial Japanese Navy (IJN), established in 1869. Whilst it looked to various European powers for its models, in 1870, by imperial decree, the Royal Navy was chosen as the foremost model for the IJN's future development. We have a shared heritage that remains highly valued. With the introduction into service of the new fleet tanker HMNZS *Aotearoa*, and the return of our upgraded Anzac class frigates HMNZS *Te Kaha* and HMNZS *Te Mana*, the feasibility of an RNZN Surface Action Group having the sustainment capability to participate in exercises Malabar and Milan has been significantly enhanced. Participation in either or both exercises would provide operational benefits for the Navy and its two sister services as well as reinforcing New Zealand's bilateral defence relationships with India and Japan and our broader security relationships with our major defence partners and allies, Australia and the United States.

21 Waters, *Official History of New Zealand in the Second World War.*

CAPTAIN DAVE MCEWAN, RNZN

Command experience has included Command of HMNZ Ships *Otago* (2011-2012), *Wellington* (2012), *Te Kaha* (2013-2014) and *Te Mana* (Jan-Feb 2018).

Captain McEwan graduated from HMAS *Watson* as a Principal Warfare Officer specialising in Above Water Warfare in mid-1999. Between sea postings as Gunnery Officer, Operations Officer and Executive Officer in units of the Naval Combat Force, he enjoyed two tours at the Headquarters Joint Force New Zealand, Trentham, firstly as the J5 Branch Maritime Planner (Operations & Exercises), then as Military Assistant to the Maritime Component Commander.

A NEW APPROACH TO PROFESSIONAL MILITARY DEVELOPMENT IN THE NZDF

In this article, **Colonel Andrew Brown** outlines the aims behind the establishment of a new New Zealand Defence Force Joint Warfare Centre as a 'community of practice' at the NZDF Command and Staff College.

Colonel Brown acknowledges with pleasure the particular assistance of Lieutenant Colonel Martin Dransfield, ONZM, in the development of this article.

The *Strategic Defence Policy Statement 2018*[1] placed a priority for the New Zealand Defence Force (NZDF) on operating and undertaking tasks in New Zealand's territory, its Exclusive Economic Zone (EEZ) and neighbourhood from the South Pole to the Equator. The subsequent *NZDF Strategic Plan 2019–2025*[2] emphasises this requirement by noting that, as a priority, the NZDF must be able to lead an independent, integrated operation in a high-risk environment in New Zealand, across the South West Pacific and into the Southern Ocean. Concurrently, the *NZDF Strategic Plan 2019–2025* states that, as a core competency, the NZDF must have the capacity to commit people and resources worldwide to support the maintenance of the international rules-based order.

This list of priorities is not new to the NZDF. For many years, the NZDF has led and successfully participated in security and stability operations and humanitarian assistance and disaster relief operations throughout the South West Pacific. More recently, the NZDF has worked alongside other government agencies within the National Crisis Management Centre to plan the support required to deal with domestic emergencies. Recent events include the Canterbury and Kaikōura earthquakes and the Whakaari / White Island volcano eruption. Presently, the NZDF fills key leadership roles in the planning and management arrangements as part of New Zealand's COVID-19 response.

Further afield, the NZDF has provided staff officers into United Nations and Coalition Force operational headquarters, including Timor-Leste, Afghanistan, Iraq and South Sudan. Key appointment holders have included Brigadier Mike Shapland DSD, who was recently the Chief of Staff in the headquarters of United Nations Mission in South Sudan (UNMISS). Currently, Major General Evan Williams is the Commander of the Multi-National Force and Observers (MFO) in the Sinai. These key roles are highly sought after by troop-contributing nations, and the selection of New Zealand officers reflects our friends', and allies', high regard for our people.

However, we cannot settle for the status quo. The *NZDF Strategic Plan 2019–2025* notes that the operating environment is becoming more complex and demanding. As a result, our people require a greater knowledge of joint, combined and interagency operating contexts. Furthermore, they must also understand the social, economic, political,

'The very best planners understood the inherent characteristics of the full range of military capabilities assigned to the force, the nuances of Alliance politics, and the subtleties of the Commander's intent in what was an exceptionally complex cultural, political and military mission.'

—Colonel Andrew Brown, Chief of Future Plans, NATO Resolute Support Mission, Afghanistan, 2019-20.

LEFT
An NZDF P-3K2 Orion aircraft from No. 5 Squadron RNZAF conducts a maritime surveillance patrol over the waters of New Zealand's Exclusive Economic Zone. Air Warfare Officers and Air Warfare Specialists at work on the TACRAIL of the Orion. Image courtesy of NZDF.

1 Ministry of Defence, *Strategic Defence Policy Statement 2018*.
2 Ministry of Defence, *NZDF Strategic Plan 2019-2025*.

religious, cultural, security and development dimensions of these contexts. This reality requires our people and our units to work alongside other government agencies, other militaries, and non-government organisations to a greater extent than has been required in the past. Doctrinally, this is called the "Comprehensive Approach", which requires two things. First, NZDF personnel must understand how to conduct effective planning. Second, planning must enable our units to operate effectively across all environments and with all actors to achieve tactical, operational and strategic objectives.

Analysis of NZDF's Joint Professional Military Learning—Programme RURU

Acknowledging the challenges of the future operating environment, the NZDF set up a project in 2017 called Programme RURU to determine the current state of the Joint Professional Military Learning continuum and design a future state model better aligned to future directed requirements. Programme RURU identified possible performance gaps in the NZDF's approach to preparing for contemporary and likely future operations. In particular, Programme RURU noted that many NZDF personnel are not adequately and systemically developed in the art of joint operations planning. That gap hinders their effective employment on a joint operations planning team in a higher tactical, operational, or theatre level headquarters, either in New Zealand or offshore. This shortfall is concerning given the ongoing request for the NZDF to fill operational headquarters' senior staff officer positions in the UN missions in South Sudan and the Republic of Korea, and coalition air and maritime surveillance missions in the Middle East and Central Asia.

Programme RURU noted that the lack of collaborative planning knowledge reflects a shortfall in our training, especially the skill of translating political guidance and strategic objectives into tactical effects in the operating environment. Linking the achievement of political objectives to tactical action via joint collaborative planning is what mid-career and senior officers, irrespective of specialisation or Service, must be competent at. Such skills require systematised training, on-the-job experience and operational experience to be truly effective at linking ends (political objectives), ways (operational art) and means (tactical effects).

Programme RURU recommended the NZDF work toward formalising an agreed NZDF Joint Professional Military Development continuum to overcome the identified shortfall. Otherwise characterised as an intellectual journey, the continuum guides officers' development and links the various learning interventions together in a cohesive end-to-end process. Without the continuum, the learning interventions, though useful in themselves, lack synergy, are uncoordinated, and neither promote nor foster the collaboration that the NZDF aspires to achieve in the *NZDF Strategic Plan 2019–2025*.

What is required to deliver the Joint Professional Military Development continuum?

The Joint Professional Military Development continuum aims to take our people from

RIGHT ABOVE
On board HMNZS *Canterbury*. Each evening, personnel from the three Services, as well as DOC staff, meet in the Joint Planning Room to discuss plans for the following day as HMNZS *Canterbury* sails to Auckland and Campbell islands on Operation Endurance. The briefing officer is Commander Martin Walker, RNZN, Commanding Officer of *Canterbury*. Image courtesy of NZDF.

RIGHT BELOW
Orders are given around a "mud model" made to resemble the surrounding landscape. Image courtesy of NZDF.


CMS

basic awareness of domain and joint capabilities to a level of proficiency appropriate to their rank and potential employment in joint, coalition and inter-agency operational or theatre level headquarters, using a modular method.

The successful delivery of a future-focused continuum requires a partnership between the single Services and New Zealand Defence College. The right learning interventions at the right time, which build on single Service mastery, will create world-class defence professionals who are domain experts capable of joint warfighting and organisational excellence.

To achieve this outcome requires a series of changes to how we currently deliver joint training.

First, as a lead-in for initial joint operations planning training, each NZDF student must possess a minimum baseline of knowledge: a working understanding of the environmental planning processes of their respective Service. Achieving that standard is a single Service responsibility. Furthermore, from a Joint Professional Military Development continuum perspective, this training is best placed at the earliest stages of an officer's military career to keep skills up-to-date.

Second, the joint operations planning training at the NZDF Intermediate and Advanced Command and Staff Courses must change to ensure graduates have the required competence and confidence in joint collaborative planning, and knowledge of the domain and joint effects that can be synchronised to achieve political objectives. The revised planning modules as part of the Intermediate Course in July 2021, and the Advanced Course in September 2021, will replace the Joint Operations Planning Course (JOPC), which is considered no longer appropriate. The revised approach aims to prepare Intermediate Course graduates to actively participate in joint planning, and for the Advanced Course graduates to effectively lead joint planning teams, which is what they would be expected to do on operations.

Third, there is a requirement for ongoing training at NZDF bases, camps and headquarters to keep skills up-to-date and ensure personnel are equipped to participate in joint, combined and inter-agency exercises, contingency planning, real-world planning activities, and operations when required.

A new NZDF Joint Warfare Centre

Enabling this continuum of joint training requires the infrastructure to deliver it. The current operating model is based on the delivery function being resourced with three Reservists led by Directing Staff (Operational Studies) at the NZDF Command and Staff College.

The NZDF Executive Committee has directed the creation of an NZDF Joint Warfare Centre that brings together single Service and joint warfare expertise to deliver high-value training activities that support single Service training. It will take the form of a community of practice rather than a "place". The Centre will be a subunit of the NZDF Command and Staff College.

What is included in the new training approach?

The ability to plan and execute effective joint, combined and inter-agency operations, alongside other agencies and militaries,

requires that NZDF personnel, appropriate to their rank level, have an awareness of: the government's focus areas and priorities; NZDF strategy; joint operations outputs and capabilities; joint and combined operations environments; and working knowledge of joint, combined and inter-agency operations planning and campaigning methods to meet national and military-strategic objectives.

In 2021, the New Zealand Defence College will trial the revised approach to preparing NZDF personnel to fill staff appointments and effectively lead and support operational planning in joint and combined headquarters. The revised course content will include a series of lectures, lessons and practical exercises, described below, that link political-military objectives via operational art to tactical action in the operating environment.

NZDF strategy and joint operations outputs and capabilities

Awareness and critical analysis of key NZDF documents is an important foundational skill. Current documents falling into that category include the *Strategic Defence Policy Statement 2018* and the *NZDF Strategic Plan 2019–2025*. Analysis of these documents will focus on the strategic context. That approach helps individuals understand New Zealand's overarching national security objectives, the principal roles and tasks expected of the NZDF, our strategic environment and our deployable combat-ready maritime, land, air and information force elements. To enhance the foundational understanding of NZDF operational outputs, visits to operational units will complement the analytical learning.

Joint and combined operations environments

Building on the foundational understanding of outputs and capabilities, officers must clearly understand the joint and combined operations environments they could operate in. This understanding can be achieved by analysing historical and present-day operations and campaigns, complemented by presentations and group discussions facilitated by those who have held key planning or leadership roles in operational and theatre level headquarters on operations. Such activities bring to life the criticality of operational art as the essential link between ends and means.

Joint, combined and inter-agency operations planning and campaigning to meet national and military strategic objectives

It is critical for NZDF personnel to understand the Comprehensive Approach as a means to achieve strategic, operational and tactical objectives. Ultimately, the task of mid-career and senior officers is to lead the collaborative planning effort necessary to deliver on the political objectives set by the government. That requires a sound understanding of doctrine, domain and joint capabilities, and the confidence to fuse that understanding and insight into a comprehensive, often All of Government plan. This level of understanding is best achieved through a series of lectures covering NZDF planning processes at the strategic, theatre and operational levels.

'The highest performing officers when I was Chief of Future Plans were indistinguishable as to Service, Branch or nation.'

—Colonel Andrew Brown

At the strategic level, NZDF personnel must understand the relationship between New Zealand's national policy and strategic objectives, including all the dimensions of that policy. Therefore, students must be aware of the All of Government national security structures and processes from which military-strategic plans are derived.

At the operational level, training should focus on demonstrating the link between the Chief of Defence Force's strategic planning guidance and the planning groups and processes Headquarters Joint Forces New Zealand (HQ JFNZ) use to develop operational plans. These plans include deploying and sustaining ongoing operational commitments, contingency planning and immediate responses to real-world situations across the full spectrum of operations.

At the tactical level, the focus should be on deriving tactical actions and effects to achieve operational objectives, synchronisation of activities, contingency planning, command and control, and sustainment.

Joint, combined and inter-agency operations planning processes

Given an in-depth grounding through analysis of strategic documents, complemented by interactive lectures and visits to operational units, the training continuum's final phase is developing operational plans. Primarily, this phase will use NZDF and Australian Defence Force (ADF) planning methodologies and tools to meet realistic scenarios. Achieving this outcome requires presentations based on the ADF Joint Publications 5.0.1[3] complemented by hypothetical examples described in each chapter. These iterative steps will provide students with a general knowledge of operational planning.

However, to develop confidence and trust in the process, NZDF military students must become experts in the planning process. Critical and creative thinking are key skills enabling students to achieve this level of competence. For example, the planning process demands that the scope of the operation is clearly understood. Achieving the necessary level of understanding demands

'Those nations who could take domain professionals and mould them into operational- and theatre-level experts through a standardised learning continuum were constantly in high demand. Those who could write well, brief well and had the strength of character to argue a contentious point of view were highly valued.'

—Colonel Andrew Brown

3 Department of Defence, *Joint Military Appreciation Process: ADFP 5.0.1.*

LEFT
RNZAF Base Ohakea HQ element conduct planning and briefing tasks as they assist with the COVID-19 response. Image courtesy of NZDF.

analysis of the observed system, the desired system and the desired end state. Next, a detailed analysis of critical vulnerabilities and the centre of gravity, both adversary and own, is critical to mission success by understanding the defeat mechanism of the potential or actual adversary. Equally, identifying tasks and decisive points across a line of operation, which are synchronised with other lines of operation, demands an understanding of capabilities and effects—both domain and joint.

Ultimately, effective plans require staff officers to match the available means to the ends and the ways. The best approach to developing skilled and confident operational planners is to adopt a modular approach, where learning is provided at carefully considered points on a career continuum.

The way ahead

In the first two decades of the 21st century, many commentators and practitioners have emphasised that operational art is a core competence of mid-career and senior officers. With this reality in mind, the Joint Professional Military Learning continuum analysis, as part of Programme RURU, identified that the NZDF requires all officers to have an awareness of joint operations effects through a greater understanding of each domain, complemented by a working knowledge of a basic operations planning process. However, given the requirement to deploy well trained and effective personnel to key staff planning roles, both in New Zealand and offshore, the main focus is on developing our mid-career and senior ranks' skills to plan and work effectively alongside other agencies and militaries. This outcome requires NZDF personnel, appropriate to their rank level, to have the awareness, confidence and ability to lead and support joint, combined and inter-agency operational planning.

Conclusion

In 2021, the New Zealand Defence College will take an important step forward to develop and deliver the appropriate level of planning expertise in the Intermediate and Advanced Course graduates. The students will complete a series of planning modules that include government defence policy and priorities; NZDF strategy and joint operations outputs and capabilities; joint and combined operations environments; and, joint, combined and inter-agency operations planning and campaigning methods to meet national and military strategic objectives. The intent is for these training modules to not only be included in extant courses, but, in 2022, to be complemented by regular planning activities at NZDF operational headquarters and bases. This approach necessitates establishing an NZDF Joint Warfare Centre, bringing together single Service and joint warfare expertise to provide high-value training activities and courses and to address the shortfalls identified through Programme RURU.[4]

4 The current resourcing model is one domain specialist officer per Service (Reservist), led by the Directing Staff (Operational Studies), which is an established position within NZDF Command and Staff College.

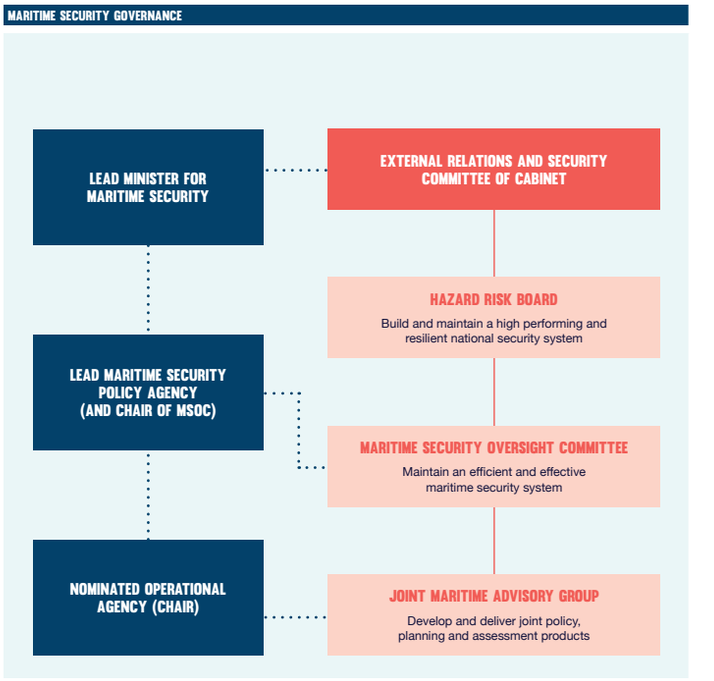
COLONEL ANDREW BROWN, NZ ARMY

Colonel Andrew Brown is the Commander of the New Zealand Defence College. Since 9/11, he has deployed seven times, four times as a Senior National Officer. His three tours of duty to the NATO-led mission in Afghanistan included Chief of Future Plans.[1] His recent career has focused on force modernisation and capability development and the broad area of people capability. He was Commandant of the New Zealand Army's 10 individual training schools from 2014-15, and in his current role is responsible for the Defence learning system, professional military development, leader development and Defence (and Joint) training. His academic qualifications include BBS and MPhil degrees from Massey University, and MCom (Hons) from the University of Auckland).

1 The conclusion of NATO's Operation Resolute Support Mission commenced on 1 May 21. Within a renewed regional and international support for political progress towards peace, NATO Allies and partners continue to support the ongoing Afghan-owned and led peace process. See: NATO, "Resolute Support".

INTRODUCING THE **MARITIME SECURITY OVERSIGHT COMMITTEE** AND THE NEW **MARITIME SECURITY STRATEGY**

In this article, Peter Mersi backgrounds the work of the Maritime Security Oversight Committee and its new Maritime Security Strategy.



RIGHT
Maritime security governance. Image courtesy of Ministry of Transport.

Introduction

As Chair of the Maritime Oversight Security Committee (MSOC), I welcome the opportunity to respond to Simon Murdoch's timely article '*A Turning Point for New Zealand's Maritime Periphery*' which appeared in the first edition of this Journal.[1]

The present article is in two parts. In Part One, I comment on Simon Murdoch's article, outline the work of MSOC and introduce the new Maritime Security Strategy (MSS).

In Part Two, Commander Gavin Birrell, my programme lead for implementing the new MSS, will provide more detail on what the strategy aims to achieve. Commander Wayne Andrew, my lead for sector planning and performance, will then describe how we intend to measure the MSS.

This piece will be followed in the Journal by an article on how the MSS was developed. This article is written by the Strategy's lead author, Justin Allan, the manager of the Strategic Coordination Unit in the New Zealand Customs Service. While the making of a strategy might be best left to mystery, along with laws and sausages, his insight into building consensus and gaining agreement from eleven different agencies will provide valuable guidance for others seeking to develop inter-agency strategy in the New Zealand public sector.

Firstly, however, I would like to offer my congratulations to all involved in the creation of this impressive journal. This publication provides a valuable platform to promote high levels of discourse and debate to ensure a collective and informed approach toward our maritime security front line. I trust you will see my support reflected in this article.

Part One - Introduction

Maritime Security Oversight Committee

The MSOC was set up to provide a more strategic approach to maritime security and to better coordinate the eleven key maritime security agencies. It is a permanent subcommittee of the Hazard Risk Board within New Zealand's National Security System and comprises executive-level leaders (mostly deputy chief executives) and, at present, myself serving as independent chair. MSOC is accountable for delivering and overseeing an integrated national approach to New Zealand's maritime security. It is supported by a senior officials' group (the Joint Maritime Advisory Group) as can be seen in the above graphic.

MSOC's vision is that we deliver:

> *'A maritime security sector that secures New Zealand's significant maritime economic, cultural and environmental interests and is better able to deter adversaries, reduce harm to New Zealand communities and exert effective kaitiakitanga (guardianship) of the sea.'*

The Maritime Security Strategy

To deliver this vision, a coordinated direction of travel and agreed priorities are required and that is what the MSS is for. The MSS adopts a

LEFT
Peter Mersi, Chief Executive, Ministry of Transport. Image courtesy of Ministry of Transport.

1 Murdoch, "A Turning Point for New Zealand's Maritime Periphery," 70-75.

MSOC MEMBERSHIP

- Ministry of Transport (MoT)
- Maritime New Zealand (MNZ)
- Department of the Prime Minister and Cabinet (DPMC)
- Ministy of Business, Innovation and Employment (MBIE)
- Ministry of Defence (MoD)
- Ministry of Foreign Affairs and Trade (MFAT)
- New Zealand Customs Service (NZCS)
- New Zealand Defence Force (NZDF)
- New Zealand Police (Police)
- Ministry for Primary Industries (MPI)
- Department of Conservation (DOC)

comprehensive, multi-agency approach to deliver maritime security through four pillars: Understand; Engage, Prevent; and Respond. I would argue, and I echo Simon Murdoch's thesis in doing so, that this coordinated direction of travel is now more important than any other time since the 1942 Battle of Midway, which marked the beginning of the end of maritime conflict in the Pacific theatre during World War II.

The subsequent "*pax pacifica*" that we have enjoyed since then, along with the development of a maritime rules-based order, has provided the conditions that have enabled New Zealand to flourish through trade. But, while we have enjoyed no direct conventional military threat in that period, to quote the 2018 *Strategic Defence Policy Statement*, 'across geography and domains, challenges once conceived of as future trends have become present realities'.[2]

Those present realities are multiple and immediate and have almost certainly been amplified and accelerated by the COVID-19 global shock that has brought to the fore New Zealand's dependence on the sea as both a moat and trade lifeline. Simon Murdoch recognised these challenges and suggested that the impact of these issues placed New Zealand at a turning point in the way it should consider maritime security. Within New Zealand's maritime estate, larger maritime domain and, increasingly, on our maritime periphery, these challenges are growing. They call for an adjustment in government policy, regulation and investment. The MSS is the start of that called-for policy adjustment.

The new MSS, though, is but one part of New Zealand's maritime security thinking. Sitting alongside the MSS is the *Strategic Defence Policy Statement 2018*. This is the repository for New Zealand's thinking on military maritime security and sovereign defence. It is fair to say that Simon's thinking has informed the development of both documents.

The MSS clearly defines the New Zealand maritime domain where we exercise rights and perform kaitiakitanga to the edge of our extended continental shelf. The MSS also defines the New Zealand maritime area of interest as the area that contains our constitutional responsibilities in the South West Pacific, our treaty obligations in the Southern Ocean and the maritime approaches that bring and take 99% (by volume) of our trade-based economy. Just the simple act of having an agreed definition of these areas, which are depicted in the New Zealand Defence Force (NZDF) graphic, is a practical example of the value of having a strategy.

Returning to the thesis put forward by Simon, I too recognise the limits of the maritime rules-based order with much of the sea being only 'partially governed spaces'[3] (to use Simon's words), but we need to acknowledge how far we have come. In doing so, we acknowledge the efforts of New Zealand maritime security thinkers and officials whose work through the United Nations Convention on the Law of the Sea (UNCLOS) and in other fora has led the way in the development of this governance. Their efforts continue today with New Zealand participating

LEFT
MSOC agencies. Illustration courtesy of Ministry of Transport.

RIGHT
New Zealand Maritime Domain and Area of Interest. Image courtesy of NZDF/GNZ.

2 Ministry of Defence, *Strategic Defence Policy Statement 2018*, 16.

3 Murdoch, "A Turning Point for New Zealand's Maritime Periphery," 70-75.

New Zealand Maritime Domain and Area of Interest

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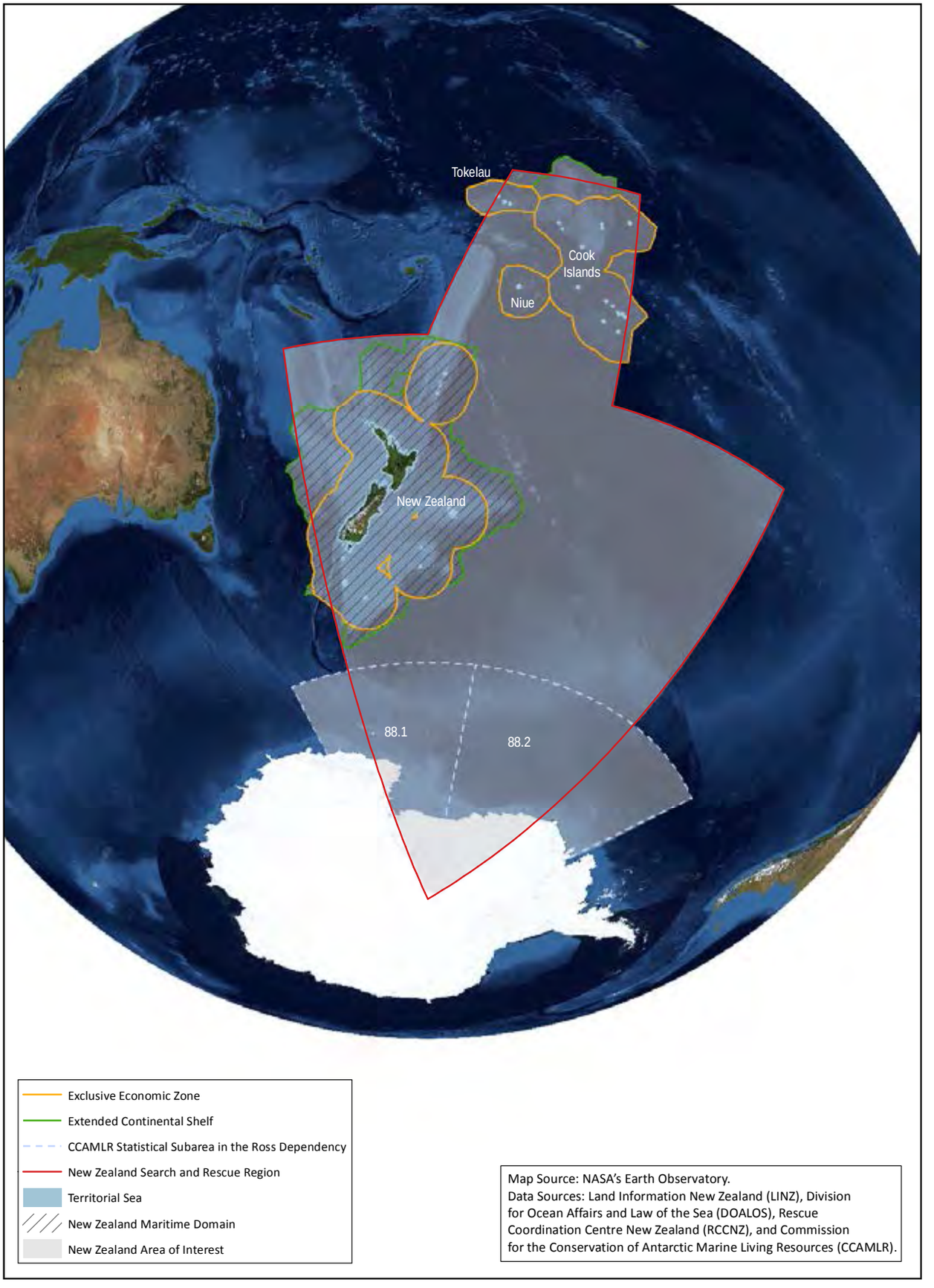


IMAGE

Maritime Security Strategy overview. Image courtesy of Ministry of Transport.

curity Strategy

nds a new vision and approach for the maritime security sector

The Approach

The maritime security sector's contribution to national security will be guided by four interlocking pillars: Understand, Engage, Prevent, Respond.

These pillars describe how an efficient and effective system goes about achieving maritime security.

The pillars are underpinned by two supporting principles: The comprehensive multi-agency approach and Kaitiakitanga.

Kaitiakitanga
New Zealand's stewardship and protection of our maritime domain for future generations.

y System

Achieved by

Implementation Priorities

Priority 1

Enable the comprehensive multi-agency response

- Assign a lead maritime security policy agency.
- Establish sufficient policy coordination, assessment, communications and campaign planning capacity and capability.
- Provide funding certainty.

Priority 2

Establish sector planning and assessment expectations

- A Maritime Security Assessment that identifies emerging threats and opportunities.
- A Campaign Plan that sets an integrated approach to the deployment of resources.

Priority 3

Coordinated investment across the sector

- Determine the approach to investing in the right mix of people, systems and tools to achieve best effect.

A layered approach to investment

People

We need people with the skills to understand the maritime environment, engage with domestic and international partners, develop and implement proactive approaches.

Systems

All elements need to work from a single point of truth (a "common operating picture").

This requires networked systems that support collaborative planning based on a shared understanding.

Tools

Investment in fit for the future surveillance and analytical capabilities.

Ensuring New Zealand continues to have suitable and sufficient maritime response capabilities.

in the Biodiversity Beyond National Jurisdiction (BBNJ) negotiations that continue under the UNCLOS umbrella. Indeed, promotion and support of the Maritime Rules-Based Order is a key issue that MSOC tracks and supports through the Ministry of Foreign Affairs and Trade (MFAT), whose BBNJ negotiating efforts are a good example of New Zealand's recognition that its security interests are involved well away from its shores.

Referring again to the New Zealand government's *Strategic Defence Policy Statement 2018*, it is important to note that it aligns with Simon's thinking on the notion of "Community, Nation and World". The associated *Defence Capability Plan 2019* included investment for the replacement of one of New Zealand's two key maritime security capabilities, namely the new maritime P8-A Poseidon patrol aircraft. That significant purchase comes on top of the government's earlier investment in the frigate systems upgrade for HMNZS *Te Kaha* and HMNZS *Te Mana*. With these upgrades complete, the two frigates will once again be ready to respond should our collective maritime security demand action on our maritime periphery or anywhere the government requires.

Part 2 - The Maritime Security Strategy and how it will be evaluated

Commanders Gavin Birrell and Wayne Andrew, RNZN

What is the Maritime Security Strategy?

The MSS is a coordinated strategy with agreed priorities that aims to secure our economic, cultural and environmental maritime interests. This agreement is important for a sector involving eleven separate agencies that, without a strategy, could very easily go in separate directions. When the sector comes together as MSOC, in a practical but simple example of the MSS in action, a hardcopy A3 copy of the MSS (see prior page) sits in front of each member to guide them as they discuss and agree on next steps for the sector.

What the Maritime Security Strategy isn't

The MSS is not a naval strategy, though. There are no fleets-in-being or quotes from Julian Corbett and Alfred Thayer Mahan. And while strategy was born out of warfare, with the word coming from the Greek word *strategos* for a general who leads an army, it is now frequently encountered in both business and government. At its root, strategy is about what one seeks to achieve, why, and with what resources. Strategies also do not stand still; they require continuous attention to context, adapting to environmental and organisational changes that may impact on the strategy. So it follows that a strategy is not the end of the line for any organisation, but the beginning.

The MSS is not a replacement for, and nor does

it compete with, the NZDF's *Maritime Doctrine*.[4] It also does not cover military maritime security and sovereign defence. These aspects are covered in the *Strategic Defence Policy Statement 2018*. The MSS should be read in conjunction with the MSOC vision statement.

> *'A maritime security sector that secures New Zealand's significant maritime economic, cultural and environmental interests and is better able to deter adversaries,[5] reduce harm to New Zealand communities and exert effective kaitiakitanga (guardianship) of the sea.'*

The MSS starts with a vision. The very word can trigger an allergic reaction in some. If this is you, then it might be helpful to explain the need for a vision. It is accepted practice for all organisations to have a vision. This is because organisations exist for a purpose, and, to thrive, they need to know what that purpose is. So for the MSS, a vision is the starting point because it describes what the maritime security sector is trying to achieve. The vision succinctly acknowledges the significance of New Zealand's maritime interests, the breadth of their impacts (economy, culture and the environment) and the fact that these interests include the possibility of 'harm to New Zealand communities'.[6] The sector's purpose is to secure New Zealand's maritime interests by getting better at deterring those who would harm them. It does this for both present and future generations.

The inclusion of the word "adversary" has immediate military as well as civil connotations. The MSS aims to reduce 'the ability of malicious and/or negligent actors to undermine our national and maritime security'.[7] In that sense, it applies to anyone who would harm New Zealand's maritime interests, be they criminals, negligent mariners or foreign powers.

Securing our maritime interests is enabled by four pillars that interlock to support the eleven maritime agencies working together. This is because no single agency can deliver maritime security on its own, as every issue or threat has impacts beyond a single agency's remit. An example is the response to illegal, unregulated and unreported fishing. This is led by the Ministry for Primary Industries, but when the response encounters the use of enslaved labour, the Ministry for Business, Innovation and Employment also needs to be involved.

Understand is the first of the four interlocking pillars. It comes first because the best decisions are well-informed

4 Directorate of Sea Power and Warfare, *New Zealand Defence Force Maritime Doctrine*.

5 Editor's Note: The next iteration of the MSOC vision could with benefit reflect further on the question of what makes an "adversary". The MSOC is focused principally on threats of a civilian nature. These arise from criminal entities or groups ignorant of, or wishing to break, New Zealand regulations and laws. Such people are not "adversaries" in the normally accepted sense. Adversaries are state actors with military forces or "grey zone" forces under the control of a government.

6 National Maritime Coordination Centre, *Maritime Security Strategy*, 16.

7 Ibid.

ones. It focuses on knowledge of our maritime areas, particularly data on those plying their trade or pleasure afloat. To deliver this, MSOC has its own centre—the National Maritime Coordination Centre (NMCC)—that is focused on delivering an All of Government maritime domain awareness[8] capability. Their current, partial capability combines some surveillance data with information from domestic and international partners, which enables New Zealand's limited stock of maritime security assets to be directed to the right place at the right time. Importantly, understand also includes the longer-term activity of horizon scanning, which enables our assets and activities to be directed to where they will have maximum impact.

The **Engage** pillar recognises that maritime security can only be achieved through the support and co-operation of partners. Our maritime areas adjoin those of other countries; many activities in our areas start or finish outside New Zealand's waters. Working with our partners supports efforts to take appropriate action before threats can impact New Zealand.

The **Prevent** pillar comes from the adage that prevention is better than cure. The NMCC and the maritime sector's agencies attempt to target their presence or activities to prevent harm from occurring. This ranges from capacity-building efforts such as the MFAT-funded, Customs-delivered South West Pacific work with partners to deterrence by physical patrolling of harbours or marine reserves by the New Zealand Police.

The **Respond** pillar includes a range of actions up to and including the seizure of a maritime vessel involved in illegal activity or the exposure of illegal activity in international fora. A recent example of that involved New Zealand presenting information to the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) that was obtained through an NZDF overflight of illegal fishing operations in the 2019/2020 season by a Russian-owned fishing vessel, *Palmer*. Although Russia blocked the vessel being added to the CCAMLR's illegal, unreported and unregulated vessel list, the vessel did not participate in CCAMLR fisheries this season. The sector has also enforced the maritime border during the COVID-19 pandemic with NMCC positional information triggering multi-agency responses whenever vessels unlawfully bound for New Zealand were detected, such as the interception of the yacht *Anita* in October 2020.

Guiding principles

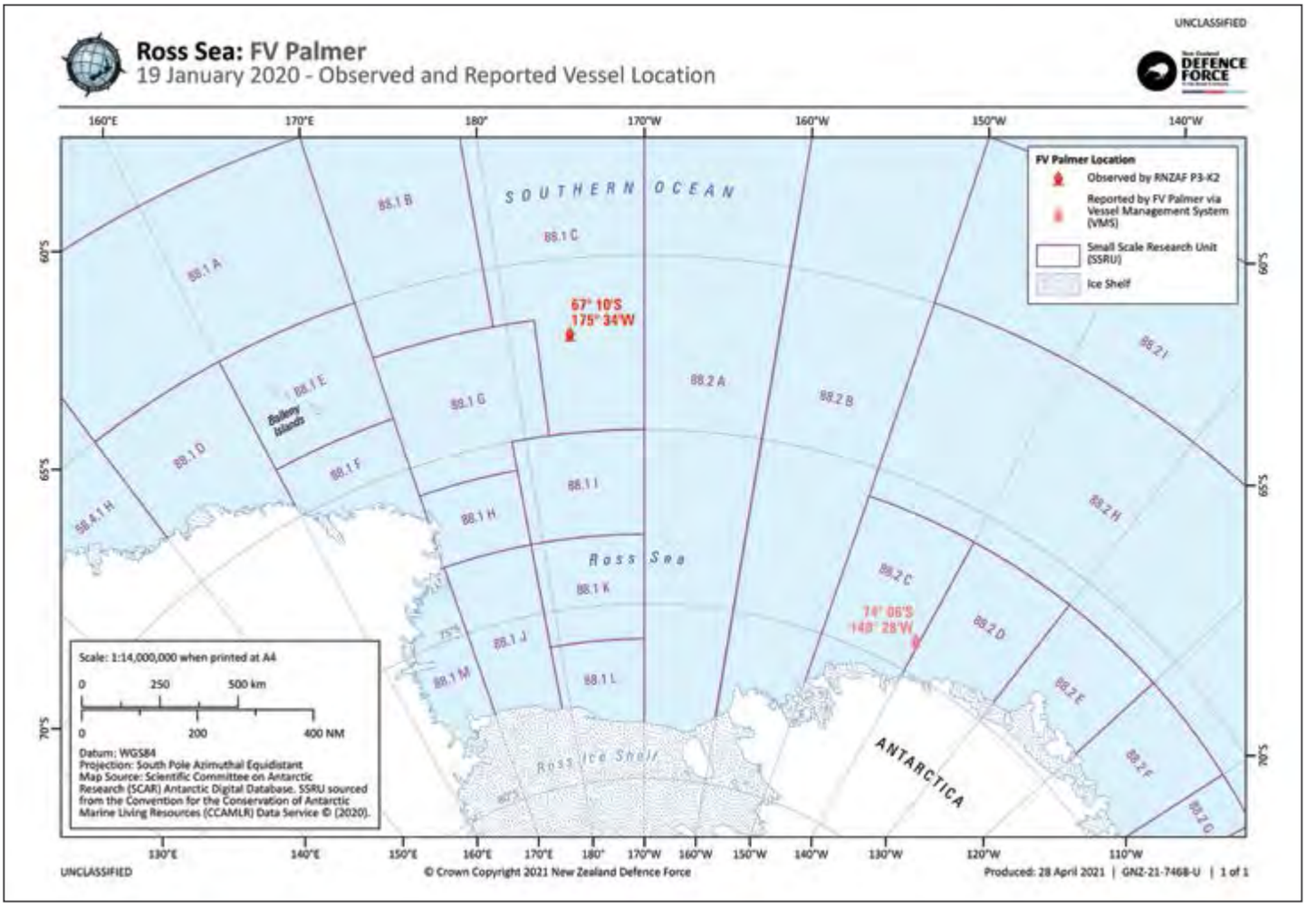
Two principles guide the actions of MSOC agencies. These are the **comprehensive multi-agency approach** and **kaitiakitanga**.

As already noted, no single agency can deliver maritime security for New Zealand working on its own, so the sector delivers maritime security through a comprehensive multi-agency approach. The best example of this approach is the funding by MSOC member agencies of the NMCC, which works to deliver shared

RIGHT ABOVE
Map indicating where *Palmer* was located. Image courtesy of NZDF.

RIGHT BELOW
Russian fishing vessel *Palmer*. Image courtesy of NZDF.

8 Maritime domain awareness is defined as the collection, analysis, assessment and dissemination of maritime domain information and intelligence.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Ross Sea: FV Palmer
19 January 2020 - Observed and Reported Vessel Location
DEFENCE FORCE
160°E
170°E
180°
170°W
160°W
150°W
140°W
60°S
65°S
70°S
SOUTHERN OCEAN
88.1 A
88.1 B
88.1 C
88.1 D
88.1 E
88.1 F
88.1 G
88.1 H
88.1 I
88.1 J
88.1 K
88.1 L
88.1 M
88.1 N
88.2 A
88.2 B
88.2 C
88.2 D
88.2 E
88.2 F
88.2 G
88.2 H
88.2 I
Balleny Islands
Ross Sea
Ross Ice Shelf
ANTARCTICA
67° 10'S
175° 34'W
74° 06'S
148° 28'W
FV Palmer Location
Observed by RNZAF P3-K2
Reported by FV Palmer via Vessel Management System (VMS)
Small Scale Research Unit (SSRU)
Ice Shelf
Scale: 1:14,000,000 when printed at A4
0 250 500 km
0 200 400 NM
Datum: WGS84
Projection: South Pole Azimuthal Equidistant
Map Source: Scientific Committee on Antarctic Research (SCAR) Antarctic Digital Database. SSRU sourced from the Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR) Data Service © (2020).
130°E
140°E
150°E
160°E
170°E
180°
170°W
160°W
150°W
140°W
130°W
120°W
110°W
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Produced: 28 April 2021 | GNZ-21-7468-U | 1 of 1


UBJH2

YACHT *ANITA* INTERCEPT

- 02 Sep - *Anita* submits exemption application to Ministry of Health (MoH)
- 03 Sep - Departs French Polynesian waters for New Zealand
- 22 Sep - Submits its Advance Notice of Arrival to NZ Customs
- 23 Sep - MoH advises request to enter New Zealand denied
- 23 Sep - Customs advises entry not permitted. They reply they intend to proceed to New Zealand anyway
- 23 Sep - Pre-planned multi-agency operational response activated
- 23 Sep - National Maritime Coordination Centre tracks vessel and coordinates assets for response
- 24 Sep - P-3K2 maritime patrol aircraft monitoring commences
- 24 Sep - HMNZS *Otago* Offshore Patrol Vessel deploys
- 25 Sep - *Otago* locates and surveils *Anita* through the night as it approaches and transits the Contiguous Zone
- 25 Sep - On entering territorial water, Customs patrol vessel *Hawk V* takes over surveillance; escorts the vessel into Opua
- 25 Sep - Customs, Health and Immigration New Zealand officers interview the crew and they are detained by Immigration New Zealand
- 25 Sep - Customs takes control of the vessel at Opua
- 29 Sep - Court appearance. Remanded in custody awaiting deportation
- 01 Oct - Three German crew deported
- 01 Oct - Vessel deemed liable for seizure and duty under the Customs and Excise Act

understanding of our waters through maritime domain awareness and to coordinate agency activities to best effect. An example of this is the NMCC identifying the need for a police vessel to deploy to the Marlborough Sounds to *prevent* and *respond* to potential harm to our maritime interests. Depending on circumstances, a Ministry for Primary Industries fisheries officer might be embarked on a Police vessel to enforce fisheries regulations or a Department of Conservation ranger transported to an offshore sanctuary, ensuring that best possible use is made of these assets. This approach is designed to be mutually supporting and efficient. For a small nation with a very large maritime area, this is the only practical way to deliver maritime security in New Zealand.

The second guiding principle is kaitiakitanga (guardianship). Recognition of the stewardship and protection of New Zealand's maritime domain on behalf of future generations of New Zealanders underlies all single agency and MSOC decisions.

Maritime Security System

To be successful, the MSOC requires a system with the following effective enablers.

Operational coordination

Operational coordination is delivered by the NMCC, which harnesses technology to ensure the efficient and effective deployment of assets. The need to invest in that technology is well recognised, with the Ministry of Defence (MoD), on behalf of the whole sector, investigating infrastructure and capabilities investment. This activity by one agency for the whole sector is a good example of MSOC leveraging the unique strengths of its members for the benefit of all.

This year, the Ministry of Transport (MOT) commenced its role as the policy coordinator for the maritime sector. MOT is taking over the servicing of MSOC's needs while developing a number of other policies that support the MSS. MOT is also leading the development of a communications and engagement plan, which builds on existing agency relationships.

The annual maritime security assessment and five-year forecast

As outlined earlier, a strategy is normally only the start of efforts to improve because the world that a strategy is based on continually changes. Information on those changes comes through the *Understand* pillar with an annual maritime security assessment providing a five-year forecast for maritime trends, and a measurement regime that provides MSOC with information on where New Zealand's maritime interventions give best value for money and most effect.

Measurement and evaluation

To help determine what aspects of the MSS are working and what may need adjusting, the MSOC is also developing a measurement and evaluation regime.

How many of you have used or heard the phrase "I intend to leave this position/place/organisation in a better state than when I found it"? A great philosophy, but the challenge is how to prove that you have actually delivered what you intended.

In the commercial sector, the end state is driven by increased profits and/or

LEFT
The yacht *Anita* under escort by Customs vessel *Hawk V* as it approaches Opua on 25 September 2020. Image courtesy of NZ Herald/ The Northern Advocate.


POLICE

LEFT ABOVE
NZDF operating environment in the Southern Ocean. Image courtesy of NZDF.

increasing service levels, but for the majority of the public sector and, in particular, the security sector, delivery levels against the desired effect are more difficult to measure. The security sector is tasked with delivering an effect rather than a product, and, as such, the result is much more subjective and open to interpretation.

The intention of the MSS is to deliver the best possible outcome now and into the future. But the question remains: how do you measure progress toward achieving outcomes across a sector that comprises eleven agencies, all with a vested interest in the strategy but all funded separately to achieve individual agency results?

Winston Churchill is reputed to have remarked when being asked to comment on an especially elegant piece of wartime strategy, 'Yes, it is certainly beautiful. But no matter how beautiful, we should occasionally look at its results'.

How do you measure results in a security environment?

Security *performance* is intrinsically difficult to quantify. We can measure how many arrests have been made, ships interdicted and fishery catches inspected, but all of these are specific outputs rather than the outcome itself in terms of improved maritime security.

Moreover, not only are we trying to measure the success of the MSS, we are also trying to align sector strategy with the requirements of the National Security System and the way that risks are managed on behalf of all New Zealanders. To do this, we rely on using information provided by the eleven agencies who hold individual responsibilities in the maritime domain, all with differing governance arrangements and with their own competing information and resource demands.

Kaplan and Norton[9] discuss how a balanced scorecard can be used by government agencies to ensure alignment between customer's expectations, the strategy to deliver to those expectations, and organisational performance against the strategy. In measuring the maritime security sector's performance against the MSS, a balanced scorecard has merit, but, before this can be implemented, the system needs to be resourced appropriately and display the behaviours that support the rationale for its creation. In short, 'a maritime security sector that contributes to the advancement of New Zealand's national security through a common approach, coordinated investment decisions and effective resource prioritisation'.[10] To make sure that we transition at a rate that matches system maturity, and to ensure that progress is being monitored and made, an interim performance management system is being implemented.

How are we measuring progress?

The most significant challenge facing the maritime security sector is sustainable resourcing of the overarching policy and performance management function for the sector. While this resource is currently being provided through an extended club funding model and the provision of a "free" resource by the NZDF, this is only a short term fix.

LEFT BELOW
Rescue exercise off Wellington. Image courtesy of New Zealand Search and Rescue.

9 Kaplan, Robert, *The Strategy-Focused Organization*.
10 National Maritime Coordination Centre, *Maritime Security Strategy*, 3.

As an interim step until the sustainable resourcing issue is resolved, the MSOC has developed a set of key performance indicators (KPIs) as a first step toward measuring progress. These KPIs use existing information sources and reporting tools. They will be updated as progress is made and the system matures, but for the moment the KPIs are tactical/operational and quantitative in nature, measuring indicators such as numbers of patrols, number of interdictions made and so on.

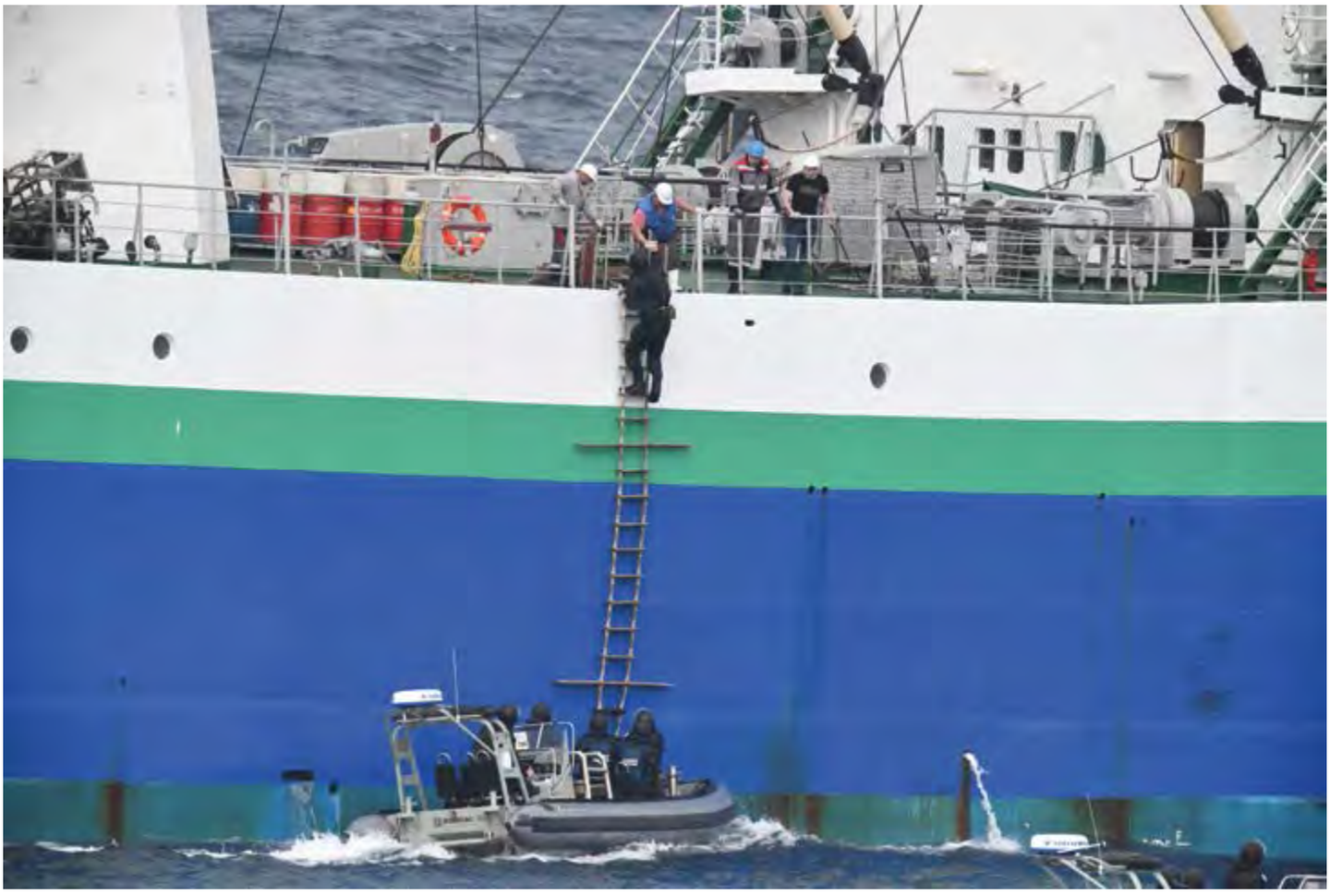
Summary

There has been a lot of very good work done within the eleven agencies that hold responsibilities for risks and threats as they evolve within the maritime domain. The introduction of the MSS has enhanced the effectiveness of the system as a whole. It is providing the direction and guidance that is needed to align investment decisions, response options and information sharing across the sector.

But it would be fair to say that the performance evaluation system is still evolving. There remains work to be done. Early performance measures are in place but these will take time to mature. Real progress can only be made when matching systems are in place in the overarching national security and risk management system.

A final thought—it may strike you that there are two competing adages worth thinking about when discussing system-wide measurement and evaluation. The first is the old saying, "what can be measured can be managed", which is no doubt very true. As a counterpoint to this, I have also been reminded of a saying attributed to William Bruce Cameron, 'Not everything that counts can be counted. And not everything that can be counted counts'.[11] Also very true, and worth keeping in mind for the sake of our sanity.

11 I owe this quotation to Matt Cavanaugh, the author of a periodic blog for practicing strategists called *Strategy Notes*. See mlcavanaugh@substack.com.



PETER MERSI

CHIEF EXECUTIVE, MINISTRY OF TRANSPORT

Peter Mersi was appointed Secretary for Transport and Chief Executive of the Ministry of Transport in July 2016.

Prior to this, Peter was the Chief Executive of Land Information New Zealand (2012-2016) and spent six months as the Acting Secretary and Chief Executive of the Department of Internal Affairs.

Peter has held senior leadership roles in Inland Revenue and the Treasury where he spent 14 years, much of which focused on social policy and the public management system. He has also worked for the Department of the Prime Minister and Cabinet, the Department of Labour, the former Department of Trade and Industry, and the Bank of New Zealand. Peter has chaired the Maritime Security Oversight Committee since becoming Secretary for Transport.

Peter has an economics degree from Victoria University of Wellington.

COMMANDER GAVIN BIRRELL, RNZN

Commander Gavin Birrell is on secondment to the Ministry of Transport as the lead for implementing New Zealand's Maritime Security Strategy.

He is a naval warfare officer with wide-ranging operational experience in all oceans and most seas ranging from navigating mine hunters to leading information warfare efforts for a Carrier Strike Group. After seventeen years in the Royal Navy, he immigrated to New Zealand. His time in the Royal New Zealand Navy has included specialist roles such as commanding a joint information warfare-related unit and general roles such as the Fleet Warfare Officer and seconding to the Ministry of Defence as the Capability Manager for the Frigate Systems Upgrade for HMNZS *Te Kaha*. The highlight of his time in New Zealand has been the opportunity to deploy on exercises and operations six times including the 2015 Indian Ocean deployment in HMNZS *Te Kaha* as the Intelligence Officer for its $235M heroin bust.

Gavin has an MA (Hons) in Intelligence and International Relations and a BSc (Hons) in Political Science and International Relations.

COMMANDER WAYNE ANDREW, RNZN

Commander Wayne Andrew is a Principal Warfare Officer (PWO) in the Above Water Warfare specialisation, graduating from the Royal Australian Navy PWO Course in 2002 with the St Barbara's Award for Gunnery. He is a graduate of the 2012 New Zealand Defence Force Command and Staff College Advanced Course and has completed a Master of International Security from Massey University and a Graduate Diploma in Information Management from the University of New South Wales.

Wayne has extensive sea experience as a watchkeeper, navigator, warfare officer and command positions deploying on multiple exercises in the Indo-Pacific region. His operational deployments include HMNZS *Canterbury* during the Timor-Leste independence crisis and in HMNZS *Te Mana* during the Bougainville crisis. He served as the Fleet Warfare Officer during the introduction into service period for the Protector Fleet.

He has had a broad range of postings ashore in personnel management, capability development, operations training, operational planning, strategic international engagement, and logistics strategy roles. His most recent postings were as the Principal Advisor Logistics Strategy and Chief of Staff for Defence Logistics Command. Wayne is currently taking up a secondment opportunity with the Ministry of Transport as part of the Maritime Security System Implementation Team.

LEFT
MPI Fisheries Officer boarding a ship to inspect the catch. Image courtesy of NZDF.

MAKING A SAUSAGE:
REFLECTIONS ON DEVELOPING A MULTI-AGENCY STRATEGY

In this article, **Justin Allan**, Manager Strategic Coordination Unit, New Zealand Customs Service, discusses how he approached the development of the Maritime Security Strategy including problems encountered and lessons learned.

Introduction

In successfully developing and delivering the Maritime Security Strategy (MSS), I learned some valuable lessons on the way. While it's a bit like revealing how the sausage is made, reflecting on a few of these lessons and the process I took to develop the MSS is, I hope, useful to those who hope to develop future strategic documents.

My journey to develop New Zealand's first national MSS did not start auspiciously. I remember discussing the role with a colleague who had worked on an earlier attempt at developing such a strategy. My colleague expressed his opinion that anyone taking on this role ought to have their head examined. After an uncomfortable silence, he realised that I was that person! His final word on this was 'well I hope you like a challenge'. Over two years later and numerous meetings, workshops, consultations and seemingly endless iterations of A3 overviews, I can confidently say that my colleague was prophetic in his view.

I have been asked to reflect on the process of developing a government strategy by setting out some of the challenges and reflecting on some of the things that helped me guide the process to a successful conclusion. To do this, I will provide a brief overview of the development timeline and then focus on some key considerations that can help a budding strategist navigate a way through the interagency system.

In doing this, I want to stress that my experience was shaped by a unique set of circumstances. Some of my observations will be of value, but I am not attempting to provide precise guidance, as contexts always differ.

Developing the strategy

The overall delivery of the MSS was informed by arguably the most mature "national strategy" process followed in New Zealand—the *Defence White Paper 2016*. Roughly speaking, this broke development of the MSS into key chunks:

- Commissioning (in particular, confirming scope)
- Assessment of the current and projected environment
- Defining the vision (ends)
- Outlining an operational approach (ways)
- Articulating how the approach would be delivered and what was needed (means)

Recognising the value of learning from the Defence experience, I was hosted within the Ministry of Defence team, tasked with writing the *Strategic Defence Policy Statement 2018*. This was a great move as it provided me with a support network of colleagues tackling similar challenges. That said, the challenges I faced differed in a number of ways, for example:

- The Defence strategic planning process had a legislative basis (mine did not).

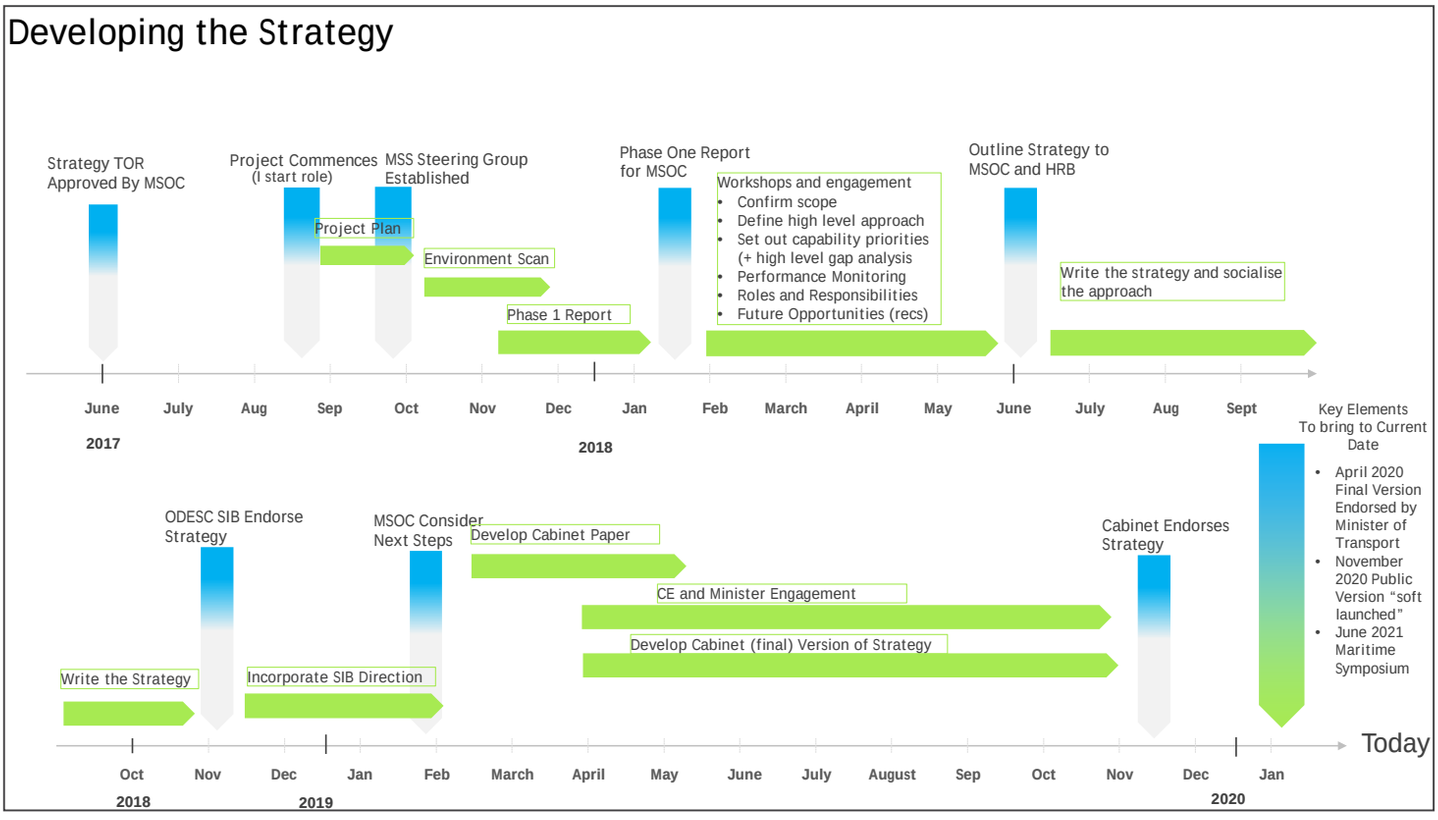
LEFT
Justin Allan.
Image courtesy of Justin Allan.

- The Defence work had clear antecedents, whereas, New Zealand had never had a national MSS.
- The Defence work had a clear ministerial lead; there was no minister responsible for maritime security.
- I was working on behalf of 11 agencies and reporting to the Secretary of Transport in his role as chair of the interagency governing body (the Maritime Security Oversight Committee).

In practise, I had to work out my own unique process and approval pathway through the interagency system and Executive Government. There is no step-by-step manual for this. And, given the complex and iterative nature of this process, it is arguable whether there could be. Despite this, I have attempted to map out the broad steps that were followed in the diagram below.

One thing on this diagram that will probably stand out to readers is the amount of time it took to take the MSS from developing the terms of reference (TOR) in June of 2017 through to public release at the end of 2020. This may seem like an inordinate amount of time, but as many of you with government experience will know, the time spent is not actually that excessive when compared with the time needed for legislative processes or any complex piece of interagency work. In addition, most of the time spent was not on *writing* the MSS, but, instead working through Cabinet processes and the interagency system. The long periods of time associated with the Cabinet process were largely driven by the challenge of getting this onto the agenda of very busy ministers, which in turn meant getting a number of chief executives (CEs) on board. All of this takes time, and these engagements required investment in supporting documents (diagrams and the ubiquitous tablemat A3s, for example, used to illustrate the MSS as it was developed).

While the above timeline does indicate a largely linear progression, the reality was that all elements were being reviewed, challenged and considered right up until the draft strategy was endorsed by Cabinet. This is just the reality of working on complex policy. Neat hierarchies flowing from strategic objective through to tactical execution only really exist in diagrams or PowerPoint slides. In practise, each level interacts and informs the other and you, as the writer, will find yourself juggling ends, ways and means as you struggle to balance this equation and work



BELOW Strategy development and delivery timeline. In the figure, the abbreviations are as follows: HRB=Hazard Risk Board; ODESC=Officials' Committee for Domestic and External Security Coordination; and SIB=Security and Intelligence Board. Image courtesy of Justin Allan.

the necessary compromises across an array of key stakeholders.

Key considerations when developing a government strategy

Working through the development of a strategy successfully requires a series of ingredients that include:

- Nailing the why
- Executive level guidance and support
- Project discipline
- Formal and informal engagement
- Tackling criticism
- Pragmatism
- Getting on with it
- Selling it

Nailing the why

The official "why" of the MSS has been outlined in Peter Mersi's introductory article in this Journal. In summary, senior maritime security officials wanted a strategy to provide a shared narrative for maritime security which would, in turn, enable a more cohesive approach to the conduct of maritime security and the direction of future investment. This formulation needed to be developed further by ensuring that the "why" continued to be compelling from the perspective of key stakeholders. This is important as it will vary across agencies' CEs, officials and politicians. For a strategy to make its way through our system with the necessary support, a compelling "why" must be provided that can appeal to a range of interests.

An early interaction I had with a senior CE underscored the critical importance of considering the "why" questions in relation to various stakeholders. This CE bluntly put forward the challenge that the MSS was 'just something cooked up by officials as they had run out of ideas for moving forward'. While we managed to convince this CE otherwise, there was a note of truth in this, as the MSS for many did reflect a hope that it would somehow resolve interagency frustrations with a lack of cohesiveness in the New Zealand maritime security system.

For many officials, the MSS was seen as a way through a seeming inability to enhance investment in the maritime security sector. This perspective was largely focused on capability gaps and, in the case of maritime security in particular, a desire to enhance the ability of agencies to develop and share a common understanding of the maritime operational picture. For other officials, especially those engaged in their own capability projects, the MSS was viewed as something that could support their work.

Busy officials tend to view strategies in quite a narrow and utilitarian way. Their interest is likely to be less about articulating how they will collectively go about their business and more about marshalling an argument for more resources. This connection is widespread and stubborn, to the point that a strategy that does not arrive with investment earmarked is often pre-emptively dismissed as "vaporware". While it is true that the sign of a bad strategy is ends that fail to have a realistic connection to available means, you can still write a good strategy that does not solely exist to grow resources to meet the endstate that it articulates.

Politicians again will take a different frame. Their focus will centre on how the strategy supports their current policy priorities. This, in turn, will be informed by the stark reality that politicians and "big G" government have limited "bandwidth" and are often dealing with a range of more pressing policy issues. For a multi-agency sector strategy, this can set a relatively high bar, as the main thing that limits a government minister is time and attention. They can be convinced of the merits but still find it really hard to allocate the necessary time and focus. This is especially the case when the interests are cross-cutting and not focused on their core portfolio responsibilities.

The MSS, therefore, needed to be shaped and pitched to account for a range of interests. As the MSS developed, it was indeed able to (in the main) meet the objectives of all key stakeholders while also not falling into the trap of trying to please *everybody*. This is reflected in the various strands that came together in the final product.

Executive level guidance

Having effective executive level support and guidance was a critical contributor in navigating the strategy through the interagency process. One of the first things established was a strategy steering group that included senior leaders from New Zealand Customs, the Department of the Prime Minister and Cabinet, the Ministry of Defence, the National Maritime Coordination Centre (the Director), and the Ministry for Primary Industries. This group was chaired by the Executive Sponsor, the Secretary of Transport (Peter Mersi).

The strategy steering group was critical to my ability to make progress for a number of reasons. The regular meetings with this group and reports

back kept me honest and drove progress on the project. The meetings also kept me in close contact with Peter Mersi, as my Executive Sponsor, and other influential officials. This ensured that what I was doing continued to meet their expectations and, importantly, maintained their active support throughout. The members of this group also provided me with the principal means for resolving conflict with influential stakeholders. This greatly eased the burdens on me as they were able to take on a number of tricky conversations. Finally, the forum was kept relatively informal, which allowed for robust testing of concepts and approaches at early stages.

Project discipline

When writing a strategy document, you have to find the right balance between linear, less creative processes and more free-form creative approaches. Planning, and in particular project planning, is a necessary chore. In fact, planning at the start created the basis for creativity. Some framing was needed to allow each chunk of the problem set to be focused on and worked through. Interestingly, the project plan, once developed, was largely not referred to further. That said, the exercise of developing this document was crucial as it allowed me to think through how the project would unfold and also gave me an opportunity to test my approach with others. As General Eisenhower has been quoted as saying, 'plans are useless, planning is indispensable'.

Formal versus informal development processes

Developing a national strategy comes laden with expectations that it will weave its way through formal engagements, consultations and workshops. Used effectively, these expectations can greatly assist the development process by providing a clear series of development checkpoints, engaging the broad array of stakeholders and building confidence in the work's progress.

However, care has to be taken not to overburden the system through too many workshops and unrealistic expectations around what can be achieved. The New Zealand inter-agency environment is busy. Bandwidth is at a premium and it is very easy to exceed its capacity, either through expecting attendees to do too much or by running too many workshops. I made both mistakes! The best way to use busy people is to get them to react to more fully formed ideas. Expecting them to progress and engage from a "blank piece of paper" is not realistic.

Informal development is crucial and works best in conjunction with more formal workshops. This is where you can go from a blank piece of paper through to a more fully formed idea, suitable for more formal set pieces. The three core elements (the four pillars, maritime security system, and

LEFT
Effective use of images and illustrations is key to selling the strategy and supporting important themes. This image underscores the core concept of 'people, systems and tools'. Ministry for Primary Industries and Fiji Fisheries working together onboard an RNZN patrol vessel in the South Pacific. Image courtesy of Ministry for Primary Industries.

investment priorities) that form the heart of the strategy were largely developed through informal engagement with interagency partners. These were done huddled around white boards in breakout rooms, on scrap paper over a coffee or in a car on the way back from the Wairarapa. It is through these less formal engagements that our interagency environment finds its true strength in its ability to unlock collaboration.

The bottom line is, if you want a fully formed idea tested and communicated, then more formal engagements are the way to go. However, if you want to collaborate and creatively tackle a problem, then informal engagement can be more productive.

Tackling criticism

No plan, strategy or policy worth the paper it's written on ever got to the finish line without taking on-board criticism. I told myself from the start if I was not getting criticised, then I probably was not pushing hard enough. However, I did learn there was a big difference between constructive and non-constructive criticism (with the former to be welcomed and the latter to be ignored).

Constructive criticism can sting. While it will often require you to eat crow, it is critical to developing a robust product and has to be welcomed. At times, you may need to be deliberately provocative in papers or at meetings to try and draw this out, so that criticism can be tackled head-on (a tactic akin to deliberately trying to provoke enemy fire just so you know where it is coming from). It is possible to skate along and let the veneer of politeness and professional courtesy, prevalent in the interagency environment, shield you from this. But this approach will come back and bite you. Unaddressed (legitimate) criticism will not go away; if ignored, it will come back and result in loss of support at later stages. Tackle this head-on, draw the criticism out (informally is always best, but sometimes this will have to be done through a set piece in a meeting) and be prepared to modify your approach. This will strengthen both the product you are working on *and*, if done well, create a new ally with a vested interest in supporting something that is now only back on track because of *their* intervention.

There is a big caveat here though and that is to not be distracted by the other kind of criticism that comes from a shallow or unprepared approach. Often this type of criticism can be easily identified (it generally looks like a comment that is based on reading the headline while ignoring the content of the article) but sometimes can be harder to avoid, especially if it comes from influential stakeholders. This is why you have established a steering group and marshalled a set of key senior allies. At the point that it is clear that the criticism is not really about improving the product, agenda-driven or just flat out wrong, you (as the author) can't waste any more intellectual or emotional energy on it. The role of an effective executive sponsor kicks in and will engage (generally behind the scenes), and you can carry on, politely and firmly ignoring the non-constructive criticism.

You will not please everybody, and you have to make choices about who you ensure is kept on board throughout. This is a key part of the initial scoping exercise; mapping out your stakeholders and targeting your efforts on a carefully chosen range of high influence individuals (key ministers, CEs, influencers etc.) is critical. Without this touchstone, I would have found it next to impossible to focus my engagement and develop the core support needed to shepherd the strategy through the interagency process.

Pragmatism

Writing a strategy (or any significant policy) is a messy process. Mistakes will be made. In fact, you should *expect* mistakes to be made if you are trying something new or trying to resolve a difficult problem. The thing you should be worried about is not identifying when you have made a mistake and course-correcting early. One mistake that held up development of the MSS was an adherence to framing it as a "civil" MSS. This was influenced by the framing used in Australia and other jurisdictions and seemed to offer a way of focusing attention on the "constabulary" elements that needed attention. It also avoided, or so it seemed, getting dragged into debates that the commissioning body did not feel able to engage in. For example, the future surface combatant debate, strategic diplomacy and broader questions around military capability. However, this formulation is especially problematic in the New Zealand context as most of the "civil" effort from a platform perspective comes from "military" assets. Framing the discussion around "civil" maritime security appeared to downplay this reality.

To respond to these criticisms, I produced complex diagrams, increasingly tortured definitions and attempted various avenues to seek compromise. None of this managed to crack the issue until I landed on the most straight forward remedy: simply remove

the "civil" reference and flag that if you wanted to get into the war-fighting stuff, then you needed to read Defence policy. This essentially pragmatic approach, which gave up trying to create neat definitions between defence spheres and the civil realm and just accepted the messiness that might result, ended the distracting debate. The main mistake here was the length of time it took me to correct the initial error and the time wasted trying to resolve what turned out to be a debate mainly of academic interest.

A final point about pragmatism: the cliché "don't make the best the enemy of the good enough" is something that every budding national strategy or complex policy author should keep at the top of their mind. Government strategies have to exist in the real world, and the real world is a messy, complex and confusing place. Attempting to land on perfection, while still something to be aimed at, cannot come at the expense of making progress, as the pursuit of the perfect will come at the expense of the one resource that the current strategic environment has made extremely scarce: time.

Just write it

In the end, I found that I had fallen victim to the tendency of spending too much time on analysis rather than just writing the strategy! It took a frank conversation with a senior colleague who said that I had nothing more to find out and just needed to put my thoughts down and stop worrying about "being 100% correct". While it was a challenging conversation, it was also an empowering one. I was given full support to just "say what I thought". Over a period of a few weeks at the end of 2018 (less than a year into the project), all of the elements came together as a first draft, based on a one-page overview that had been approved. This draft was then presented to the Officials' Committee for Domestic and External Security Coordination (ODESC), and, after a bit of a grilling (akin to a shortened and sharper thesis review panel), the draft was endorsed. From this point, November 2018, the MSS remained essentially unchanged as it worked its way through the Cabinet process until eventually the final version was approved at the end of 2020, much delayed due to the pandemic.

The period of actually writing was a very productive and short span of time (2–3 weeks). The period of productivity sat at the end of a much longer period that, to the casual observer, did not have a lot to show for all of the workshops, discussions and meetings. However, while at the time I was painfully aware of the lack of progress, wheel spinning and definitional problems, looking back I can see that all of this was a necessary precursor to the burst of highly productive work that resulted in the successful delivery of the strategy to ODESC and ultimately Cabinet. I needed the final push to "get on with it", but the long period of musing, consultations and discussions was also a crucial enabler to being able to put a set of coherent thoughts to paper.

The strategy can't speak for itself

This might seem like a really obvious point, but it must be stressed: writing good policy and/or strategy is just not enough. As the earlier timeline highlighted, the actual writing and development took up much less time than progressing through officials' committees and then ministers.

Communicating in an attractive, concise and professional way is an absolute imperative. A core underpinning, of course, is to have a document of high quality that can withstand scrutiny. But people are not going to be satisfied with a wall of text. So, my final point is to stress that investment in what some people may dismiss as "pretty pictures" is actually a critical and core part of gaining support and confidence from CEs and ministers. Being able to describe the strategy on a single page is not only a great way of communicating, it also reflects the maturity of the longer document and the soundness of its logic. A good A3 generally reflects a good underlying product.

I took care in selecting images for the MSS to support the key themes (for example, the focus on interagency efforts and people-centric approaches) and ensuring that the essence of the MSS could be communicated in five minutes and supported by a one page overview. Using catchy language to articulate core concepts, for example 'people, systems and tools', was especially effective and has left a lasting legacy in how the conversation around maritime security is shaped.

Ensuring that the strategy is visually appealing, easy to digest and supported by good images is a critical ingredient that needs to be planned for from its inception and should not be regarded as a discretionary element.

Final reflections

It is crucial that you work out as early as possible what kind of strategy you are writing. This can only be done by determining exactly what your key stakeholders need to achieve. The strategy I had to write was one that was internally focused on a sector that needed a common narrative and a better sense of itself. It was not so much focused on getting out there and shaping an operating environment, rather, it had to focus on setting the conditions for effective interagency engagement to occur. Other strategies or, indeed, the next version of the MSS, will necessarily have a different focus.

Strategy writing in New Zealand has no set model or template to follow. Nor should it, as each strategy will need to be shaped to fit the unique circumstances and the particular opportunities and threats that present themselves. This can be viewed as a challenge, but it is a fact of life that gives the writer an opportunity to shape a development and approval pathway that suits the particular circumstances. Therefore, don't waste time waiting for someone to tell you what process you have to follow; just come up with something reasonable and get on with it!

As I reflect on the last three years over which I struggled to "make the sausage", it seems clear to me that the international and regional environment in which New Zealand makes its living is demanding the development of more forward-leaning and ambitious strategies, especially in the national security space. The new MSS represents only an initial step as New Zealand faces up to the challenges and opportunities of a more challenging and less benign world.

JUSTIN ALLAN

MANAGER STRATEGIC COORDINATION UNIT, NEW ZEALAND CUSTOMS

Justin joined New Zealand Customs (NZ Customs) last year following a stint supporting the National Maritime Coordination Centre and the Chair of the Maritime Security Oversight Committee (Secretary of Transport Peter Mersi) writing and delivering New Zealand's first Maritime Security Strategy.

Justin's current role sees him leading a small team charged with supporting Customs engagement with the national security system and ensuring Customs continues to meet its national security responsibilities. This involves interagency and internal NZ Custom's coordination work focused on a range of readiness and response activities. For 2020 this has focused almost exclusively on COVID-19 issues as Customs Strategic Coordination Unit continues to serve as the NZ Customs Incident Management Team and chairs the key border sector operational coordination mechanism, the Border Sector Working Group.

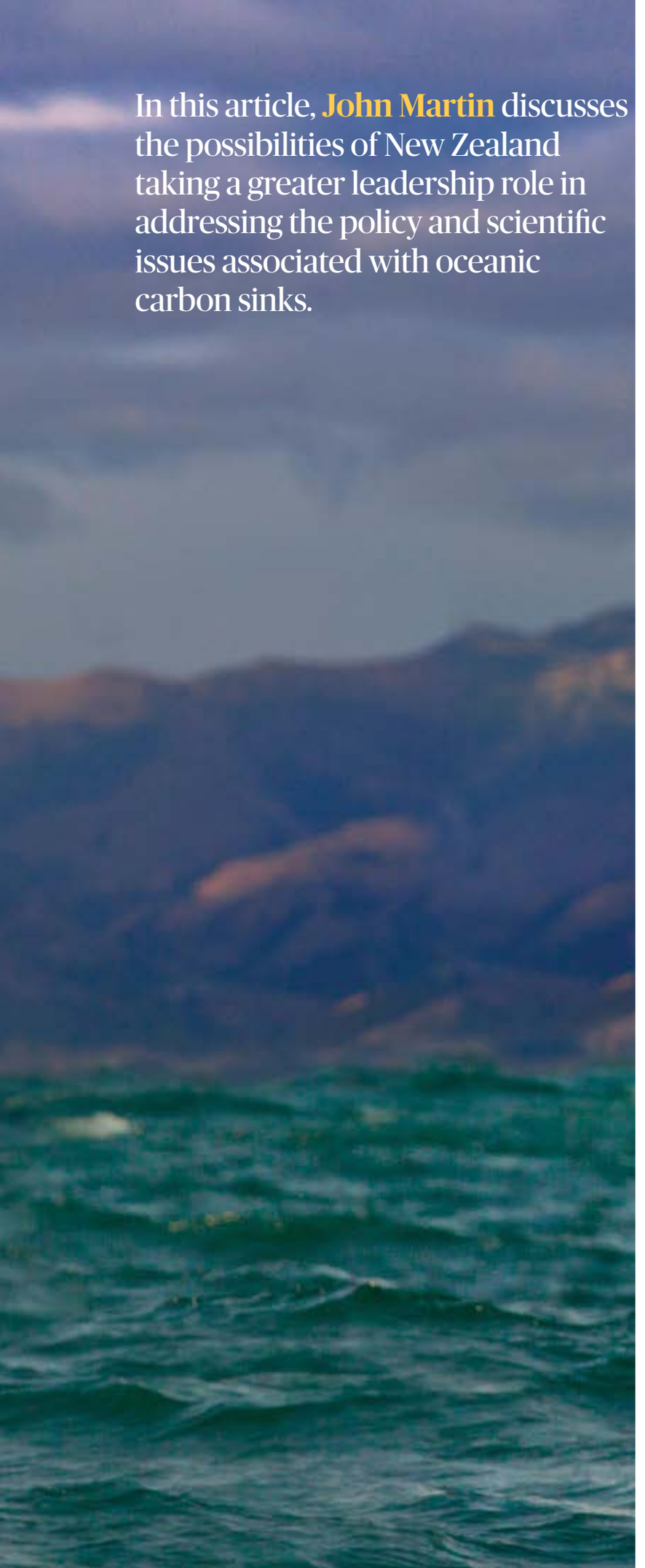
Justin has held senior advisor roles in the National Security Systems Directorate in the Department of the Prime Minister and Cabinet and the Police Policy Group. Justin also spent time working on NZDF capability projects as an analyst in Army General Staff and has served overseas with the New Zealand Police as a mentor and performance advisor (Solomon Islands) and two operational tours with the New Zealand Army (Timor-Leste and Solomon Islands).

Justin has a Master of Arts (Hons) in Strategy and Defence from the Australian National University and BA(Hons) in Political Science from Canterbury University.

IMAGE

Wandering albatross, Kaikōura, New Zealand. Image courtesy of Ernie Janes/Alamy.

NEW ZEALAND'S OCEAN ESTATE: A CASE FOR A GREATER ROLE IN ADDRESSING CLIMATE CHANGE



In this article, **John Martin** discusses the possibilities of New Zealand taking a greater leadership role in addressing the policy and scientific issues associated with oceanic carbon sinks.

Introduction

The Paris Agreement requires its signatories to approach their emission reductions efforts in a spirit of 'highest possible ambition'. With one of the largest exclusive economic zones (EEZ) in the world, New Zealand has an opportunity to be a leader in investigating the science, engineering and policy questions involved in increasing the carbon carrying and sequestration capacities of the world's oceans as a central part of the Government's emission reduction and mitigation efforts.

This article explores the possibility of New Zealand taking a greater leadership role in the questions associated with the development of oceanic carbon sinks.[1] There are, in addition, a number of other areas where the role the oceans could play in assisting the work of the Climate Change Commission and of government would benefit from further examination.

Background

The Climate Change Commission released its first draft advice on 31 January 2021.[2] The Commission finalised its advice on 31 May 2021 following an extensive consultation process. This advice was tabled in Parliament by Hon James Shaw, Minister for Climate Change, on 9 June.[3]

Following the release of the draft advice of the Climate Change Commission, the New Zealand Ocean's Foundation wrote to the Hon James Shaw, Minister for Climate Change, expressing its view that although the draft advice was timely and well researched, and although we were in complete support of the Commission in its vision to create a thriving, climate-resilient and low-emissions Aotearoa, it did not take sufficient note of the extent to which the oceans contribute to reducing our total carbon budget, or of their potential to do more.

The Foundation has impressed on the Minister its conviction that New Zealand's land and oceans are best thought of as a single system. What happens on the land affects our oceans and vice versa. To the extent that the advice of the Climate Change Commission is essentially a land-based view of New Zealand's carbon reduction possibilities, this appears to be a case of treating only half the patient. Nor can it be said, absent consideration of the role of the oceans, that New Zealand is approaching its emissions reduction and mitigation efforts in the spirit of 'highest possible ambition' as required by the Paris Agreement.

Response from the Climate Change Commission

In its final advice, the Commission included a section titled 'Feedback on what was missing.' In their discussion of advice missing from their draft report, the Commission noted that one of the themes emerging through the

1 See following pages for extracts from the Paris Agreement, the United Nations Framework Convention on Climate Change and New Zealand's National Interest Analysis that deal with the question of carbon sinks.
2 Climate Change Commission, *2021 Draft Advice for Consultation*.
3 Climate Change Commission. *Māia tonu nei: a low emissions future for Aotearoa*.

consultation process was that of 'the emissions sources and sinks associated with oceans, wetlands and biodiversity.' It then observed that notwithstanding the increasing interest shown in the oceans 'as the evidence base is still developing, robust accounting for ocean sinks is not yet possible.'[4]

Robust accounting is no doubt important but it largely misses the point. The Commission should urgently re-consider the role that the oceans can play in contributing to emissions reductions and mitigation. Government should seek to include consideration of ocean sinks and other ways in which the oceans impact on emissions in the future work programme of the Climate Change Commission.

New Zealand's ocean estate: a case for a greater role in addressing climate change

From a combined land and oceans perspective, there is a strong case for believing that New Zealand's ocean estate could play a significantly enhanced role in our overall carbon reduction and mitigation requirements.

Both the draft advice and the final advice of the Climate Change Commission acknowledge the potential for rail and coastal shipping to replace some of New Zealand's heavy transport on land. But, left largely unexplored by the Commission, is the extent to which the oceans, already our largest carbon sink, could contribute to carbon emissions reduction and mitigation without adding to ocean acidification and warming. The New Zealand Ocean's Foundation has written on this from a New Zealand perspective.[5]

New Zealand's ocean areas are some 15 times the size of our land area. They play a vital part in the water cycle and as a climate modifier. There is a growing literature around the possibility of using kelp farming to sequester carbon dioxide, as well as providing methane-reducing farm stock feed.

The oceans also have a large potential role to play in meeting our future renewable electricity generation requirements, through the construction of offshore windfarms, tidal flow generation plants and the possible exploitation of offshore geothermal fields.

To explore these issues further there will be a need for greater investment in the underlying science associated with ocean carbon sinks. New Zealand is not alone in this. A significant scientific effort is already underway in a variety of countries interested in exploring the science and climate change policies associated with ocean carbon sinks.

The authors of one such paper conclude that, on the basis of their modelling of the international market for carbon dioxide emissions to evaluate who would gain or lose from allowing for ocean carbon sinks, 'countries such as Australia, Denmark, France, Iceland, New Zealand, Norway and Portugal would gain substantially, and a large number of countries would benefit too. Current net exporters of carbon permits, particularly Russia, would gain less and oppose the inclusion of ocean carbon sinks.'[6]

Given the size of our ocean estate, there is a strong prima facie case for New Zealand to do more in joining with other countries in a large-scale collaborative effort in this area. Our South Pacific island neighbours would be immediate beneficiaries, and this provides an even stronger reason for New Zealand to put together a working coalition of countries with an interest in exploring the science and policy aspects associated with ocean carbon sinks.

Technical reference groups and the Climate Change Commission

Four different technical reference groups have already been set up to provide technical support to the work of the Climate Change Commission. There is a case for establishing an Oceans Technical Reference Group to build the Commission's capacity to consider future work in this area. Membership would be for consideration, but it would need to include representatives from the sciences, from government, and from a range of commercial interests such as shipping. The inclusion of legal and academic expertise should also be considered, as should independent think tanks such as Motu that have written on aspects of the "blue economy".

What counts cannot always be counted

In developing its advice the Climate Change Commission has stressed the value

4 Ibid.

5 See the textbox opposite for an outline of New Zealand research into kelp sequestration. Extracted from a New Zealand Ocean's Foundation blog, "Part One. Blue Carbon: The Role of Kelp Farming."

6 Rehdanz, Tol, Wetzel, "Ocean carbon sinks and international climate policy."

NEW ZEALAND RESEARCH INTO KELP SEQUESTRATION[1]

Research in New Zealand into kelp sequestration is at a relatively early stage but interest in seaweed farming is developing and a number of researchers have been active in the field.

Associate Professor Dr Nick Shears (Director of the Leigh Marine Laboratory and President of the New Zealand Marine Sciences Society) is working with postdoctoral student Caitlin Blain on research into the role of kelp forests in carbon sequestration and pH buffering.

Dr Wendy Nelson, principal scientist at NIWA and a researcher at Auckland University, is co-author of an award winning paper on 'Carbon dioxide mitigation potential of seaweed aquaculture beds (SABs)'. This paper appeared in the Journal of Applied Phycology, Issue 5, Volume 29, October 2017.

Dr Mike Packer, Senior Research Scientist in Algal Biotechnology at the Cawthron Institute, has been leading work on biomass generation by algae as a means to mitigate GHG emissions.[2]

Popular interest in the potential of seaweed

Popular interest in seaweed farming is also picking up. On Saturday 12 October 2019 Dr Marjan Van Den Belt was interviewed by National Radio's Kim Hill on seaweed farming, carbon sequestration, environmental and economic aspects and the need for government policy in this area.[3]

Kelp farming in New Zealand has an obvious future as a macro-algae concentrate for soil and plant health, as an ingredient in various specialty food products and additives, as cattle feed and for the top dressing of pasture. Whether it can ever be farmed in sufficient quantity to act as a useful adjunct to carbon sequestration efforts on land remains to be seen. In her interview with Kim Hill on National Radio recently (12 October), Dr Marjan Van Den Belt mentioned a back of the envelop calculation that apparently showed that if a way could be found to grow kelp on offshore floating platforms in New Zealand's EEZ, the amount of kelp required to offset ALL of New Zealand's greenhouse gas emissions would take up a mere 2% of our EEZ.

This sounds very doable, until we remember that the area of our EEZ is 4 million sq kms. 2% of this is a massive 80,000 sq kms, which implies a series of extraordinarily large floating arrays and an engineering challenge of overwhelming complexity and cost (the largest ship currently afloat is a floating liquified natural gas tanker, the FLNG Prelude, which is 1600 feet long and 243 feet wide). Unless these giant kelp floating arrays were somehow built out of waste plastic engineered to be semi-submersible, the carbon emissions cost involved in building a sufficient array of steel kelp platforms would probably be self-defeating.

An alternative might be to think of concentrating and farming the kelp, or alternatively some other species of a free-floating planktonic seaweed, to form a kind of New Zealand mini-Sargasso Sea in one of our ocean gyres (an area of our oceans that is effectively contained by circulating ocean currents). The South Pacific gyre is too large to be considered, but there is a clockwise circulating gyre in the Ross Sea, for example, that might conceivably be made to serve such a purpose. The waters of the Ross Sea are nutrient rich as a result of the upwelling of cold water from the depths. The area of the Ross Sea gyre is not known with any accuracy but it is probably of the order of 2-3 million sq kms, which puts it into the right range for consideration as a naturally contained but artificially induced, macro algae-based, planktonic carbon sequestration system.

The potential impact of any such initiative on sustainable fisheries and other ecosystems would need to be considered in terms of New Zealand's responsibilities as a signatory of both the Antarctic Treaty and the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR). Presumably none of the signatories to either of these Treaties would have had in mind possible future carbon sequestration requirements at the time these Treaties were originally negotiated (1959 and 1982 respectively).

1 New Zealand Oceans Foundation. "Part One. Blue Carbon: The Role of Kelp Farming."Marjan is an ecological economist and Ministerial Appointee to Lincoln University's Council.
2 See the link at https://www.researchgate.net/profile/Michael_Packer/Algal_Capture_of_Carbon_Dioxide Biomass_Generation_as_a_Tool_for_Greenhouse_Gas_Mitigation_with_Reference_to_New_Zealand_Energy_Strategy_andPolicy/.
3 The interview is available as a podcast at https://www.rnz.co.nz/national/programmes/saturday.

EXTRACTS FROM BACKGROUND DOCUMENTS

We have examined the text of the Paris Agreement,[1] the United Nations (UN) Framework Convention on Climate Change[2] and the New Zealand National Interest Analysis.[3] There appear to be two Articles in the Paris Agreement that deal specifically with the question of carbon sinks. These are Articles 4 and 5.1 below. The UN Framework Convention deals with the role of carbon sinks, including ocean-based carbon sinks, and the New Zealand National Interest Analysis also recognises the ongoing requirement, under the Convention, to protect and enhance sinks and reservoirs of greenhouse gases.

Paris Agreement

The Parties to this Agreement, Being Parties to the United Nations Framework Convention on Climate Change, hereinafter referred to as "the Convention", AGREE....

ARTICLE 4

1. In order to achieve the long-term temperature goal set out in Article 2, Parties aim to reach global peaking of greenhouse gas emissions as soon as possible, recognizing that peaking will take longer for developing country Parties, and to undertake rapid reductions thereafter in accordance with best available science, so as to achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century, on the basis of equity, and in the context of sustainable development and efforts to eradicate poverty.

2. Each Party shall prepare, communicate and maintain successive nationally determined contributions that it intends to achieve. Parties shall pursue domestic mitigation measures, with the aim of achieving the objectives of such contributions.

3. Each Party's successive nationally determined contribution will represent a progression beyond the Party's then current nationally determined contribution and reflect its highest possible ambition, reflecting its common but differentiated responsibilities and respective capabilities, in the light of different national circumstances.

ARTICLE 5

Article 5 1. Parties should take action to conserve and enhance, as appropriate, sinks and reservoirs of greenhouse gases as referred to in Article 4, paragraph 1 (d), of the Convention, including forests.

United Nations Framework Convention on Climate Change

Article 4 Commitments

1. All Parties, taking into account their common but differentiated responsibilities and their specific national and regional development priorities, objectives and circumstances, shall:

(a) Develop, periodically update, publish and make available to the Conference of the Parties, in accordance with Article 12, national inventories of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol, using comparable methodologies to be agreed upon by the Conference of the Parties;

(b) Formulate, implement, publish and regularly update national and, where appropriate, regional programmes containing measures to mitigate climate change by addressing anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol, and measures to facilitate adequate adaptation to climate change;

(c) Promote and cooperate in the development, application and diffusion, including transfer, of technologies, practices and processes that control, reduce or prevent anthropogenic emissions of greenhouse gases not controlled by the Montreal Protocol in all relevant sectors, including the energy, transport, industry, agriculture, forestry and waste management sectors;

(d) Promote sustainable management, and promote and cooperate in the conservation and enhancement, as appropriate, of sinks and reservoirs of all greenhouse gases not controlled by the Montreal Protocol, including biomass, forests and oceans as well as other terrestrial, coastal and marine ecosystems.

National Interest Analysis: The Paris Agreement

Extracts from the New Zealand National Interest Analysis

Table 4: Obligations and expectations about greenhouse gas sinks and reservoirs (Article 5)

Obligations about greenhouse gas sinks and reservoirs	What this means for New Zealand
Parties should take action to conserve and enhance, as appropriate, sinks and reservoirs of greenhouse gases as referred to in Article 4, paragraph 1(d) of the Convention, including forests.	New Zealand is already required under Article 4(1)(d) of the Convention 'to protect and enhance sinks and reservoirs of greenhouse gases.' The Agreement continues the existing obligation.

1 Paris Agreement, 2015.
2 United Nations, *Framework Convention on Climate Change*.
3 New Zealand Parliament, *National Interest Analysis: The Paris Agreement*.

of whanaungatanga—the interconnectedness of the climate and global system—and tikanga—doing the right thing in the right way.[7] Although the Paris Agreement appears not to specifically count the possibility of including ocean-based carbon sinks toward country-based 'nationally determined contributions', New Zealand should nonetheless do everything in its power to examine this aspect of the total emissions reduction story. Not to do so because it is not counted under current rules or conventions (if that is indeed the case), or not to do so because 'the evidence base is still developing [and] robust accounting for ocean sinks is not yet possible'[8] could be seen as a clear example of not 'doing the right thing in the right way'. We can do better than that.

Conclusion

In the Executive Summary of its draft advice, the Commission observed that we need to understand that all things are connected: the people, the land, the atmosphere, the oceans.[9]

The connectedness of land and oceans is the crux of the matter. Much of New Zealand's existing wealth is based on the strength of our land-based agriculture. We are a country of farmers. And of scientists. We understand as well as any country, and maybe more than most, the value of science-based investments in land-based agricultural research. Now is the time to apply this science-based approach to our oceans.

A new and significant investment in the science of oceanic carbon sinks to grow the evidence base, as well as in diplomatic and other efforts to develop new international approaches to accounting for ocean carbon sinks would be a worthwhile investment in our future.

New Zealand is well placed to foster the development of new international approaches to these issues. Both in the underlying science and in developing new approaches to the counting rules for ocean based carbon sinks.

This is not just a New Zealand issue. It is a global issue. And one on which New Zealand is well placed to lead. The world's oceans are a powerful climate modifier. Developing carbon emission policies solely on land-based issues deprives governments' of a significant number of possible response options. Neglecting the role that the oceans can play in addressing climate change is likely to have significant political, social and economic consequences over the longer run.

JOHN MARTIN

EXECUTIVE DIRECTOR, NEW ZEALAND OCEAN'S FOUNDATION

As Executive Director of the New Zealand Ocean's Foundation, John writes:

'We have one of the largest maritime estates in the world. This offers opportunities for the future of New Zealand while at the same time conferring responsibilities of stewardship and ownership.

New Zealand is the Earth's eighth and newest continent. The name of this continent is Te Riu-a-Māui or Zealandia. Apart from the small land-based portion that we make most of our living off, it is almost entirely submerged. Indeed, as much as 94% of it is under water. It follows that we are an oceans-based continent with continental-sized opportunities and responsibilities.

Our future sovereign wealth fund is under water. We need to find ways to access our oceans-based wealth if we are to continue to afford the education, health care, social security, defence, national security and other services demanded of us in a modern, low-emissions economy. And we need to do so in ways that do not repeat the environmental mistakes made on land.

It is timely that we consider the importance of the economic opportunity offered by this maritime resource. With it may rest the key to repairing the damage left by 150 years of intensive rural productivity; address the impacts of climate change and offer the possibility of developing intergenerational wealth.'

7 Climate Change Commission, *2021 Draft Advice for Consultation*, 156.
8 Climate Change Commission. *Ināia tonu nei: a low emissions future for Aotearoa*.
9 Climate Change Commission. *Executive Summary: 31 January 2021 Draft Advice for Consultation*.

IMAGE

Kelp field in the sea off the Otago peninsula in New Zealand. Image courtesy of Ernie Janes/Alamy.

BOOK REVIEWS

Edited by Commander Andrew Dowling, RNZN

In my first editorial for the Book Review pages, I said that my aim was to make the book reviews relevant, insightful and most of all enjoyable, and I am hopeful that is what this issue's three reviews achieve. It's been a busy period since the last Journal, and I've been chipping away at the never-diminishing pile of books all waiting to be read. Some of the highlights have included David Halberstam's *The Best and The Brightest*, which is the tale of how the United States became mired in Vietnam. Second was David Abulafia's magisterial new story of human interaction with the oceans, *The Boundless Sea*; a great read if you, like me, find the history of humanity and the oceans fascinating. My final highlight was a new biography, *Napoleon the Great*, by Andrew Roberts. It was this book that got me thinking about the theme of our book reviews for this edition of the Journal: how fundamentals in leadership, commerce and geography remain as true now as they ever were.

Napoleon was a tremendous leader and inspired battlefield captain but not in the maritime domain. Our first review, *Four Weeks in May*, is a very readable and touching memoir of modern-day leadership on the ocean. A book that everyone who has served on a ship, military and civilian alike, will not only relate to but enjoy.

One of Napoleon's failings was to underestimate the importance of the sea and the sinews of maritime interconnectivity. He never fully grasped that Great Britain's power was founded on maritime supremacy and that this supremacy enabled the lifeblood of commerce and, with it, Great Britain's ability to finance a coalition against him, eventually leading to his downfall. The basic premise of maritime interconnectivity has not changed and is well articulated in our second book, *The New Silk Roads*, which takes a fresh look at how the trading routes and patterns of the past remain the same today and what a vital role the seas continue to play in the success or failure of every nation's commercial prosperity.

The tyranny of geography impacts every nation much as it did in Napoleon's time. China remains hemmed in by deserts, mountains and jungle while the United States is blessed to be facing both the Atlantic and the Pacific. There is no getting away from the importance of proximity to the sea, distance to other nations or the topographical qualities of nations. Our third book, *Prisoners of Geography*, views the choices each nation makes through the prism of what each nation's geography allows it to do.

I hope one of the books reviewed or mentioned in this editorial encourages you to take the plunge. We cannot become better professionals, whatever our sphere, unless we understand the viewpoints of others, our history and the challenges of the world around us.

COMMANDER ANDREW DOWLING, RNZN

Commander Andy Dowling is the Deputy Director Naval Combat and Patrol Force in Capability Branch. He holds a Master's degree from King's College, London, in War in the Modern World (with Distinction). He also holds a degree from Massey University in Strategic Studies as well as being a graduate of the New Zealand Defence Force Advanced Command and Staff Course.

Commander Andy Dowling has served with both the Royal New Zealand Navy as Operations Flight Commander and Project Manager for the Future Naval Helicopter, and with the Royal Navy, where he was on the F-35 Project. He was the Strike Operations Officer on HMS *Illustrious* and the J5 of UK Amphibious Battlestaff. His goal for the Book Reviews is to introduce readers of the *Journal* to a carefully selected range of books from the worlds of contemporary naval and strategic literature as well as from the classical canon of war studies.

Four Weeks in May: A Captain's Story of War at Sea

David Hart Dyke
Published by Atlantic Books, London, 2008.
978-1407410029

First person narratives and compendiums on leadership written mainly by those who have seen action in the land environments seem to abound. This is no great surprise, given the seemingly endless land-based conflicts, from the former Yugoslavia through Iraq and into Afghanistan. Being able to read a book on modern naval warfare and leadership is relatively rare, and what makes this book even more special is that it is a good first person narrative. Moving and well written, *Four Weeks in May* tells the story of Captain Hart Dyke as he prepared his ship HMS *Coventry* (a Type 42 Air Defence Destroyer) for war against Argentina in 1982. It describes how he fought and ultimately lost his ship and the men under his command in the harsh environment of the South Atlantic.

The Falkland's conflict of 1982 came as a surprise to many, not least the men and women of the Royal Navy. Hart Dyke is keen to make this point. They (including himself) were emotionally unprepared; the "it'll never happen to me" syndrome, when blended with the technological challenges of a new type of ship, meant he had a considerable job on his hands to lead his team. Before *Coventry* was sunk, the Royal Navy had already lost three other ships and so, as Hart Dyke comments, '*every day demanded nerve when you had to put on a confident face as men watched you go below and wondered whether we would win the next round and survive unharmed*.'

Hart Dyke makes little to no comment on the broader strategy of the campaign and how it was fought. This is not a history of naval warfare or of the Falklands conflict. Rather it is the story of HMS *Coventry* and her Captain.

The Falklands conflict was the first time a blue water naval force had operated against an enemy air threat where missiles were the primary weapon for offensive and defensive means. There is an unfortunate irony that Hart Dyke lost his ship to a fighter bomber attack, but in doing so he unwittingly demonstrated the range of threats and counter measures needed to fight in the contemporary maritime environment. In the forty years since, the range of threats has only increased.

The portions of the book I found most compelling were those where Hart Dyke took the time to outline his views on leadership, about how he prepared his men and his ship, and how, despite his own doubts, he drove his team to give their utmost. It is obvious that he was a devoted Captain and the language he uses when he describes his leadership reflects this.

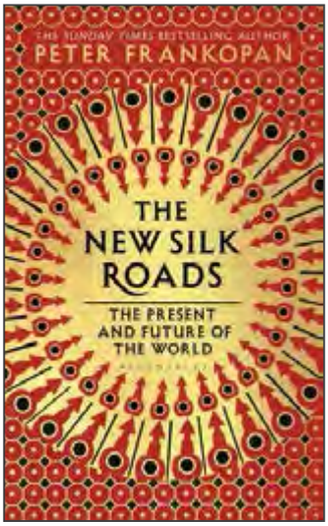
'*It is my own story as the Captain of* Coventry. *It was my privilege to lead such brave men in battle and they are, quite simply, my heroes*.'

Hart Dyke excels in not only bringing you to the frontline, the business end of naval warfare, but in portraying the vulnerabilities he felt going to war. The private moments of self-reflection and doubt are underpinned by a steely determination to keep his ship's company together and focussed. Any naval officer or rating will instantly recognise the descriptions he makes of the ship, of the people and situations on board, and most of all the feeling of being part of an effective team, something we all work for.

Modern naval combat, and how it may transpire, is generally left to the imagination and the forecasting of war games. The Falkland Islands' conflict in 1982 is as close as we can come to assessing how a peer-to-peer conflict at sea might play out in the future and how easy it is to be "off the pace". At its core, this is a deeply personal book about people, a moving account that demonstrates how vital leadership and training are in preparing for war and how, in order to be a good leader, you put yourself last and your team first.

Ultimately, the book's value lies in prompting us to ask the question: how well are we preparing our men and women to lead, fight and operate in such an environment today?

Reviewed by Commander Andrew Dowling, RNZN



The New Silk Roads: The Present and Future of the World

Peter Frankopan
Published by Bloomsbury, London, 2019.
978-1526608246

This book follows on from Frankopan's *The Silk Roads: A New History of the World*, but, instead of being historical, this new book is about the rapidly developing world in which we live. With a backdrop of fragmentation in the West and an increase in cooperation and strengthening ties in the East, Frankopan seeks to remind his audience that the world is interconnected and what happens in one part of the globe will reverberate in another.

What Frankopan does really well is illustrate how the balance of economic power is tilting eastwards, and how the relative decline of the West is having disruptive and polarising effects. Frankopan lays out the amount and extent of cooperation that has occurred in the last decade between the countries of the old Silk Road. A Eurasian Economic Union now reaches from Belarus through Russia to Armenia, Kyrgyzstan and Kazakhstan.

For me, it is the level of detail and little-known facts that I find absorbing. Facts that are important and that, as a reasonably educated naval officer, I should know, such as Iran providing nearly half of India's oil and that China is financing the Atlantic-Pacific canal in Nicaragua.

One of Frankopan's chief contentions is that so much of what goes on in the East and in Central Asia goes relatively unreported and unremarked. The world is rapidly changing and we in the West are not comprehending the extent and rapidity of the change.

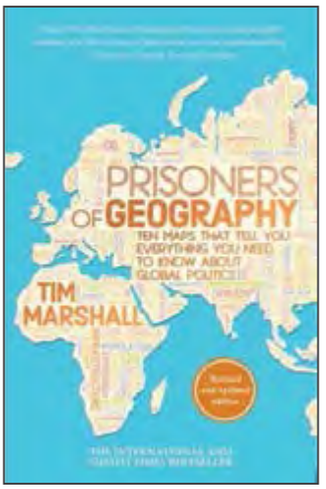
This change in the balance of power is already being felt in the maritime domain. As Frankopan reflects, this change will have immediate and large scale impacts in and around Oceania, with state actors wrestling for resources in the sea and on the deep seabed. With this contest for resources comes friction around the freedom of the seas and the need to keep sea-lanes open and trade moving.

Frankopan hardly ever uses the term "empire" in the book, but the concept is pervasive. From the Atlantic-Pacific canal in Nicaragua to the Cape-to-Cairo railway in Africa, Chinese-led infrastructure projects mirror those undertaken by Western investors and engineers 150 years ago. Frankopan quotes a Chinese commentator who points out that 'China has never been a colonial power. If it hasn't been in the past, why should it be now?' But as any student of 20th-century America knows, you don't need to call yourself an empire to act like one. And as the Chinese know best of all, you don't have to have been formally colonised to find yourself beset by numerous outside powers.

The implications of the shift in power are enormous for the maritime domain and consequently New Zealand. Frankopan may eventually be proved wrong about the extent of the shift in power from West to East since power and strength can be fickle mistresses. But what is happening in the countries along the old and new silk roads—China, India, Russia, Central Asia and the Middle East—will be one of the many forces that shape the future, including our own.

Reviewed by Commander Andrew Dowling, RNZN

RIGHT
Lt Jennings, as helicopter observer, is seen sitting in the left hand seat of a 6 Squadron Seasprite helicopter.



LIEUTENANT HARRY JENNINGS, RNZN

LT Harry Jennings is a Seasprite helicopter observer currently posted to 6 Squadron, Whenuapai at RNZAF Base Auckland. He completed basic observer flying training at RAAF Base East Sale in 2016, flying KA-350 King Air, before returning to New Zealand to convert to the SH-2G(I). LT Jennings finished operational conversion in 2018 and posted to C Flight where he served for two years as the embarked flight observer on HMNZ Ships *Te Mana*, *Wellington* and *Otago*. In 2020 he completed helicopter warfare instructor course at HMS Collingwood before returning to 6 Squadron as the training flight observer instructor.

Prisoners of Geography: Ten Maps That Tell You Everything You Need to Know About Global Politics

Tim Marshall
Published by Elliott and Thompson, London, 2016.
978-1783962433

Do people regularly consider why China's influence and physical presence is expanding so rapidly, and how and why the Americans have naval bases in Guam, Japan, the Philippines and Bahrain? Tim Marshalls' *Prisoners of Geography: Ten Maps That Tell You Everything You Need to Know About Global Politics* makes the argument that countries and the decisions they make are a consequence of their geography.

While this book may not change your political views, it may change the way you look at a map of the world and your understanding as to why certain countries choose to behave in certain ways. Marshall is a British freelance reporter with a wide range of experience covering conflict across the globe. His reporting attributes stand out, with a fast pace and machine-gun delivery of information that makes for an exciting read.

It is easy to forget that while Russia is an enormous country, spanning no less than eleven time zones, it has no access to a warm water port. *Prisoners of Geography* discusses the significance of the Russian annexation of Crimea through its desperate need to gain access to the sea. The strategic value, both commercially and militarily, of access to the oceans meant, in Marshall's view, that the annexation of Crimea was just a matter of time. Marshall paints many of the cause-and-effect choices nations have to make on the basis of their geographical attributes alone.

The book reminds the reader of many basic geographical facts. For example, that the African continent is far larger than is portrayed on a typical Mercator projection, being large enough to hold the United States, Greenland, India, China, Spain, France, Germany and the United Kingdom, while still having room for most of Eastern Europe. Marshall reminds and encourages the reader to view certain facts of geography in different ways. He describes how rivers are incredibly strong drivers or inhibitors of socioeconomic development, depending on their characteristics. As an example, the rivers of Europe being extremely navigable are ideal for trade, as too are those of the United States, where the Mississippi provides navigable waterways to support transport, trade and energy. Contrast this with Africa, where the Nile and the Congo—broken by frequent waterfalls, jungle disease and a hostile climate—are much more limited in value. Or consider Japan, which has short, jagged rivers that are barely navigable and offer little trade or transport prospects.

Marshall's argument is persuasive overall. The book is balanced and logical. It makes very good sense in the way it draws together its conclusions based on time, space, geography and political choice. The book concludes with a quotation that reminds us to face global problems not as countries, nations or states, but as humans. '*When we are reaching for the stars, the challenges ahead are such that we will perhaps have to come together to meet them: to travel the universe not as Russians, Americans or Chinese but as representatives of humanity. But so far, although we have broken free from the shackles of gravity, we are still imprisoned in our own minds, confined by our suspicion of the "other", and thus our primal competition for resources. There is still a long way to go.*'

Reviewed by Lieutenant Harry Jennings, RNZN

NEXT ISSUE AND GUIDELINES FOR CONTRIBUTORS

Note: *With the sad passing of our General Editor Dr Lance Beath just before the publication of this second volume of the Journal, the team that worked with Dr Beath on the Journal has elected to keep this page just as it was written by him in July 2021. There is one exception where we have replaced Dr Beath's personal email address.*
The new email address for the Journal is: rnznjournal@gmail.com.

Articles which are in prospect for the December issue of the Journal include an analytical piece on the Defence Assessment 2021 and its conclusions; a special feature article by the New Zealand Army on how it sees its maritime futures; a piece on the Government's new ocean vision; developments in the New Zealand information warfare domain; the work of the New Zealand Joint Force Headquarters; an analysis of Chinese grand strategy; an article on the return of the Royal Navy to the Indo-Pacific; the future industrial requirements of a modernising fleet; New Zealand's maritime interests; the history and future direction of the Defence Technology Agency; and a historical piece on enemy action in New Zealand waters in both world wars.

Continuing the theme established in the first two volumes of the Journal where we have worked to illustrate the impact of grand strategy on maritime thinking, we intend to publish a prize-winning essay from the US Naval War College on the influence of geography on great power competition. Depending on progress, we also hope to be able to publish preliminary high level conclusions emanating from the maritime domain team in the Ministry of Defence who are conducting preliminary studies to help define the composition of the future fleet.

Articles submitted for publication in the Journal should normally not exceed 4,000–4,500 words in length. Shorter articles and commentaries are always welcome. References, where included, should be carefully checked for accuracy and relevance and, for online references, include the date accessed. Accompanying illustrations must be high resolution (300 dpi minimum) and in colour wherever possible.

The next issue of the Journal will be published in December 2021. The close-off date for contributions to Vol 2 No 2 is Wednesday 1 September for working drafts and Wednesday 15 September for final drafts. Intending contributors are encouraged to consult the editor as soon as possible to help shape ideas for their articles and obtain advice on the suitability of topics and prospects for publication. In some cases, where final drafts remain outstanding on the dates indicated, it may be necessary to hold off publication until June 2022 or later.

The general address for correspondence relating to the Journal is rnznjournal@gmail.com. If your interest is to do with the Book Reviews, Commander Andrew Dowling is more than happy to take your ideas for a book review. He can be contacted at Andrew.Dowling@nzdf.mil.nz.

I look forward to welcoming you all back for the next issue of the Journal.

Lance Beath
General Editor

RIGHT ABOVE
Horatio, Viscount Nelson, K. B. Vice Admiral of the White. Oil on canvas. Lemuel Francis Abbott 1797. Many versions of this portrait by Abbot exist but this is the version that was in the possession of Lady Nelson.[1] Image courtesy of Alamy.
2021 is the 250th anniversary of Nelson joining the Royal Navy. In the December issue of the Journal, to mark the anniversary, the Editor hopes to offer some insights on the nature of leadership as seen by Nelson. This will be based on a reading of Nelson's correspondence with the Admiralty and other notable figures in Nelson's life.

1 Walker, *The Nelson Portraits*, 30.

RIGHT BELOW
Colin C Wynn *'Searching for German Raiders'*. Oil painting of HMS *Leander* at Campbell Island in the opening months of the Second World War. Image courtesy of the Torpedo Bay Navy Museum/ National Museum of the RNZN, Devonport.

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