Fusing Intelligence and Strategy Capabilities: The MIQ Experience

Authors: Harriet Kay, Paul Keymer, Sarah Mackey, and Shae Vickers

FUSING INTELLIGENCE AND STRATEGY CAPABILITIES: THE MIQ EXPERIENCE

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New Zealand's Managed Isolation and Quarantine ('MIQ') was a rapidly established, distributed isolation and quarantine capability, designed to maintain the restricted international movement of people into New Zealand between April 2020 and August 2022 and to provide some of these services to those in our communities. The rapid establishment of this complex function (in addition to the fast-changing COVID-19 landscape) led to the requirement for quick operational decisions, with strategic impacts, often being made with limited information. The MIQ Future Strategy Team (FST) was established in August 2021 to enhance MIQ leadership's ability to make robust future-focused strategic decisions. It successfully achieved this by (uniquely) establishing an intelligence and strategy 'fused' capability, delivering integrated planning and predictive analysis in a manner not achievable via a single discipline. Its success demonstrated the compound value of fusing complementary business functions and adopting intelligence functionality within business environments unfamiliar with these concepts. This article explores how this was achieved, conveys lessons identified through this journey and describes three case studies which highlight FST outputs.

The MIQ Journey

In response to the emergence of a highly infectious respiratory virus in Wuhan, China in late 2019 and its subsequent global spread, the World Health Organization (WHO) declared the novel coronavirus (COVID-19) outbreak a pandemic on 11 March 2020.[2] From 10 April 2020 until 28 February 2022, almost all arrivals, including New Zealand citizens and residents, were required to be isolated or quarantined in Government-managed isolation and quarantine facilities and to submit to medical testing.[3] In August 2020, the Director-General of Health directed Medical Officers of Health to isolate all new confirmed cases of COVID-19 at a location (such as a dedicated facility) determined by the Medical Officer of Health.[4]

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1   The authors were members of the Ministry of Business, Innovation & Employment's MIQ Future Strategy Team (FST) (see endnotes for author profiles). This article contains the views of the authors and does not necessarily reflect the views of any organisation they have been, or are now, associated with.

New Zealand set up an MIQ[5] system as part of a suite of public health measures implemented in response to the COVID-19 pandemic.[6] MIQ was an unprecedented undertaking for New Zealand, borne out of necessity to protect people from a largely unknown, rapidly evolving virus. The MIQ system encompassed many aspects – a chain of hotels, a bus company, an air charter service, a healthcare provider – with 32 hotels and more than 4,500 workers involved in ensuring MIQ functioned effectively at its peak. Despite its well-publicised limitations, MIQ was successful in protecting New Zealanders from the worst impacts of COVID-19, particularly at the outset of the pandemic in the absence of any COVID-19 vaccine. MIQ helped nearly 230,000 travellers return safely to New Zealand and supported more than 5,000 members of the community in quarantining and isolating.[7]

With all MIQ facilities now decommissioned, an account of the work of the FST provides valuable insights into how to set up an effective intelligence and strategy fusion function in a fast-paced, constantly changing environment.

Why the need for a Future Strategy Team?

FST was not the first intelligence-based capability to service MIQ. During the initial crisis phase, MBIE seconded a small number of intelligence personnel to support MIQ.[8] The impressive outputs of this small group proved the need for a similar enduring capability - they conducted indepth research and predictive analysis, when no other resource was available for this work. Moving beyond the initial crisis phase of MIQ's COVID-19 response (and after intelligence practitioners left MIQ), MIQ leadership recognised the value of intelligence, but also knew they needed longer term strategy development, strategic advice and better situational awareness. A dedicated capability was needed to achieve this - one that was air-gapped from the pressures of MIQ operations. A more detailed list of requirements which formed the basis of many FST tasks:

1. At the time it was likely that MIQ would endure for an extended period and therefore the evolution of MIQ operational design needed future proofing (tested against likely future scenarios; for example, possible variants of concern).

2. MIQ combined public-private sector organisations and functions to deliver effect in a manner not previously experienced. This made it important for MIQ to continually evaluate its operational delivery, ensuring it was commensurate with the risk environment. FST enabled this self-evaluation.

3. There was no ability to conduct trend or in-depth analysis on factors which impacted MIQ's operations.

4. FST was also tasked with assessing global best practice and providing assessment on the implication for MIQ.

5. Finally, there were specific projects and all-of-government initiatives which required strategic systems insight and analysis which MIQ needed to contribute to.

What was the Future Strategy Team?

When? FST was established midway through the MIQ journey in August 2021. FST leadership was initially recruited and began delivering strategic advice to MIQ leadership and wider government from September 2021. Advice was provided on project work (specific ongoing tasks) and through ad hoc requests. The remainder of the team was recruited between December 2021 - January 2022. FST had a very short period (December 2021 - January 2022) to develop and refine Standard Operating Procedures (SOPs) and product templates, before it began delivering formal outputs. The team's previous intelligence and strategy experience - augmented with MBIE Intelligence support - was able to finalise these processes quickly. In January 2022, FST began producing regular intelligence reports in response to MIQ leadership requests, by February 2022 it was delivering weekly intelligence briefs to MIQ leadership and cross-agency groups. From March 2022, it was leading the strategic rationale for New Zealand's future quarantine capability.

Who? FST comprised a team manager, a strategic advisor, a principal intelligence analyst, two senior intelligence analysts and two senior advisors. The intelligence team's backgrounds were deliberately varied - having experience from a variety of New Zealand's Central Government agencies - including New Zealand Defence Force, Ministry of Foreign Affairs and Trade, Ministry of Primary Industries, New Zealand Police and Department of Prime Minister and Cabinet. Intelligence specific expertise incorporated operational-to-strategic level intelligence analysis, intelligence collection across several disciplines, governance, tasking and coordination, intelligence leadership and quality assurance (of intelligence processes and outputs). Additional skills included strategy development, an appreciation of data analysis, policy development and stakeholder engagement. The intelligence analysts were hosted by MIQ's data function and 'permanently' seconded into FST. Advantageously, this meant they were onboarded by the data function which continued to provide a 'homebase' for understanding the data landscape., created further functional balance across the team and meant FST could readily draw on data analysis as required." On arrival, the two senior advisors complemented FST skills with significant project and programme management, and communications experience. The mix of knowledge proved highly effective - FST was able to create an environment which valued and leveraged these skills in a targeted way to create robust solutions. For example, the scientific background of one of the senior intelligence analysts was critical toward the success of Case Study One.

How? FST's operating model (Figure 1 refers) was experimental and evolutionary. It was not the result of a known concept (that the team were aware of) as there was no playbook for the provision of strategic advice to a quarantine capability responding to a global pandemic. Much like MIQ itself, FST established the baseline components of its function and through continuous improvement, refined its model to service both anticipated (proactive) and unique (reactive) requirements.

FST tasks were primarily delivered by the intelligence function in a 'non-traditional' or 'intelligence adjacent'[9] manner - where strategic advice was the end game, but intelligence the vehicle used to achieve it. Intelligence was particularly important at the start and end of a task request. At the start, it offered situational understanding (insight into why an issue had transpired) and future focused assessment (foresight into potential futures). At the end, it offered decision validation - had the strategic advice or planning remained effective or resulted in the desired impact?

Initially, intelligence techniques were used in a traditional way within FST. Progressively, it became apparent these techniques were highly effective at facilitating system-wide stakeholder engagement. Stakeholders enjoyed the interactive (intelligence) methodologies used. The results of using these methods then contributed to further strategic work and outputs (Case Study 1 refers).

A key aspect of any intelligence system is the tasking and coordination of requests for service ('intelligence requirements'). FST established an informal mechanism for tasking and coordination which worked well, but relied on close customer relationships, credibility and trust (which could only be developed over time). Customers were generally time poor and unable to clarify scope in detail. So understanding the intent behind the request was crucial, especially as some thematic tasks evolved over time.
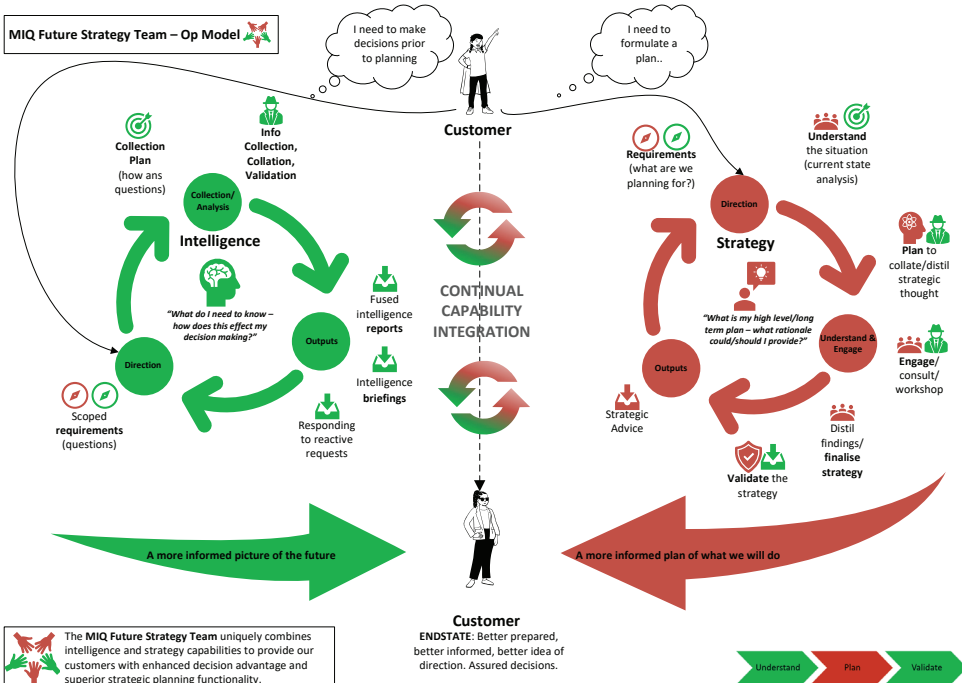

Figure 1: FST Operating Model

Challenges

Despite enjoying MIQ sponsorship, other parts of MIQ were less familiar with intelligence. Intelligence (as a capability) is fraught with prejudice generally caused by misunderstanding. Defining FST as 'intelligence-led' was therefore problematic and necessitated an early focus on building intelligence awareness, credibility and dependability. Within MIQ, building this awareness was significantly easier due to the supportive leadership.

Another notable challenge was the split focus of initiating the FST capability whilst designing, developing and delivering outputs. The adopted approach was to continue that which worked well and discontinue that which did not. This approach was acceptable in the MIQ environment, but may have been harder to achieve in other (more established) organisations. Due to the pace of MIQ, FST products which worked well were quickly identified and resources dedicated to evolve them appropriately.

Finally, the tempo of the MIQ work environment and the fast evolving health and political context took their toll on the team: lockdowns were unpredictable and severely impacted New Zealand's workforce, remote working was developing at pace but had limitations, the FST was physically dislocated (Wellington and Christchurch), 'Reconnecting New Zealand' was planning for the reopening of New Zealand's international borders (which impacted MIQ planning considerably) and towards the end of FST's tenure the easing of COVID-19 restrictions across New Zealand stressed all workforces, as it increased the likelihood of people catching COVID-19.

What went well?

FST enjoyed a supportive sponsor from its establishment. The (then) Associate Deputy Secretary of MIQ was influential, championed FST establishment from the outset and was a believer in the emerging FST concept. As in most business areas, senior level support is a critical success factor. It meant FST enjoyed relative autonomy to recruit the skills required to generate a fusion cell and to continually evolve in line with an intent to provide MIQ leadership with better strategic advice. The FST Manager hired the mix of skills, experience, and personalities they thought would best generate fusion success.

Compiling a team with the right attitude was a significant factor in its success. Team members were deliberately self-starters and highly motivated by a desire to make a positive difference for New Zealanders. The work environment was intense so dedicated, pragmatic, flexible and resilient team members (with a good sense of humour!) were required to ride out ambiguity, rapidly shifting direction and the need to establish cross-functional relationships at pace. Analysts with relationship management experience and those who had thrived in operationally-focused environments were selected. FST needed people who could work well under pressure and achieve a fast turn-around

on requests. Typically, intelligence analysts tend to be introverted but FST were more on the extroverted side – which was useful for the significant engagement and consultation required within MBIE and across Government. Once FST found its strategic feet, the team engaged widely with public and private sector stakeholders.

MIQ operated on the understanding that due to the fast-moving and unique environment mistakes were inevitable and rather than cultivating a blame culture, a learning culture was established. This was a unique environment for FST to operate in and meant they could experiment and innovate. Care was taken to promote collaboration and achieve a highly supportive environment - which fostered resilience. The team's strengths were identified and utilised. Projects were often worked on as a team, requiring close collaboration and connectivity. Catch-ups and regular interactions meant the team were comfortable with each other. As the FST Manager was geographically dislocated from the team, a high-trust environment was necessary and worked well.

From the outset, it was evident that fusing intelligence and strategy functions enabled greater innovation in developing products and solutions for a complex set of business requirements. By using intelligence analytical methodology for problem sets not usually associated with intelligence (for example, case study one) predictive products were more defendable. Strategy-focused analysts were able to provide a greater understanding of how a product would feed into MIQ's decision making processes. Thus, each skillset was able to inform the work of the other, generating a force-multiplier for product quality and utility (as per Figure 1).

FST had relative freedom to design fit-for-purpose templates for intelligence products,[10] including presentations, A3s, charts, intelligence notifications and the visualisation of strategic advice. This was unique (most organisations with intelligence functions have established intelligence processes and products[11]) and allowed FST to use their prior knowledge to create truly effective, bespoke products which met the needs of customers.

FST was time limited. It would only remain whilst MIQ was a justifiable, proportionate and necessary part of New Zealand's COVID-19 response. This temporary nature had some positive impacts, contributing to FST product and process innovation; but it also increased the importance of recording FST's analysis and rationale – the work needed to stand the test of time in the face of likely future reviews and audits. Conversely, no one knew how long the COVID-19 pandemic would endure, so there was always the chance that FST would continue into the future.

FST was able to lead cross-sector COVID-19 analysis and assessment. FST was required to deliver this work from an MIQ perspective and offered other agencies to participate. It transpired that it was valuable work from an AoG perspective and engagement levels

were high. The team led all-of-Government scenario generation work ahead of the anticipated Omicron outbreak in New Zealand. Capitalising on significant interest, FST led sessions with a wide range of agencies. The workshops generated understanding on how agencies might respond to Omicron, agency capabilities and limitations, and how the system was pulling together on COVID-19. They enabled FST to produce artefacts of cross-government utility and provided agencies with future-focused assessments that they lacked the capacity to produce. The fact other agencies sought out FST products underlined the genuine demand for quality predictive analytical work.

Close relationships with customers (predominantly within MIQ) enabled strong (often inherent) understanding of scope and the ability to deliver products which met expectations. As mentioned, the dynamic operating environment of MIQ required a high degree of FST flexibility, as tasks could change quickly and almost always required short turn-around times. Trust developed quickly between FST and MIQ leadership, especially following the introduction of weekly intelligence briefings. This direct contact between FST intelligence analysts and MIQ leadership expedited FST credibility and resulted in regular reactive intelligence requirements.

Analytical and visual software was a force multiplier for the team. The team used software like Visio and Mindmanager to design graphics and brainstorm scenario assumptions and drivers (part of the scenario generation process). When it came to workshop facilitation, both Mural and Miro were critical enablers. The ability to virtually whiteboard during facilitated sessions was game changing and optimised time and outputs. This connectivity allowed for multiroom workshops, highly efficient ideation and collaborative analysis and nationwide participation during periods of lockdown.

What could FST have done differently?

Due to the fast-paced nature of the work in MIQ, the evolution of the team was organic and often self-directed. As with many intelligence functions, there are always aspects that could have been better. Because the FST was established quite late on, the opportunities to work closely with MIQ's data analysts were limited as MIQ moved from a data-centric border function to a futures planning function. In addition, beginning to brief LT earlier and linking our intelligence input to their decision outputs would have helped us identify the specific impact of our intelligence products and analysis: as it stands, it is difficult to provide an objective measure of the impact of our work on decision-making. This paper advocates for the inclusion of an FST function (or similar) well ahead of any comparable incident response, ensuring contextual situational awareness is identified and maintained at the outset. This will ensure a broad and evidence-based approach to operational decision making is initiated.

Case studies

Explanation of three case studies of FST products now follows. The intent is to highlight how the points made above resulted in FST outputs.

Case Study One - scenario generation into tabletop exercise

The FST was asked to test New Zealand's readiness for a future unknown human infectious disease threat. To achieve this it developed a series of feasible infectious disease scenarios and used these to examine how New Zealand's public and private organisations would respond, through two facilitated tabletop exercises (TTX). This case study was perhaps the best example of how traditional intelligence techniques were used to produce 'intelligence adjacent' outputs.

Scenario Generation[12]

Situating the scenarios in March 2025 in a post-COVID-19 New Zealand, FST generated a 'start-point' narrative to situate New Zealand in a specific point in time (March 2025). Concurrently, they developed five hypothetical diseases according to a range of disease characteristics (including: incubation period, fatality rate, R number and location of origin) which were based on exaggerated versions of existing diseases, such as Ebola and Dengue Fever.[13]
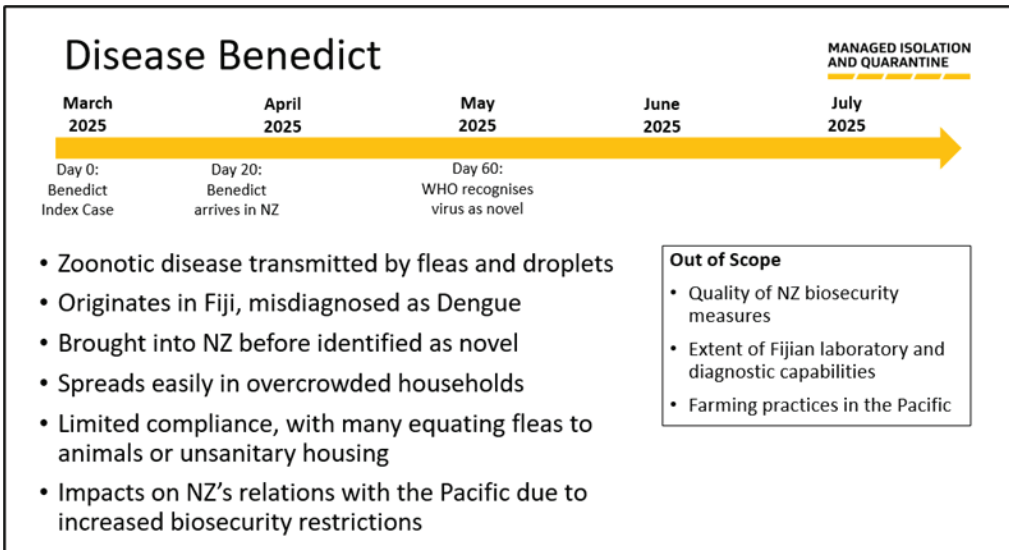
Figure 2: *Disease Benedict*

Prior to the facilitated scenario generation workshops, FST had distributed the 'start-point' narrative and associated infectious disease scenarios. FST then convened NZ Government intelligence practitioners to build the narrative around the infectious disease scenarios. An initial silent brainstorm was followed by smaller breakout groups to understand the likely impact of each disease against six environmental factors (derived from STEMPLES[14] – we considered the Health System, Public Health, the Economic and Geopolitical situations, Technology advancers and Social licence).

To fully develop a scenario narrative for each disease and to ensure the greatest variation across stated environmental factors, each disease was assigned a 1-5 ranking for each environmental factor. In such a way, the collective disease narratives represented maximum variety and resulted in better subsequent analysis of the impacts of each disease on New Zealand. Each disease narrative was given a name, a summary of Disease Benedict is presented in Figure 2.

Tabletop Exercise

The scenarios were designed as the start point for the TTX. They were a series of feasible futures to discover how a national response to a future human infectious disease threat would be coordinated and implemented. As each scenario played out through the TTX process, several complicating events were introduced to stress-test the system. Each required the ongoing involvement of multiple agencies, but each also tested whether quarantine might be part of the solution. Intended exercise outputs included: the identification of risks, threats and opportunities as part of this national response, a start point for subsequent Investment Logic Mapping[15] and an indication of components of any future National Quarantine Capability. Two TTXs were held – one for public sector participants (selected for their role within the broader New Zealand response system) and one for private sector participants (who had been involved in New Zealand's COVID-19 response). The focus was on response actions and therefore minimal causal analysis was allowed. This also ensured no critique of the New Zealand Government System during the TTXs. The TTX workshops highlighted existing gaps in New Zealand's pandemic response, identified systemic considerations for forward planning, and demonstrated the overlap of expectations between the public and private sector as well as differences in approach. Figure 3 captures the TTX outcomes, system considerations for use as a series of planning requirements.

Case Study Two – tracking indicators and warnings

"Indicators are observable phenomena that can be periodically reviewed to help track events, spot emerging trends, and warn of unanticipated changes… Indicators can be monitored to obtain tactical, operational, or strategic warnings of some future development."[16] The generation and monitoring of indicators is a particularly challenging, but highly valuable part of intelligence analysis.

MIQ leadership were keen to maintain situational awareness of both the international COVID-19 situation, given the potential for new variants of concern or urgent demands for MIQ spaces, the domestic health situation and MIQ system pressure points. The FST team identified the value of tracking indicators and warnings, and developed a list of key factors to track as New Zealand attempted to contain the spread of COVID-19. This allowed the team to monitor any significant changes in New Zealand's overall COVID-19 response which had the potential to impact MIQ operations.

The team developed the list of indicators by identifying key overarching themes (such as overall health system capacity, domestic COVID-19 case numbers) and then compiled lists of specific indicators and warnings likely to have a material impact on New Zealand's COVID-19 response. While MIQ capacity was a key focus for our audience, the team found it was necessary to track a range of indicators relating to New Zealand's wider system response, given MIQ did not operate in isolation (Figure 4 refers).
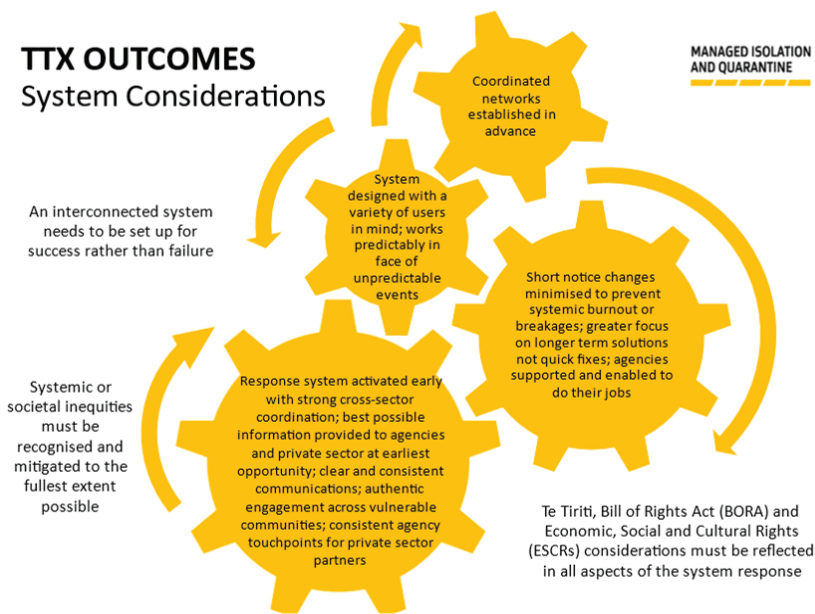

Figure 3: TTX Outcomes

To future-proof this work, data sources were recorded to enable people reviewing MIQ processes in future to clearly see what data actually existed at the point in time when assessments were made, and any limitations and caveats on the data based on its source (Figure 4 also refers).

The list of indicators and warnings was tuned to align with categories from the FST-led, All-of-Government, Omicron scenario generation work. The three scenarios generated in these workshops resulted in: 1) New Zealand moving towards a situation where COVID-19 is contained and therefore its impact is limited; and 3) one in which COVID-19 was having a catastrophic impact on New Zealand (Figure 5 refers). Aligning the indicators and warnings (as defined data points) to these scenarios allowed the team to track progress towards these scenarios. This was used to brief MIQ leadership on a weekly basis (Figures 7 and 8 refer).

One challenge was finding a robust way to measure and assess more qualitative indicators, such as overall levels of inequity in New Zealand's COVID-19 response (Figure 6 refers). While quantitative factors like the disproportionate numbers of hospitalisations and deaths for specific ethnicities, or vaccination rates in vulnerable groups, can be used to provide some insight, measurable data points were somewhat meaningless without being placed within their wider context. This meant analysing and fusing qualitative factors with quantitative factors. On the qualitative front, FST sought to explore the underlying reasons for disparities, given there are a range of socioeconomic and demographic factors and issues such as long-term underlying health conditions, lack of access to healthcare and testing, overcrowded housing, and general mistrust of government institutions, which all have a contributory impact. Resultantly, many of the equity-focused indicators and warnings developed over time, as FST developed an increased understanding of how and why inequity exists and the various ways in which New Zealand's COVID-19 response might be exacerbating inequities within vulnerable communities. As all factors were reliant on the robustness of underlying data, our assessments also changed over time as more studies and reports on inequities in different groups were published.

CATEGORY	INDICATORS	WARNINGS	DATA SOURCES
DOMESTIC SITUATION	COVID-19 case numbers (community and border)	• Rise in number of cases detected in the community and/or at the border • Rise in number of cases within vulnerable communities • Rise in number of travellers/positive cases from countries with high rates of COVID-19 • Upcoming public holidays, school holidays, other sporting or cultural events etc with the potential to increase transmission of COVID-19 due to the number of people seeking to travel to and/or throughout New Zealand	• MoH website • MoH Daily SitRep • MoH COVID-19 Surveillance Reports • MIQ IDI Weekly Snapshot • Open Source, media reports
	Number of close contacts	• Numerous potential super-spreader events and/or positive cases with extensive networks of close contacts • Inability of contact tracers to keep pace with surge in cases • Inability of system to maintain and distribute an up-to-date list of locations of interest	• MoH website • MoH Daily SitRep • MoH COVID-19 Surveillance Reports • Open source, media reports
	Indications of undetected transmission	• COVID-19 detected in wastewater testing in areas of the country with no known positive cases • Increased numbers of people with COVID-19-like symptoms and/or other colds, flus, viruses etc circulating in the community • Instances of symptomatic individuals choosing not to get tested for COVID-19	• MoH website • MoH Daily SitRep • Open source, media reports
	R number	• Goes above one • Stays above one	• MoH • Our World in Data
	Vaccination rates	• Slow booster uptake • Slow paediatric vaccination uptake • Gaps in vaccine coverage in certain geographical locations or within vulnerable communities • Growth of anti-vaccination movement, anti-vaccination protests etc	• MoH website • MoH COVID-19 Surveillance Reports
HEALTH SYSTEM CAPACITY	Number of hospitalisations	• Rise in number of cases requiring hospitalisation • Staff shortages • Shortages in the supply of PPE or other medical equipment needed by hospital staff • Lack of, or shortages in the supply of, medication to help treat COVID-19 cases	• MoH website • MoH COVID-19 Surveillance Reports • COVID-19 Response Weekly Reports to the Minister
	Hospital ICU bed, ventilator and workforce capacity	• Rise in cases requiring ICU care and/or ventilators, nationally or in specific regions • Staff shortages • Outbreaks of other illnesses (e.g. measles or influenza) creating pressure on the health system	• MoH website • MoH Daily SitRep • MoH COVID-19 Surveillance Reports
	Contact tracing capacity	• Inability of contact tracers to keep pace with rise in cases • Inability of system to maintain and distribute an up-to-date list of locations of interest	• MoH website • COVID-19 Response Weekly Reports to the Minister
	Testing and laboratory capacity	• Shortages in supply or issues with the distribution of RATs or PCR tests • Delays in notifying people of test results • Testing stations and/or laboratories unable to keep pace with demand • Staff shortages	• MoH website • COVID-19 Response Weekly Reports to the Minister
MIQ AND SUPPORTED ISOLATION	Number of community cases and close contacts requiring transfer into MIQ	• Rise in cases within in vulnerable communities and/or increase in numbers of individuals unable to safely self-isolate • Shortage of MIQ and/or Care in Community isolation and quarantine rooms	• MIQ - IDI
	Number of travellers required to stay in MIQ	• Rise in positive cases detected at the border • Increase in number of travellers arriving in New Zealand required to stay in MIQ • Increase in number of airlines travelling to New Zealand that are prepared to accept unvaccinated travellers • Increase in length of time travellers are required to stay in MIQ	• MIQ - IDI • Customs • INZ • Airlines
	Availability of MIQ, supported isolation options and wraparound services	• Hotels and other facilities reluctant to extend MIQ or supported isolation contracts • Hotels and other facilities reluctant to move from being isolation to quarantine facilities • Lack of resource to detect and/or prosecute any breaches of self-isolation requirements • Shortages in supply of PPE for MIQ and community-supported isolation and quarantine staff	• MIQ
	MIQ and supported isolation workforce capacity	• Staff shortages • Difficulties in recruiting and maintaining MIQF workforces longer-term	• MIQ
POLICY SETTINGS	Alert levels and restrictions	• Changes to the overarching alert level system • Changes to alert level • Amendments to public health restrictions (e.g. mask-wearing requirements, social distancing etc) and COVID-19 mitigation measures • Lack of clear, consistent messaging around changes to alert levels or settings	• Govt media releases • Media reports
	Border settings	• Implementation of Reconnecting New Zealand (RNZ) • Changes to RNZ timeframes • Changes to isolation and quarantine requirements for travellers (e.g. length of stays, use of self-isolation) • Domestic or international developments which result in a reinstatement of the list of Very High-Risk countries and/or a pause on accepting returnees from a specific country/ies	• Govt media releases • Media reports • MIQ
	Vaccine mandates	• New Zealanders disregarding vaccine mandates • Vaccine mandates not being enforced by businesses • Businesses experiencing difficulties retaining staff due to vaccine mandates	• MoH • Media reports
	Economic support for citizens impacted by COVID-19	• Decrease, withdrawal, or other changes to the financial support provided to businesses and individuals negatively impacted by COVID-19	• Govt media releases • Media reports

Figure 4: *List of COVID-19 Indicators and Warnings [this page and next].*

| Category	Indicator	Details	Sources
PUBLIC COMPLIANCE	Adherence to COVID-19 restrictions	• New Zealanders disregarding COVID-19 mitigation measures such as social distancing, QR scanning, mask wearing • Self-isolation requirements not being followed	• MoH • NZP • Social media • Media reporting
	Public sentiment and any significant dissent or protest	• Increased amount of disagreement or dissatisfaction with COVID-19 restrictions expressed by special interest groups, the public, and by or in the media • Discourse becoming increasingly polarised and vitriolic, beyond the usual levels of dissent • Political criticism of policy in excess of normal political posturing • Protest action planned or occurring • Protests attracting people beyond those who are anti-vax, anti-mandate, anti-government • Focus of protests changing from the health response to economic issues	• MoH • Social media • Media reporting
	Spread of misinformation and disinformation	• Increase in amount of misinformation and disinformation being shared online or in person (such as pamphlets, door-knocking), particularly targeting vulnerable communities • Shift of commentary from mainstream social media sites to sites which are harder to monitor	• MoH Disinformation and Assessment Response Team (DART) • DPMC • Social media
NOVEL COVID-19 VARIANTS OF CONCERN	Mode of transmissibility	• COVID-19 becomes transmitted through different methods of transmission such as surface touch • Airborne particles retain infectivity for longer	• MoH • WHO • International and domestic scientific studies
	Infectiousness	• Higher R number • Increased viral load • Longer incubation period (time from exposure to symptoms) • Shorter latency (time from exposure to infectiousness) • Longer duration of infectiousness • Increase in number of cases in vaccinated people • Disagreement in scientific or international community regarding the significance of new variants	• MoH • WHO • International and domestic scientific studies and modelling
	Disease severity	• Increase in number of positive cases requiring hospitalisation or ICU care • Increase in number of long covid sufferers and/or the severity of other long-term side effects	• MoH • WHO • International and domestic scientific studies and modelling
	Vaccine effectiveness	• Decreased vaccine effectiveness (in one or more COVID-19 vaccine) against catching COVID-19, spreading COVID-19, and/or disease severity • Increase in number of breakthrough cases in vaccinated people • Decreased long-term effectiveness of one or more COVID-19 vaccine	• MoH • WHO • International and domestic scientific studies and modelling
INTERNATIONAL LANDSCAPE	International numbers of COVID-19 cases	• Surge in COVID-19 cases internationally • Countries slow or reluctant to detect and report new cases • Countries slow or reluctant to detect and report new variants of concern • Increased likelihood of undetected transmission internationally	• Our World in Data • WHO • International scientific studies • International media reports, Government websites
	International vaccine rates	• Low vaccine uptake in parts of the world • Reluctance of wealthy countries to provide vaccines to COVAX while their own populations require boosters • Decreased effectiveness of one or more COVID-19 vaccines • Growing popularity of the anti-vaccination movement globally • Increase in number of breakthrough cases in vaccinated people	• Our World in Data • WHO • International scientific studies • International media reports, Government websites
	Changes in international responses to COVID-19	• Changes to approaches used by other countries to respond to COVID-19 (e.g. elimination, containment, herd immunity) • Undermining of WHO's leadership; WHO no longer trusted to handle pandemic • Waning international scientific cooperation • Disintegration of support for COVAX • Countries beginning to ringfence international medical assistance for domestic use, resulting in crumbling international aid architecture	• WHO • International scientific studies • International media reports, Government websites
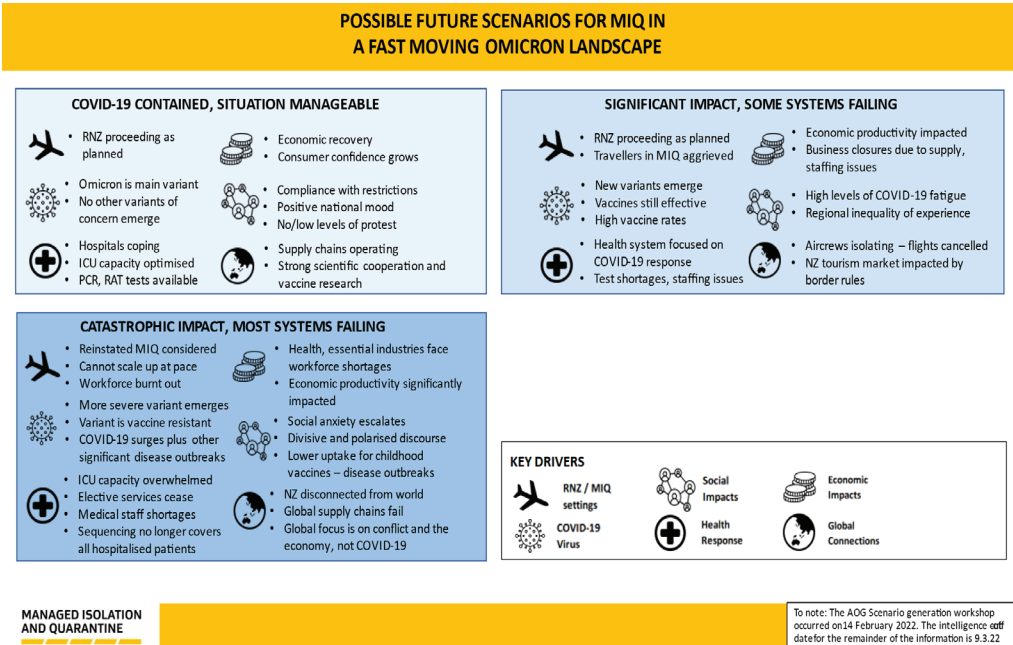
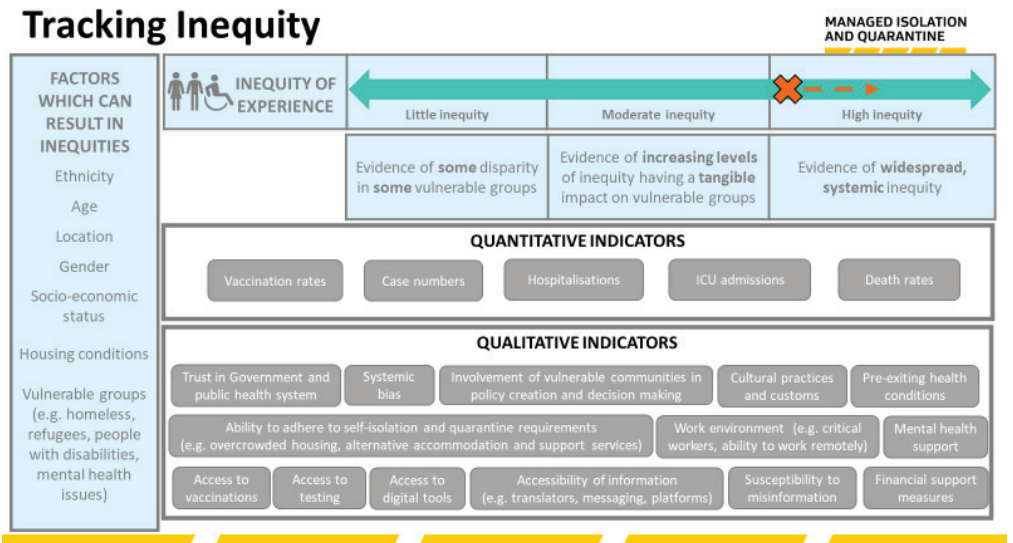**Figure 5:** *Possible Future Omicron Scenarios*

Figure 6: *List of COVID-19 Indicators and Warnings*

Case Study Three - using graphics to convey information effectively

FST knew it needed to focus on effectively conveying information to busy customers. Dynamic 'at-a-glance' products were going to be more effective than traditional intelligence reports. Time-poor decision makers were unlikely to prioritise intelligence reports, were not familiar or comfortable with intelligence, and the number of data points across MIQ did not lend itself to short written products. Finally, the outputs of analysis and strategic advice required visually highlighting - the rationale and rigour behind assessments was not visually important. MIQ leaders learnt that they could review this detail if required and on request.

One of the FST solutions was a series of visualisations combining sliding scales and charts. It was manually compiled and generally paired with a verbal briefing. Figures 7 and 8 reflect examples of similar content visualised initially as a sliding scale and then in graph form. These examples are drawn from FSTs visualisation of scenario indicators and warnings trending over time.

Sliding scales such as Figure 7 represent the current state (orange cross), anticipated future trajectory (dashed arrow) and indicator change week to week (light grey cross). These scales translated qualitative intelligence assessment into a more easily understandable 'semi-quantitative' visual form. They were also easy to understand scales representing progress towards the 'catastrophic, significant or contained' COVID-19 scenarios which FST previously developed (Figure 5 refers). The anticipated trajectory was the result of intelligence assessment.
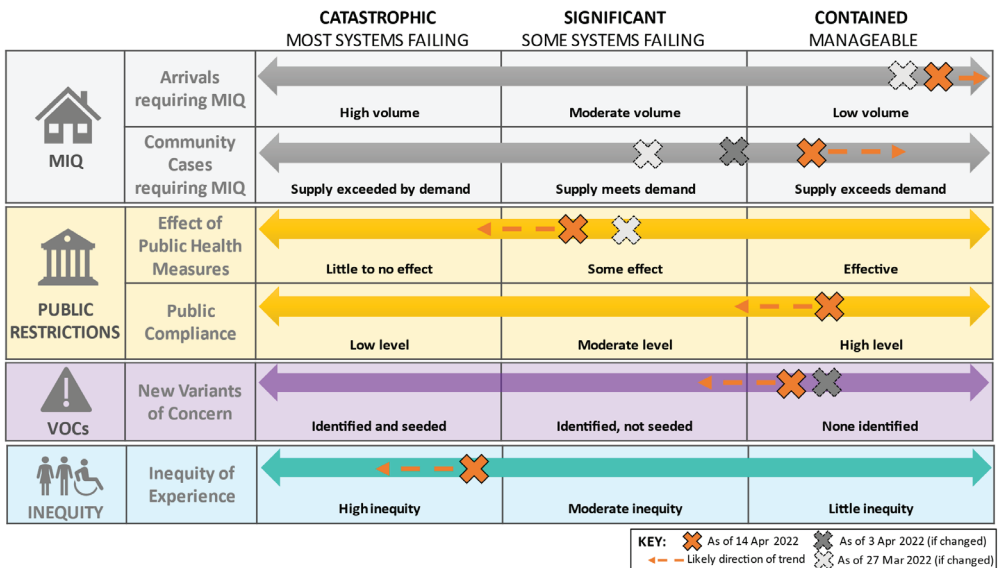

Figure 7: *COVID-19 Indicators and Warnings Tracker*

The use of such a system allowed decision makers not only a broad holistic view of the system in a short time, but allowed them to focus on those areas which were the most severe, rather than just those with the most movement. Finally, it allowed them to understand whether any change implemented was impacting the indicator to which it was targeted.

The graph in Figure 8 (which represented the same data as the sliding scales) was particularly useful at demonstrating thematic change over longer time periods. It highlighted significant changes (such as case numbers surging in February 2022, MIQ occupancy falling as a result of Reconnecting New Zealand steps) and the absence of change (levels of non-compliance with public health measures). Importantly the graph also shows how - as our understanding of the inequity of COVID-19 experience developed - the line rises sharply. FST felt it was important to not retrofit the inequity line on the graph - showing your homework or admitting improvements in understanding can be important methods to gain trust in assessments. In addition to showing which of the indicators fluctuated the most, the graph view could be cross referenced to relevant domestic and international decisions. This helped show which of the factors being monitored had the greatest impact on New Zealand's overall direction of response, or were most affected by these decisions.
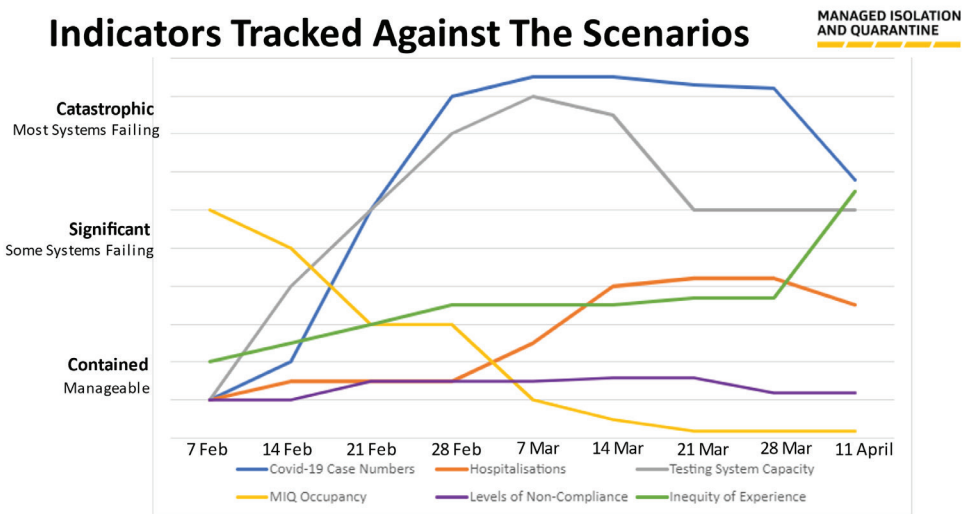

Figure 8: Indicators tracked against scenarios over time

The Future of Futures Thinking

The fusion of intelligence and strategy capabilities worked well within the MIQ environment. The views in the 'What Worked Well' section of this paper highlight some of the reasons which made success possible. FST's experience of fusing intelligence and strategy will have future utility across the government sector when decision makers are operating in high-tempo, low or uncertain information environments. It also makes sense from a resourcing perspective - effectively achieving more with fewer discrete business capabilities (and arguably less resource).

To effectively fuse capabilities in the future, it will be advantageous (but not essential) that all practitioners in a team are experienced operators - fusion teams must be able to produce impactful products on complex or incomplete information sets at pace. FST can see real utility in New Zealand intelligence community intermediate-to-senior level analysts spending time in a fusion environment. This will allow them to demonstrate the value of their intelligence skills, expose them to wider government processes, allow them to integrate and learn from other traditional governmental functions – for example, policy – and will provide intelligence analysts the opportunity to demonstrate that their skills are valued by a wider range of agencies than expected (classification allowing). In turn, fusing intelligence, strategy, and data generates better insights, supports better decision making and delivers better policy advice by incorporating rigour not achievable through a single discipline.

Conclusion

In the high-tempo, 'no-faults' MIQ environment, an intelligence-strategy fusion team was highly successful at providing rigorous decision support, for leading cross-government scenario generation work, for undertaking detailed system wide gap analysis (TTX) and maintaining senior leaders' situational awareness of the broader COVID-19 context. As such, this paper advocates for the inclusion of an FST function (or similar) both: 1) within future incident response and operational units, and 2) from the outset of comparable incident responses, ensuring contextual situational awareness is identified and maintained through a response. This will ensure a broad and evidence-based approach to operational decision making is initiated.

FST has not identified other comparable capabilities within NZ and contends that the approach (combining futures thinking with intelligence methodology and strategy techniques) would be a valuable addition to NZ's public sector - especially those agencies with existing Policy, Strategy and Intelligence or Insights teams. Finally, a community of expertise or a futures thinking hub would be useful to guide those interested in applying the techniques explored in this article (and a plethora of others).

1   *Harriet Kay* was a Senior Intelligence Analyst in the MIQ Future Strategy Team, bringing to the team analytical expertise and practical experience in intelligence and security operations from her previous work for the New Zealand and United Kingdom governments. Harriet's role in the team included conducting in-depth, future focused research and analysis, and developing innovative strategic and intelligence products incorporating international intelligence best practice.

Paul Keymer was the MIQ Future Strategy Team's Manager. Bringing intelligence and strategy leadership to the role, he focused on developing the Future Strategy Team concept and ensuring its integration within MIQ. He led FST support to several multi-agency projects which supported New Zealand's wider COVID-19 response, for example 'Reconnecting New Zealanders.'

Sarah Mackey was the MIQ Future Strategy Team's Principal Intelligence Analyst. Drawing on extensive strategic intelligence expertise and foreign policy experience, Sarah's role included designing and leading workshops to predict COVID's likely impacts on New Zealand and framing world events through an MIQ-specific lens. She also led the team's work to measure qualitative inequities within the MIQ and COVID experience in New Zealand.

Shae Vickers was a Senior Intel Analyst in the Future Strategy Team from its formation in 2021. Shae came from a scientific background, with intelligence and emergency response experience in the Biosecurity sector. She worked with the team on determining, monitoring and reporting on Omicron scenarios, but her favourite project was generating scientifically grounded 'disease stories' as scenarios for the team's later work on future infectious disease threats.

Andy Milne was Associate Deputy Secretary of MIQ throughout the period of FST's tenure. Andy joined MIQ in July 2020 and left in October 2022.

2   11 March 2020, Director-General of the World Health Organisation (WHO) Tedros Adhanom Ghebreyesus, WHO Director-General's opening remarks at the media briefing on COVID-19, https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020

3   Three orders established the requirement for people travelling to New Zealand to enter MIQ: 27 February 2022, COVID-19 Public Health Response (Air Border) Order (No 2) 2020, https://www.legislation.govt.nz/regulation/public/2020/0239/latest/whole.html#LMS403346; 2 May 2022, COVID-19 Public Health Response (Marine Border) Order (No 2) 2020, https://legislation.govt.nz/regulation/public/2020/0240/latest/LMS403466.html; and 2 May 2022, COVID-19 Public Health Response (Isolation and Quarantine) Order 2020, https://www.legislation.govt.nz/regulation/public/2020/0241/latest/whole.html

4   The direction was made under the Health Act 1956 and was renewed by the Director General on 14 October 2020: November 2020, Ministry of Business, Innovation and Employment, *Briefing for Incoming Minister*

COVID-19 Response: Managed Isolation and Quarantine (MIQ), https://www.beehive.govt.nz/sites/default/files/2020-12/MIQ.pdf

5   Quarantine is the process of separating and restricting the movement of people exposed to a contagious disease to see if they become sick while isolation refers to separating sick people with a contagious disease from people who are not sick.

6   Other measures adopted at various points in the pandemic included school closures, restrictions on public gatherings, testing and contact tracing, border controls, restrictions on internal movements, requirements to wear face coverings and vaccination policies.

7   Ministry of Business, Innovation and Employment, About MIQ, https://www.mbie.govt.nz/immigration-and-tourism/isolation-and-quarantine/managed-isolation-and-quarantine/about-miq/ 28 July 2022 – accessed as 1 August 2022)

8   Within MIQ, the intelligence capability was a group of individuals trained in information analysis to create future focused assessments or foresight, to support senior level decision making.

9   This term became prevalent with FST and came to define its outputs. FST viewed 'intelligence adjacent' as the use of intelligence methodologies and techniques to develop strategic advice products, rather than traditional intelligence outputs. Arguably, this approach did not conform to traditional intelligence rules - offering operational and strategic recommendations, not including the intelligence analysis when presenting assessment, limiting use of probabilistic language and often using intelligence techniques as a vehicle for engagement - rather than the vehicle for outputs.

10   FST resorted to a traditional format for intelligence reports.

11   For very good reason. Though FST conformed to MBIE standards it had freedom to innovate.

12   Scenarios are hypothetical, yet plausible, illustrations of the future. They are an invitation to conversations; a way of "thinking the unthinkable." They are a tool for framing imagination, aiding decision making, identifying recommendations, testing, and refining strategy and policy options. (World Health Organisation. "Imagining the future of pandemics and epidemics: A 2022 perspective." September 2022).

13   Feasibility was tested with a clinician.

14   An environmental scanning technique useful to ideate for a range of purposes. S = social, T = technological, E = environmental, M = military, P = political, L = legal, E = economic, S = security. These factors can be tailored/amended, as FST did in this case. https://www.whatdotheyknow.com/request/707122/response/1693060/attach/4/Quick%20Wins%20for%20Busy%20Analysts.pdf?cookie_passthrough=1

15   It is a technique to ensure the 'story' about any proposed investment makes sense (the 'logic' part of ILM) and to test and confirm that the rationale for a proposed investment is evidence-based and sufficiently compelling to convince decision makers to commit to invest in further investigation and planning. (https://www.treasury.govt.nz/information-and-services/state-sector-leadership/investment-management/better-business-cases-bbc/bbc-methods-and-tools/investment-logic-mapping).

16   J. Richards, J.R. Heuer, Randolph H. Pherson. *Structured Analytic Techniques for intelligence analysis.* (SAGE, CQPRESS, 2015).