



## CAPTAINING A TEAM OF 5 MILLION: NEW ZEALAND BEATS BACK COVID-19, MARCH – JUNE 2020

*Blair Cameron drafted this case study based on interviews conducted in Wellington, New Zealand, in July and August 2020. Case published September 2020.*

### SYNOPSIS

In early 2020, a novel coronavirus spread from Wuhan, China, to almost every corner of the globe. COVID-19 caused devastation in every country where it gained a foothold and was allowed to spread through the population. When the first cases hit New Zealand at the end of February and beginning of March, Prime Minister Jacinda Ardern moved decisively by adopting a “go hard, go early” lockdown strategy to stop the virus from spreading across the island nation. Behind Ardern stood a small cadre of civil servants and infectious disease experts who studied the rapidly evolving science of pandemic response—and the virus itself—and made policy recommendations to Ardern and her cabinet. Behind that response team stood a battalion of police, healthcare professionals, and other essential workers ready to implement the policies. And behind them stood everyday New Zealanders—whom Ardern referred to as “the team of 5 million”—who gave up personal freedoms for the greater good during a mandatory national lockdown. A far-reaching and comprehensive communication effort drove strong public acceptance as the government shifted health directives and policies in response to the fast-changing situation. After May 1, the country went 102 days with no locally transmitted cases of the virus. However, a new outbreak of cases in August plunged Auckland, New Zealand’s largest city, back into lockdown and made clear that extreme vigilance was necessary to protect New Zealanders from the pandemic raging abroad.

## INTRODUCTION

On March 9, 2020, farmers and agribusiness experts from around the world gathered in Queenstown, on New Zealand's South Island, for the World Hereford Conference. Queenstown was the ideal location: the tourist mecca nestled among lakes and mountains provided a spectacular setting for the conference, and the surrounding farmland was home to thousands of Hereford cattle. But the timing was problematic: New Zealand had confirmed its first case of COVID-19 less than two weeks earlier. COVID-19, caused by severe acute respiratory syndrome coronavirus 2, had swept through Wuhan, China, during January and February and had spread to dozens of other countries. The death rate was much higher than that of seasonal influenza, and by the second week of March, more than 4,000 COVID-19 deaths had been recorded worldwide. By the time the World Hereford Conference began, the number of infections in New Zealand had risen to five, all of them among people who had traveled from Iran or Italy or been close contacts of someone who had.

Far away from the Hereford conference, government officials in Wellington, New Zealand's capital, had closely monitored COVID-19 for weeks. On January 27, two days after neighboring Australia reported its first case of the disease—and a month before New Zealand confirmed its first—the Department of the Prime Minister and Cabinet activated the National Security System (Textbox 1). The system's protocols codified a long-established plan for responding to crises, laying out the types of national security threats New Zealand might face—natural disasters, cyberattacks, or pandemics, for instance—and how the government should identify and respond to such threats. Activation meant top officials from various government departments began meeting on a regular basis—through the Officials Committee for Domestic and External Security Coordination (ODESC)—to discuss the threat the virus was posing.

As chief executive of the Department of the Prime Minister and Cabinet, Brook Barrington led coordination of key government agencies and provided guidance for the prime minister and cabinet members. In that capacity, he oversaw the National Security System and chaired ODESC. Barrington, a former diplomat, quickly realized that COVID-19 posed a significant threat to New Zealand and that the government had to prepare for a number of scenarios that could play out. An uncontrolled viral pandemic would require a coordinated approach across the whole of government—a scenario the Ministry of Health had no experience in leading.

In early February, Barrington approached the Ministry of Business, Innovation and Employment (MBIE)—one of the largest government ministries—looking for a civil servant with the skills to lead the government's strategy and policy response to COVID-19. He chose Peter Crabtree, who managed MBIE's science, innovation, and international efforts. In his post at MBIE, Crabtree headed the New Zealand Space Agency and oversaw rocket

**Text Box 1. The National Security System<sup>1</sup>**

New Zealand's National Security System is a directorate of the Department of Prime Minister and Cabinet (DPMC). The system responds to crises affecting New Zealand's national security and encompasses much more than the traditional ambits of national security (defense, law enforcement, and intelligence). Examples of such threats include commodity price shocks, natural disasters, and food safety incidents.

The system operates at three levels, with (1) a cabinet committee headed by the prime minister; (2) the Officials Committee for Domestic and External Security Coordination (ODESC), headed by the chief executive of DPMC and composed of other top officials from government departments and various other committees; (3) and working groups attending to more-specific tasks. The security system identifies a lead agency with the authority to respond to each specific type of hazard. For a pandemic, that agency is the Ministry of Health.

When DPMC activates the national security system, the chief executive invites relevant officials to form ODESC and organizes the committee's first meeting. On January 27, the same week that Wuhan went into lockdown and Australia reported its first case of COVID-19, Brook Barrington, chief executive of DPMC, activated ODESC in response to the growing threat posed by the virus.

In the event of a major crisis, the National Crisis Management Center is activated. ODESC activated the center on March 10, when New Zealand had five confirmed cases, and one day before the World Health Organization declared a pandemic. The National Crisis Management Center is physically located in a bunker underneath the Beehive, New Zealand's distinctively shaped parliament building. Because the bunker was not a practical space for the crisis management team to be based for a sustained period of time, the team instead based itself at the Ministry of Health—the lead agency for pandemic response.

<sup>1</sup> Security and Intelligence Group, *National Security System Handbook*. Department of the Prime Minister and Cabinet, August 1, 2016; <https://dpmc.govt.nz/publications/national-security-system-handbook-html>.

launches, a function that required someone who could understand complex systems and manage significant risks.

Crabtree described his initial role in the COVID-19 response as ambiguous, because at the time no one knew much about the virus. “I was asked to drop in, assess the situation, and advise the chief executive [Barrington] about what kind of system approach was appropriate,” he said. Throughout February and March, Crabtree and his team coordinated the government's strategy and policy response to COVID-19, and Ashley Bloomfield, a physician and the top civil servant at the Ministry of Health, led the health response (Textbox 2).

Despite the low number of cases in the first week of March, Barrington, Bloomfield, and Crabtree were becoming increasingly worried about the risk the virus posed. In the two countries where New Zealand's first cases had come from—Italy and Iran—the outbreak had overwhelmed the governments' capacities to respond. On March 9, as hospitals overflowed with COVID-19 patients, Italy implemented a nationwide lockdown, mandating that the country's entire population stay at home.

**Text Box 2. New Zealand's Response to COVID-19 in February 2020**

On January 28, in response to the growing outbreak of COVID-19 in China, New Zealand's Ministry of Health activated the National Health Coordination Centre, a structure to coordinate the health response to COVID-19. The center, led by Director General of Health Ashley Bloomfield, monitored the situation abroad and provided daily updates on the outbreak. Throughout February, Bloomfield held regular press conferences to inform the public about the virus and launched a campaign to encourage vigilance about handwashing and other public health measures.

The government's first major response to the COVID-19 outbreak in Wuhan was to ban travelers from China beginning February 3, following the leads of the United States and Australia, which had announced similar policies slightly earlier. That ban was "put in place with very little warning . . . so there were quite a few implementation issues," said Kirstie Hewlett, deputy chief executive of system and regulatory design at the Ministry of Transport. "The government made the decision to go hard and fast . . . so the understanding of how that would impact airlines and airports hadn't necessarily been fully worked through." The transport ministry wrestled with those implementation issues throughout February, which helped prepare it for the broader border restrictions implemented in March.

In the first week of February, the government organized a repatriation flight for New Zealanders and citizens from nearby countries who had become stuck in Wuhan when the province entered lockdown. After the successful repatriation flight, Brook Barrington, head of the Department of Prime Minister and Cabinet, appointed Peter Crabtree to lead the government's strategy and policy response to COVID-19. Crabtree organized a team of analysts he knew from many years of working in New Zealand's civil service.

Throughout February, Crabtree's team responded to a series of questions regarding COVID-19 that the government needed answers to. The first was whether to grant foreign students from China exemptions to the travel restrictions. New Zealand's public universities pushed hard for the measure, pointing out that the students paid NZ\$170 million (about US\$110 million) in tuition fees.<sup>1</sup> "That was two weeks of hard debate across government and with the education sector," said Crabtree. "There were some very vocal university representatives saying those students were worth a lot of money coming to New Zealand."

Government officials understood the economic costs but had to weigh the risks of allowing thousands of students in just as the COVID-19 outbreak was starting to escalate globally. "Our public health capacity to respond was limited and we did not want our public health units having to devote resources to quarantine for students," Crabtree said. Despite protests from universities, the government decided to not allow students to enter the country so that health professionals could focus on preparing for possible cases of COVID-19. "We needed those people to be getting prepared and ready for what might be coming at us," Crabtree said. "It turned out it was the right decision to make."

Each week, the response team made recommendations to the government on increasingly consequential policy decisions. And even though the team relied on information from the World Health Organization (WHO), officials realized that implementing WHO recommendations would not be sufficient to keep New Zealand safe. "There was lots of useful information from the WHO, but we were forming our own judgments about what would work in New Zealand's specific context," Crabtree said.

Part of Crabtree's job was to build understanding across government about the threat that COVID-19 posed. Clinton Watson, Crabtree's lead analyst, spent much of February pooling information from biomedical experts and data from public health modelers and bringing together people from across the New Zealand government to recognize the risks. "The key message was, if this thing gets out of control, our health system will be overwhelmed very quickly and it will be disastrous," Watson said.

<sup>1</sup> John Gerritsen, "Coronavirus: Universities seek travel ban exemption for students." Radio New Zealand, February 17, 2020; <https://www.nz.co.nz/news/national/409672/coronavirus-universities-seek-travel-ban-exemption-for-students>.

As more and more countries appeared to lose control of the outbreak, New Zealand's government tightened border restrictions to block travelers arriving from virus hot spots. On February 3, Prime Minister Jacinda Ardern had banned travelers from China, and in early March, she added restrictions on travelers from other badly affected countries, including Italy and Iran. In mid-March, Ardern announced that anyone arriving at New Zealand's borders from anywhere in the world would have to self-isolate in one location for 14 days.

It soon became clear that COVID-19 was emerging as a national crisis—the third that New Zealand's 39-year-old leader had dealt with in 12 months. A year earlier, a white supremacist had killed 51 people and injured scores in an attack on two mosques in Christchurch, New Zealand's second-largest city. Nine months later, the Whakaari/White Island volcano erupted, killing 21 and seriously injuring 26. Ardern, who had won global praise for her empathetic response to communities in the wake of the Christchurch terrorism, signaled the gravity of the COVID-19 threat by canceling a national remembrance service scheduled for March 15—the first anniversary of the tragedy.

On March 16, amid growing concerns that the virus might spread quickly at large events, the government banned all gatherings of 500 or more people. By that time, most of those who had attended the World Hereford Conference were back at home. The conference organizers breathed a sigh of relief, thinking they had dodged a bullet. They hadn't. On March 17, an Australian attendee tested positive for COVID-19. And in the coming weeks, more than three dozen others linked to the conference would test positive for the virus.

## THE CHALLENGE

The last time a global pandemic had hit New Zealand was in 1918, when influenza infected more than 500,000 New Zealanders out of a population of 1.15 million at the time, killing about 9,000 people in six weeks. That pandemic had been particularly devastating among New Zealand's indigenous Māori population. Although the death rate among New Zealanders of European descent was about 6 per 1,000, the death rate among Māori was about 42 per 1,000.<sup>1</sup> Public health experts had long sounded warnings about the risk of another viral pandemic sweeping the world. Despite those warnings, New Zealand was ill prepared.

For more than a century, New Zealand's geographic isolation had largely kept it safe from major outbreaks of new infectious diseases, and New Zealanders typically saw such outbreaks as problems that affected densely populated cities in far-flung places. When COVID-19 began spreading, governments in those places could call on citizens to remember how they responded to previous outbreaks. For example, several East Asian countries quickly introduced public health measures that citizens remembered from an outbreak of severe acute respiratory syndrome (SARS), a disease caused by a novel coronavirus similar to the one that caused COVID-19. In 2003, SARS had

infected more than 8,000 people and killed 774, mostly in China, Hong Kong, and Taiwan.

Without a recent outbreak on the scale of SARS, one of the first tasks New Zealand's response team confronted was how to distill the message that COVID-19 was a serious threat and convey it in a way the public would understand.

New Zealand's epidemiologists and other experts stepped up to identify how much of a threat the virus posed to the country and to communicate that threat to the public and the government officials in charge of the response. Many of those experts worked on their own time, and the Ministry of Health also brought some of them together into a technical advisory group. That group met twice a week to provide updated advice to Bloomfield, the director general of health.

Michael Baker, an epidemiologist and professor of public health at the University of Otago, was a member of the advisory group, and in March he and his colleagues modeled various scenarios for the ways the virus could spread. Some of those scenarios saw the potential for hundreds of thousands of New Zealanders becoming infected and more than 10,000 dying.<sup>2</sup>

Other models were even more dire. University of Auckland physics professor Shaun Hendy, who headed a data analytics center, modeled how the pandemic could affect New Zealand based on data showing how quickly the virus had spread in China and Italy. When Hendy plugged data on New Zealand's health infrastructure into his model, he found that COVID-19 could cause up to 60,000 deaths across New Zealand.<sup>3</sup>

Part of the reason for the high numbers was that—compared with the other wealthy countries that belonged to the Organisation for Economic Co-Operation and Development (OECD)—New Zealand's health system was underresourced. It had fewer hospital beds per capita than did most other countries in the OECD and just 4.7 intensive care beds per 100,000 people compared with nearly 35 per 100,000 in the United States. In addition, New Zealand scored just 54 on the 100-point Global Health Security Index, an assessment system developed by a global team of academics and public health experts following the 2014 West Africa Ebola epidemic.<sup>45</sup> That score meant New Zealand ranked lower than Italy in terms of its preparedness for disease outbreaks and faced a major impediment to mounting an effective response.

The health system was also highly decentralized, and oversight posed a significant challenge for the Ministry of Health, even in normal times. Twenty district health boards made up the operational backbone of the health-care system. Each board was in charge of delivering health services for a specific geographic area. Twelve regional public health units—owned by the district health boards—were in charge of communicable disease control. When COVID-19 began spreading, those units had to begin testing for possible cases of the virus and tracing the contacts of anyone who tested positive.

District health boards were also responsible for procuring and managing their own supplies such as ventilators, which other countries had found useful in treating seriously ill patients, and personal protective equipment (PPE), including gloves, gowns, masks, disinfectants, and hand sanitizers. Several districts found that their PPE stockpiles had dwindled or passed their use-by dates. When those district boards tried to procure more PPE quickly, they found that usual suppliers had sold all of their inventory and other suppliers had increased prices by 10 times or more.

In addition to PPE and ventilators, every country in the world was competing to procure the components required for testing. Testing for COVID-19 was not a quick and simple procedure. For each sample that medical professionals collected using special swabs, lab staff had to undertake a lengthy, multistep process to extract the virus's genetic material and amplify it enough to be detectable. The process took several hours to complete, even when there were enough trained staff and sufficient supplies on hand. In addition to the swabs, testing labs required specific reagents that were produced overseas. With limited world supply and skyrocketing global demand, New Zealand's health officials battled to procure the materials the country needed in order to increase testing rates.

On top of solving these communication and logistics problems, the government had to find an effective way to coordinate across its own agencies. Even though New Zealand's National Security System had been activated many times in response to major threats to the country, the scope of a threat had never been so broad. "This wasn't a volcanic eruption," Crabtree said. "It was something of a quite different nature, and it would touch all of government if it played out."

The response further had to consider economic and social impacts and the ways these might impede the effort to contain the disease. Job losses—which began occurring in the education and tourism sectors as early as February—represented the most-pressing economic concern. New Zealand usually welcomed large numbers of international tourists and international students every year—particularly from China. But with no tourists or foreign students, businesses closed down and employees lost jobs. If the pandemic worsened, other sectors would fare poorly as well.

In turn, these impacts complicated the social and political context of the response. Globally, the pandemic had sparked a xenophobic backlash against immigrants—especially those of Asian ethnicities. In some countries, populists used the tension to politicize measures taken to reduce the spread of the virus. Ardern faced potential opposition from within her three-party coalition government as well as from opposition parties in parliament. Her deputy prime minister, Winston Peters, was the leader of New Zealand First, a political party known for its hardline stance on immigration. With an election just six months away, the New Zealand First Party, the National Party (the main opposition and largest party in parliament), and other parties were jostling to win public favor.

Although it was important that the opposition hold the government to account, Ardern had to ensure politics didn't get in the way of pandemic response efforts.

## FRAMING A RESPONSE

On March 10, in recognition of the growing threat, Barrington beefed up the response group, which became known as the *all-of-government team*. He appointed John Ombler, a highly regarded senior civil servant, to lead the team and report directly to ODESC. Ombler, who was given the title national controller, had a wealth of experience across the public sector, including as chief executive of the Canterbury Earthquake Recovery Authority, a government agency set up to manage the response to the 2011 Christchurch earthquake, which killed 185 people. The four other members of the team were Police Commissioner Mike Bush, head of New Zealand's police service; Sarah Stuart-Black, head of the National Emergency Management Agency; Bloomfield; and Crabtree. Crabtree continued to lead the strategy and policy response, and Bush took over operations. (Exhibit 1 at end of case.)

The response team had to build capacity quickly. As the number of coronavirus cases increased in New Zealand and the pandemic wreaked havoc on other countries, the team members began contacting people they knew who could work effectively in a crisis situation. The team seconded staff from across the civil service and took over offices at two Wellington locations: at the Ministry of Health, where Crabtree's policy team set up ad hoc workstations, and at the Evidence-Based Policing Centre, where Bush's operations team moved in.

Crabtree deliberately kept his policy team small, reflecting his belief that having too many people would hinder speed and effectiveness. "We didn't want lots of people, because that creates problems; it's too hard to communicate," he said. Having a small team made it easier to coordinate with top officials across government agencies. "We needed a small core group and then to be able to task senior colleagues by asking, 'Can you take this hard thing, go figure it out, and come back to us?'" Outside of the core group, Crabtree's team coordinated with senior officials across government departments working on key "pillars" of the policy response. For example, one pillar focused on border issues, while another focused on the economy.

To lead the crucial work of communications, Barrington seconded John Walsh, director of readiness and response services at Biosecurity New Zealand, an arm of the Ministry for Primary Industries. Walsh had a background in public relations and marketing and was previously communications director at the ministry. "My background working in operational biosecurity responses and communications was a little unique," said Walsh. "The government and senior officials were very aware that the communications effort was going to be key in seeing New Zealand through the problem."

With the response team in place, it was up to Ardern and her cabinet to make the big policy decisions. The prime minister formed an ad hoc cabinet

committee to deal with the pandemic response. The group included a handful of government ministers as well as the leaders of the two parties that made up the coalition government with Ardern's Labour Party: Peters of New Zealand First and James Shaw of the Green Party.

*Learning from others*

At the time, governments confronting the global pandemic were considering two main policy options: a hard, lockdown strategy and a softer, herd immunity approach.

The Chinese government had been the first to implement a lockdown strategy when it shut down the city of Wuhan on January 24. Wuhan's strictly enforced lockdown placed severe restrictions on citizens' movements, with residents allowed to leave their homes only for essential supplies. As the pandemic escalated, some countries showed reluctance to implement similar policies because of (1) a concern that such a heavy-handed approach infringed on citizens' rights, (2) the belief that the Chinese government had succeeded only because of its powerful enforcement apparatus, and (3) an idea that lockdowns would have an unbearable economic impact that would outweigh any positive impact on citizens' health.<sup>6</sup>

But despite its drawbacks, the Wuhan strategy appeared to be effective. Case numbers rapidly declined after the government imposed the lockdown in late January. Seeing Wuhan's success in containing the virus "was illustrative," said Crabtree. "Lockdown worked in Wuhan; we were really lucky that we could see how the Chinese response went."

Advocates of the second approach, herd immunity, favored more-passive policies that allowed society to continue its activities more or less normally. The goal was to manage infection rates so that the health system did not become overwhelmed while allowing the virus to slowly spread so that people could develop antibodies against future infection. After enough people had antibodies, the high levels of immunity would prevent the virus from spreading. Proponents said the economic costs of lockdowns were too high and cited the low death rate of COVID-19 compared with other diseases such as SARS as one reason that lockdowns weren't necessary.

Juliet Gerrard, the prime minister's chief science adviser, played a major role in advising Ardern on which approach to take. The position of chief science adviser, modeled after the one in the United Kingdom's public service, was designed to "get independent advice to senior leadership," according to Ian Town, the chief science adviser at the Ministry of Health. "There is a delicate but carefully managed relationship between the science adviser; the minister, who is an elected member of parliament; and the director general, who is the top civil servant in the ministry," said Town, who was a respiratory physician by training. "In general, it works extremely well." More than a dozen ministries and agencies had chief science advisers, and together those advisers formed a network to share information and advice across government.

As well as leading that domestic network, Gerrard also communicated regularly with chief science advisers in the United Kingdom and other countries. Throughout February and March, Gerrard was in constant communication with those contacts and with Town, ensuring that everyone was on the same page regarding the science around COVID-19 and then “filtering that [information] to the prime minister,” she said in a podcast interview.<sup>7</sup>

Whereas certain other countries opted for the herd immunity option, Ardern made clear that New Zealand would not be one of them. “We got guidance from the prime minister very early on that we were not going down the herd immunity route,” said Town. “That was a values-based decision . . . [Ardern] made it very clear that we would be protecting the lives and health of New Zealanders from the get-go, and that was nonnegotiable.” Opposition politicians, Ardern’s coalition partners, and prominent business leaders all supported her decision.

### *Adapting the plan*

In its response to COVID-19, the Ministry of Health turned to its existing influenza pandemic plan, the best playbook it had for how to respond to a viral pandemic.<sup>8</sup> Throughout the 2000s, the ministry had developed and updated the plan in case a new strain of influenza virus caused a pandemic similar to the one in 1918. The plan outlined a six-phase strategy: Plan For It (planning and preparedness), Keep It Out (border management), Stamp It Out (cluster control), Manage It (pandemic management), Manage It: Post-Peak (postpandemic management), and Recover From It (recovery). The idea was that the government would shift through the phases as the virus spread through the population.

By mid-March, as clusters of COVID-19 cases began emerging, the team shifted from the Keep it Out strategy to the Stamp It Out strategy and began preparing for a move to the next phase: Manage It. That phase—similar to the herd immunity strategy—was modeled on 40% of the population becoming infected over the course of eight weeks and aimed to limit the impact of the pandemic. But after seeing how quickly Italy and other countries had run out of capacity to cope with the crisis, the New Zealand response team realized that a shift to the Manage It phase would be catastrophic.

An influential Imperial College London paper published on March 16 further shifted health officials’ thinking away from the Manage It strategy.<sup>9</sup> The researchers found that such a mitigation strategy in the United Kingdom would “likely result in hundreds of thousands of deaths and health systems (most notably intensive care units) being overwhelmed many times over.” To stave off disaster, the New Zealand response team had to double down on the Stamp It Out approach.

Realizing that the influenza pandemic plan was not an appropriate strategy for COVID-19 was a key turning point. “I think the problem was, we had the influenza pandemic plan, which is really a mitigation approach,” Baker said in an

interview with *The Independent*, an online news site. “[We] had to turn that on its head and instead of gradually increasing your controls as a pandemic gets worse, you throw everything at it at the beginning and you extinguish it.”<sup>10</sup>

Baker’s team of public health experts and Crabtree’s team of policy analysts looked at the data and came to the same conclusions. “We were worried the system would be unable to respond to so many cases,” Crabtree said. “The only response we could have was one where we acted really fast to nip it in the bud. We don’t just tap the brakes; we slam the brakes on.”

Although the influenza pandemic plan was not helpful in defining a broad strategy, it did help the Ministry of Health *organize* its response. “The plan clearly articulated who was meant to do what and described what our public health units should be doing,” said Town. “Without [the pandemic plan], the structure and responsibilities might have been unclear.” Public health units, run by the district health boards, were responsible for key parts of the health response, including testing potential cases, tracing the contacts of confirmed cases, and treating the sick. The pandemic plan lacked specifics on policy options and operational responses, however. “There hadn’t been a great deal of attention to the detailed operational planning that might be required,” said Town. For example, the plan had little information on what kinds of situations merited travel restrictions.<sup>11</sup>

#### *Ramping up the response*

With the pandemic getting out of control in multiple countries simultaneously, the all-of-government team realized broad travel restrictions were needed—and quickly. “There was an emerging view that the border needed to be closed as soon as possible,” said Crabtree. “This was a big call with significant operational implications. Senior officials from across government quickly came together to develop considered advice. Because of the small size and mobility of New Zealand’s public service, these officials knew each other well having worked together on a broad range of strategic and tactical issues.”

On March 18, Ardern met with her cabinet and the response team. She immediately approved the plan to close the border to foreigners, effective two days later. But that alone was not going to be enough; New Zealand already had 20 confirmed cases of COVID-19 within its borders. Public health units did not yet have the capacity to implement widespread testing, and their capacity to trace the contacts of those infected was already overwhelmed.

It was clear to everyone at the cabinet meeting that responding to the crisis would require action not only by the whole government but also by the country’s entire population. Getting New Zealanders to understand the risk the virus posed and preparing them to play a role in the response required an easy-to-understand and actionable strategy, and it was up to Walsh’s team to communicate that strategy to the public.

Ardern told those at the meeting that she wanted an alert-level system similar to the six-level system that GeoNet, the government’s geological-hazard-

monitoring system, used for volcanic eruptions. New Zealanders had become familiar with the system after the Whakaari/White Island eruption just a few months earlier. Science adviser Gerrard had shown Ardern how Singapore used a similar system for disease outbreaks. “When I showed that to the [prime minister], she was very, very passionate about using it as a useful communication tool,” Gerrard said in an interview with *Forbes* magazine.<sup>12</sup>

Money was not a problem, as the government had the borrowing power to fund a robust response. Minister of Finance Grant Robertson praised previous ministers for keeping government debt low when on March 17 he announced NZ\$12.1 billion (about US\$8 billion) of new spending in response to the COVID-19 crisis. “This is the rainy day that we have been planning for,” he said.<sup>13</sup>

## GETTING DOWN TO WORK

With the pandemic creating new challenges each day, the response team had to work fast and be flexible. After March 17—the first day that the Ministry of Health reported more than ten new cases—the number of new infections began to escalate rapidly.

### *Launching a public information campaign*

Ardern’s cabinet approved NZ\$25 million (about US\$16 million) in funding for COVID-19 communications.<sup>14</sup> With the cabinet’s support, Walsh quickly recruited people he described as “the best in the business” from across the public sector as well as independent contractors. In addition to establishing his own team, which grew to about 50 people at its peak, Walsh hired Clemenger BBDO Wellington, the local branch of a global advertising network, and media agency OMD. “Clemenger and OMD were very experienced in public-behavior-change programs, and I had worked with [the two firms] before, so I knew and trusted their capabilities,” Walsh said. He sent some of his staff to Clemenger BBDO’s offices to work together on a public information campaign. “That *one team* approach was critical in creating strong linkages between government and our creative and media experts,” he said.

After beginning work in the second week of March, the team put together the campaign in short order. “We had it out the door in one week, as we had been asked to by cabinet,” said Walsh. “It felt like we did a couple of months’ work in that one week.”

The campaign aimed to achieve impact through simplicity. “We focused on a clear call to action: Unite against COVID-19, and established that as a brand for all our communications to sit under” Walsh said. “We had simple and consistent messaging around the behaviors we wanted people to engage in.” The campaign initially centered on four elements. The first three were direct calls for specific action by individual New Zealanders: wash your hands, cough or sneeze into your elbow, and stay home if you’re sick. The fourth was an appeal for societal compassion—“be kind”—and reflected Ardern’s focus on empathy,

which had played a major role in uniting the country after the terrorist attack a year earlier. It came as no surprise to New Zealanders that Ardern’s government’s COVID-19 messaging also encouraged them to be respectful and caring of one another.

On March 18, Unite against COVID-19 advertisements flooded radio, television, and digital media. “We went *full noise* in terms of the volume of content we pushed out through multiple channels,” said Walsh. One of the advertisements included trusted New Zealand celebrities—such as members of the All Blacks (the national rugby team) and Oscar-winning director Taika Waititi—who asked New Zealanders to band together, listen to the experts, and be kind to one another.

The advertisements directed citizens to a government website, covid19.govt.nz, that Walsh’s team had developed to provide detailed, usable, and credible information about the developing situation. “We knew that the center of the campaign had to be a website, a repository of all the information that New Zealanders needed to navigate COVID-19,” Walsh said. As well as public health advice, the website included information on government support and how to access those resources. The website became a central component of the response, and Walsh’s team aimed to make the website “the single source of truth” for information on COVID-19 in New Zealand—and the government’s response.

#### *Introducing the alert-level system*

As the communication blitz got underway, Clinton Watson—an analyst who had joined Crabtree’s core team back in February—developed the framework of the alert-level system. Watson had been a science and innovation counselor at New Zealand’s embassy in Beijing but had found himself unable to return to China after taking a vacation in January—the same time that Wuhan went into lockdown. Crabtree and Watson had worked together intermittently during their careers, and Watson’s fluency in Mandarin and previous experience in health research made him an ideal fit for the response team.

Watson developed a four-level system and the basics of what each level would entail, starting with minimal restrictions at level 1 and topping at level 4, which would mean full lockdown with severe restrictions on citizens’ freedom of movement (Image 1). While the decision on which alert level the country should be in was ultimately up to Ardern and her cabinet, the alert-level table listed certain triggers to guide that decision. For example, Level 2 would be appropriate if there was a single cluster or outbreak, and Level 3 would be appropriate if health officials identified cases of community transmission—when individuals tested positive for COVID-19 and there was no clear source for how they became infected.

Watson said he had been working for several weeks on the foundations of what would become the alert-level system after realizing that the COVID-19 pandemic was a challenge that exceeded the scope of the influenza pandemic

plan. In early March, while working alongside officials at the Ministry of Health, Watson put together a document outlining which scenarios would trigger certain responses, and what potential interventions could be used. “All the material was there, so I just turned that into the alert-level system,” he said.

When Ardern requested the alert-level system on March 18, a Wednesday, Crabtree and Watson were well aware of the urgency of the situation. Working at such a fast pace was uncommon for policy analysts but crucial because of the nature of the pandemic. “The process was atypical; standard departmental consultation was cast aside.” said Watson. “Peter [Crabtree] and I know how bureaucrats work. Policy processes are often about being the smartest person in the room and going through all these different arguments about why you do this and why you don’t do that. Well, there was no time to work through that policy contest. We had to make some blunt decisions and just get on with it in order to avoid total calamity.”

The top officials on the response team were all on board with the alert-level system. On Friday, March 20, Barrington, Bloomfield, Gerrard, and Ombler presented the alert-level table to Ardern and her cabinet.<sup>15</sup>

Image 1: Alert Level Table

**New Zealand COVID-19 Alert Levels** Unite against COVID-19

- These alert levels specify the public health and social measures to be taken.
- The measures may be updated on the basis of (i) new scientific knowledge about COVID-19 and (ii) information about the effectiveness of intervention measures in New Zealand and elsewhere.
- The alert levels may be applied at a town, city, territorial local authority, regional or national level.
- Different parts of the country may be at different alert levels. We can move up and down alert levels.
- In general, the alert levels are cumulative, e.g. Level 1 is a base-level response. Always prepare for the next level.
- At all levels, health services, emergency services, utilities and goods transport, and other essential services, operations and staff, are expected to remain up and running. Employers in those sectors must continue to meet their health and safety obligations.

LEVEL	RISK ASSESSMENT	RANGE OF MEASURES (can be applied locally or nationally)
<b>Level 4 - Eliminate</b> Likely that disease is not contained	<ul style="list-style-type: none"> <li>• Sustained and intensive transmission</li> <li>• Widespread outbreaks</li> </ul>	<ul style="list-style-type: none"> <li>• People instructed to stay at home</li> <li>• Educational facilities closed</li> <li>• Businesses closed except for essential services (e.g. supermarkets, pharmacies, clinics) and lifeline utilities</li> <li>• Rationing of supplies and requisitioning of facilities</li> <li>• Travel severely limited</li> <li>• Major reprioritisation of healthcare services</li> </ul>
<b>Level 3 - Restrict</b> Heightened risk that disease is not contained	<ul style="list-style-type: none"> <li>• Community transmission occurring OR</li> <li>• Multiple clusters break out</li> </ul>	<ul style="list-style-type: none"> <li>• Travel in areas with clusters or community transmission limited</li> <li>• Affected educational facilities closed</li> <li>• Mass gatherings cancelled</li> <li>• Public venues closed (e.g. libraries, museums, cinemas, food courts, gyms, pools, amusement parks)</li> <li>• Alternative ways of working required and some non-essential businesses should close</li> <li>• Non face-to-face primary care consultations</li> <li>• Non acute (elective) services and procedures in hospitals deferred and healthcare staff reprioritised</li> </ul>
<b>Level 2 - Reduce</b> Disease is contained, but risks of community transmission growing	<ul style="list-style-type: none"> <li>• High risk of importing COVID-19 OR</li> <li>• Increase in imported cases OR</li> <li>• Increase in household transmission OR</li> <li>• Single or isolated cluster outbreak</li> </ul>	<ul style="list-style-type: none"> <li>• Entry border measures maximised</li> <li>• Further restrictions on mass gatherings</li> <li>• Physical distancing on public transport (e.g. leave the seat next to you empty if you can)</li> <li>• Limit non-essential travel around New Zealand</li> <li>• Employers start alternative ways of working if possible (e.g. remote working, shift-based working, physical distancing within the workplace, staggering meal breaks, flexible leave arrangements)</li> <li>• Business continuity plans activated</li> <li>• High-risk people advised to remain at home (e.g. those over 70 or those with other existing medical conditions)</li> </ul>
<b>Level 1 - Prepare</b> Disease is contained	<ul style="list-style-type: none"> <li>• Heightened risk of importing COVID-19 OR</li> <li>• Sporadic imported cases OR</li> <li>• Isolated household transmission associated with imported cases</li> </ul>	<ul style="list-style-type: none"> <li>• Border entry measures to minimise risk of importing COVID-19 cases applied</li> <li>• Contact tracing</li> <li>• Stringent self-isolation and quarantine</li> <li>• Intensive testing for COVID-19</li> <li>• Physical distancing encouraged</li> <li>• Mass gatherings over 500 cancelled</li> <li>• Stay home if you're sick, report flu-like symptoms</li> <li>• Wash and dry hands, cough into elbow, don't touch your face</li> </ul>

When Ardern announced the alert-level system to the public a day later, she immediately put the country into level 2. At that level, the government closed public venues, encouraged at-risk people including those older than 70 years to stay home, and encouraged everyone to stay at least two meters apart at all times. The same day, the Ministry of Health confirmed 13 new cases of COVID-19, bringing the total number to 52.

The introduction of the alert-level framework gave New Zealanders the opportunity to learn about the virus and prepare for the strong possibility of more-stringent restrictions. “The alert-level table was a really simple idea that became very impactful as a piece of risk communications,” said Walsh. “That simple idea was that as we go through this fight against COVID-19, and as the impact of the disease grows, we are going to have to change the way we live. As things get worse, we are going to go up alert levels and have more restrictions placed on us as we unite to fight COVID-19. It was a simple concept to describe a tough situation and really helped people get their head around the serious nature of the challenge in front of us.”

The Unite against COVID-19 campaign team saturated media channels with information about the alert-level system, spreading the concept to all corners of New Zealand. One of the tactics used to explain the system was a printed document sent to every household in the country. The document had two sections: Our Plan, which was the alert-level table, and Your Plan, which set forth simple actions that each household should take to contribute. “People got it pretty quickly,” said Walsh. “People were looking for guidance, and the alert-level system helped anchor them.”

### *Shifting into lockdown*

After the Saturday unveiling of the alert-level system and the imposition of level 2, the government’s response continued to escalate. Crabtree’s team worked over the weekend to develop guidance on the level 3 and level 4 restrictions. “We got together in the Ministry of Health with a whiteboard and about 20 people,” Crabtree said. He divided his team into work groups to attend to different parts of the framework and by Sunday night had a paper ready to present to Ardern and her cabinet on Monday. Throughout, Crabtree’s policy team worked closely with lawyers to evaluate the legal aspects related to the higher-level restrictions. “We had the best regulatory minds in New Zealand working with Crown Law [the government adviser on legal affairs] on the legal basis for implementing levels 3 and 4,” said Watson.

On Monday, March 23, the health ministry confirmed 36 new cases of COVID-19, bringing the total number of confirmed cases to 102. Five of those people were hospitalized, but none were in intensive care. Despite the low number of hospitalizations, it was clear that the outbreak was getting out of control and that community transmission was occurring—several people infected had no recent history of overseas travel and health officials were unable to identify how they caught the virus.

Ardern quickly announced that the country would immediately move to level 3, and, at the same time, announced that in two days the country would move to level 4, the strict lockdown. She told the public that the level 4 restrictions would remain in force for at least four weeks.

Because policy decisions were happening so quickly, Crabtree's and Walsh's teams worked closely to ensure that communication efforts were up-to-date and that the COVID-19 website continued to be a reliable source of facts. "The volume of traffic to the website was significant," Walsh said. "The day the prime minister announced we were going from level 2 to 3, she said, 'Go to the COVID-19 website for more information.' We went from 7,000 people on the site to 27,000 people on the site in two seconds. In a New Zealand context that's a massive spike—and it kept going up!"

At 11.59pm on March 25, when the level 4 lockdown began, all nonessential businesses had to close, and everyone had to stay in their homes unless they had a valid reason to go out—for example, to exercise near their home or to buy groceries.

To move the country to level 4, Ardern issued an Epidemic Notice, which enabled her, following recommendations by the director general of health, to suspend certain legal requirements that were impractical to comply with during a health crisis. For example, issuing the notice automatically extended the visas of foreigners already in New Zealand.

Next, Minister of Civil Defence Peeni Henare declared a state of national emergency—the second time in New Zealand's history such a declaration had been made, the first having been made in 2011 after the Christchurch earthquake. The national emergency meant the government could regulate land, water, and air traffic; close roads and public places; and exclude people from any premises.

In a speech to parliament the day the level 4 lockdown began, Ardern acknowledged that the government's plan was imperfect but said the urgency of the situation meant there was no time to waste. "We could have waited to plan every intricate detail required to execute this closure, until we could answer every single question or circumstance. But, every hour we wait, is one more person, two more people, three more people, exposed to COVID-19," she said. "From midnight tonight, we bunker down for four weeks to try to stop the virus in its tracks." That night, the National Emergency Management Agency sent out an alert to every cell phone in New Zealand, advising everyone to stay in one place throughout the level 4 lockdown (Image 2).

For the lockdown strategy to work, the level of compliance had to be high. The response team put together a strategy to maximize compliance, based on the ideas (1) that most people would do what they were asked to do if they had the right information, (2) that some would need active support or management, and (3) that only a small minority would ignore the restrictions or refuse to obey them. "You want people to have information, to have incentives to line up, and

to make the right decisions,” said Crabtree. “It’s all going to depend on buy-in and the legitimacy of the system.”

The day the level 4 lockdown began, the Ministry of Health announced 50 new cases of COVID-19, and the total number of cases passed 200.

### *Building a team of educated citizens*

In her televised speech the day the country entered lockdown, Ardern addressed citizens’ fears and concerns and shared a straightforward message. “If you have any questions about what you can or can’t do, apply a simple principle: act like you have COVID-19,” she said. “Every move you make is a risk to someone else. That is how we must all collectively think. That’s why the joy of physically visiting other family, children, grandchildren, friends, neighbors is on hold because we’re all now putting one another first. And that is what we as a nation do so well. So, New Zealand, be calm, be kind, stay at home.”

Ardern was forthright about the near certainty that case numbers would continue to rise despite the lockdown. “Success won’t be instant,” she said. “The benefit of what we do today won’t be felt for many days to come. Expect our numbers to keep rising, because they will. But over time, we will see change if we all stick to the rules.”

At the same time, the prime minister sought to create a sense of community among all New Zealanders, including the essential workers who remained on the job, workers who were working from home during the lockdown, and people who had been laid off. “You may not be at work, but that doesn’t mean you don’t have a job,” Ardern said. “Your job is to save lives, and you can do that by staying home.”

Ardern and Director General of Health Bloomfield were the public faces of the government’s response from the beginning of the COVID-19 pandemic, and that continued when the country entered level 4 lockdown. “You will hear us and see us daily as we guide New Zealand through this period,” Ardern said in her speech. Every day at 1 p.m. throughout the level 4 lockdown, Bloomfield—

**Image 2: NEMA Alert**



*Note: “Kia kaha” is a commonly used Maori phrase that means “Be strong.”*

usually accompanied by Ardern—updated New Zealanders on case numbers and details about the government’s response. The briefings were carried live online and broadcast on radio and free-to-air television.

Because communication with the public was the main strategy to drive compliance with level 4 restrictions, a lot of preparation went into the daily briefings. “There was a coordinated process between the Ministry of Health, the all-of-government team, and the prime minister’s office to ensure information was clear and current,” said Walsh.

After Bloomfield and Ardern communicated the daily updates, journalists—all of them spaced two meters apart—had the opportunity to ask questions. Ardern put health advice and scientific evidence front and center. Whenever journalists asked health-related questions, Ardern deferred to Bloomfield. The pair repeated simple, easy-to-understand messages every day: “Be kind,” “Stick to your bubble,” “Stay home, save lives,” and “Act like you have the virus.” Those messages matched the advertisements that the Unite against COVID-19 campaign posted in newspapers, radio, television, and digital media. “We worked really hard to align those three voices [Ardern’s, Bloomfield’s, and the campaign’s] throughout so that New Zealanders got consistency in terms of the public health information being provided,” Walsh said.

Social media engagement—particularly through Facebook and Instagram—played a crucial role in the communication strategy, and accuracy and consistency were paramount. Walsh brought on a team of social media experts to manage the Unite against COVID-19 accounts and to answer questions from the public.

The social media team also analyzed the types of questions being asked and fed that information back into the wider campaign. “We changed our radio and television ads on a daily basis, and a lot of that change was driven by what we heard on social media . . . what people were asking and the types of information they seemed to be looking for,” said Walsh. For example, the social media team received many questions regarding what people were allowed to do outside their homes, how often they could go outside, and how far they were allowed to go for exercise. “We listened to that and adjusted radio and TV ads for that,” Walsh said.

Part of the communications team’s work was to support New Zealanders’ mental health throughout the lockdown period. “We did early work with clinical psychologists and sociologists around tone and manner and what we expected the mood of New Zealand to be as we went through lockdown,” said Walsh. “At that point, we had no idea how long the lockdown was going to last. Both our instincts and that professional advice told us that consistency was going to be really critical.”

Striking the right tone was critical to drive compliance. “We never wanted to tell New Zealanders off,” Walsh said. “We wanted to maintain a firm but empathetic manner all the way through.” The communications team shelved a

prototype answer bot for the website because the machine lacked human qualities. “We got really worried about its ability to get tone wrong and to misread sensitive inquiries,” said Walsh. “We were worried about its ability to hear and be appropriately empathetic when people were displaying—through their questions—signs of stress. We did not want to get that wrong.”

Between Facebook, Instagram, radio, television, print media, and mailings, Walsh said, the government maintained regular communication with all New Zealanders. “You couldn’t help but see us or hear us,” he said. “The expenditure that we pushed into all of those channels meant we created multiple opportunities on a daily basis to see the campaign and hear the messaging.”

### *Solving problems: the Operations Command Center*

While Crabtree’s policy team remained small, Bush’s operations team grew rapidly. The operations command center was set up “to operationalize the government’s decisions, to address the complex risks that the pandemic was bringing us, and to help manage across the system,” Bush said. With the pandemic creating more complex challenges every day, there was a huge array of tasks for the operations team to work on.

Bush recruited people he knew from the police and others from across the public and private sectors. “We recruited known quantities: people who were effective at standing things up very quickly and people who knew systems and understood leadership,” he said. The team working at the center grew to about 250 people, and Bush had to procure space from other offices in the same building as the team grew.

The operations center focused on specific work streams (key problem areas), and Bush created new ones as needs arose. Each work stream followed a plan and aimed to reach specific goals. “At one point, we had 22 different work streams,” he said. “We set a template for every one of those work streams: what is the issue, what is the problem you need to solve, what is the result you require, identify a lead person and agency, governance and support agencies, and what the plan was to land on a result.”

In essence, the operations center was “a problem-solving coordination facility,” Bush said. “We would identify an issue, work out the agencies that needed to be involved, put the governance around it, put a plan in place, and then execute that plan across those agencies.” Participants in some of the work streams worked closely with one ministry or agency, whereas participants in other work streams worked with multiple agencies across government as well as with the private sector.

Each morning, Bush held a meeting with the heads of all of the operation center’s work streams to solve problems as a team. “We would spend several hours working through all of the issues and ensuring that whatever support or deconfliction was required across those work streams got managed,” Bush said. A big part of work stream meetings involved avoiding duplication. “People would give us an update around what they were doing and what their issues

were, and if we identified an overlap, it would be resolved there by those work stream leads.”

Private-sector support was critical for many aspects of the response. Ardern enlisted Rob Fyfe, former chief executive of Air New Zealand, as a liaison between the private sector and the operations team. “Rob corralled all of the private-sector offers and requirements into one place,” said Bush. “We established something we called a *good-ideas database*, so we would be able to coordinate and respond to all of those offers.” One example of an idea from that database was a manufacturing firm that reconfigured itself to produce ventilators.

Fyfe worked closely with New Zealand companies both domestically and internationally to procure essential supplies to respond to the pandemic, such as PPE and ventilators. Many companies offered to contribute resources free or at cost. “There is so much goodwill,” Fyfe said in a radio interview shortly after the level 4 lockdown began. “Anyone I have rung up and said, ‘Can we have people, can we have resources, can you help us solve a problem?’ Small businesses and large businesses have dropped what they were doing and thrown all their resources into trying to solve the problem. The culture of New Zealanders is that everyone leaps at the opportunity to contribute.”<sup>16</sup> The operations team coordinated with airlines, with the Ministry of Foreign Affairs and Trade, and with the Ministry of Health to ensure supplies reached the places they were needed.

As a completely new government organization, the operations center ran into initial challenges in working with some government agencies. “Our role was to support and coordinate, not to take over,” said Bush. “Getting that message across was difficult.” Bush drew on relationships he had built with top officials at public agencies through his role as police commissioner, and he brought on retired senior civil servants and other seasoned leaders to smooth coordination. When possible, he also seconded sitting officials to the operations team. For example, the Caring for Communities work stream, which supported those suffering socially and economically due to COVID-19, was led by Lil Anderson, chief executive of Te Arawhiti, a government office in charge of work with the Māori population; the governance group for that work stream was chaired by the chief executive of the Ministry of Social Development. That structure resulted in “all of the agencies collectively working together in the community to deliver services and support and welfare,” Bush said.

#### *Providing economic and social support*

The response team recognized that some New Zealanders—for example, the homeless—would be unable to comply with the level 4 lockdown even if they wanted to. To support those citizens throughout the lockdown, the government partnered with local organizations that worked closely with vulnerable communities. For example, the government partnered with Housing First—an existing initiative that provided housing for the homeless. Shortly after

the level 4 announcement, staff from Housing First took 74 members of the Christchurch homeless community to motels where they could stay for the lockdown period.<sup>17</sup> Similar efforts took place in 14 other towns and cities across the country, with the government paying for around 1,000 motel rooms for the homeless at a cost of \$1400 per person per week.<sup>18</sup>

A wide-ranging economic package provided support for other citizens who likely would suffer economically and socially during the lockdown. The government doubled its Winter Energy Payment, which provided all New Zealanders who received welfare payments with additional funding during winter months to heat their homes, and introduced a COVID-19 Income Relief Payment of NZ\$490 (about US\$315) per week to those who had lost their jobs after March 1 (higher than the existing Jobseeker Support unemployment benefit). The government also banned rent increases and evictions for six months.

The biggest support, however, came through a wage subsidy scheme, which allocated an initial NZ\$5 billion (about US\$3.2 billion), which later grew to more than NZ\$13 billion (about US\$8.4 billion) to subsidize wages for employees at businesses that lost revenue because of the pandemic. To be eligible, businesses had to have experienced or to anticipate a drop in revenue of at least 30%. Businesses had to keep their staff employed and pay them at least 80% of their usual wages, although in some cases, businesses could negotiate lower rates with employees, as long as those businesses passed on the full amount of the subsidy to their employees. The system supported more than 1.7 million jobs and paid NZ\$585.80 (about US\$375) per week per full-time employee. In a government statement, Minister of Finance Robertson described it as “a high trust system in order to ensure that money reaches workers and businesses as soon as possible.”<sup>19</sup> Businesses could apply for the subsidy by using a simple online form, and the Ministry of Social Development began issuing payments within days.

After an initial 12-week period, the government extended the payment system for an additional 12 weeks. Details on all of the businesses that claimed the subsidy were published online, and any business that ended up not meeting the eligibility requirements was asked to repay the government. By mid-July, more than 10,000 businesses had repaid more than NZ\$300 million (US\$192 million).<sup>20</sup>

### *Bolstering compliance*

Although the success of the lockdown depended on a high level of public compliance, Police Commissioner Bush, who was in charge of enforcement, stressed that he focused on avoiding having to deal with violators. “Our operating model as police is prevention first,” he said. “The aim was to encourage people to comply for the right reasons.”

The police strategy revolved around four E’s, and the fourth of them—*enforce*—was a last resort. “We [mainly] used three E’s: engage, encourage, and

educate,” Bush said. “It was only when people were persistent, serious, repeat offenders that we would use enforcement powers. The first three E’s were really important because this was new, and it was really important that people be given the opportunity to comply. No one had ever been here before; it was a unique circumstance.”

During the widely viewed 1 p.m. briefings, Bush and Ardern called out those who flouted lockdown rules. “I would charitably describe [them] as idiots,” Ardern said during the April 5 briefing, referring to lockdown violators.<sup>21</sup> She was forced to include Minister of Health David Clark in that definition when a member of the public caught Clark at a mountain biking track two kilometers from his house. When Clark was found to have committed further lockdown breaches, Ardern demoted him within her cabinet rankings. Clark faced intense public backlash for not following his own rules, and he eventually resigned as health minister.

For the “encourage” part of the strategy, police took to the streets. “It was very high-visibility policing, with regular patrols,” Bush said. Roads were largely empty—the only vehicles allowed on the roads were those of essential workers or those of others traveling for essential purposes such as to drive to a grocery store—and police patrols were clearly visible to all who ventured out of their homes. “We started off by educating people, giving them advice, and then visibly encouraging them to comply,” said Bush. Bush and other members of the response team also had a strong presence on television and radio. “We were on the media three or four times a day, giving encouragement and advice,” he added.

When the first three Es didn’t work, police had to move to enforcement. “Ninety-nine percent of the population were massively compliant because they knew the risks,” said Bush. “However, there is always a very small minority—where it doesn’t matter what you do or say—they are not going to comply.”

Bush stepped down as police commissioner in early April—a move that had been planned many months before the COVID-19 crisis began. He continued leading the operations command center, however, where he had set up phone lines and e-mail accounts so the public could report breaches of lockdown rules. “We set up a compliance call center whereby police could triage all of the notifications of breaches,” Bush said. “People who were persistent and serious offenders were prosecuted. It was public . . . to discourage others.” Throughout the level 4 lockdown, police reported about 4,000 breaches of level 4 restrictions across the country, of which about 400 were prosecuted.<sup>22</sup>

Bush said the high rates of compliance were due largely to strong leadership and effective communication. “People knew why” the lockdown was necessary, he said. “The messaging from the top was very much, ‘If you do this, you will save lives.’ It was really simple messaging that people really understood.”

*Governing during lockdown*

A cross-party committee agreed to adjourn parliament when the lockdown began. Aside from Ardern and a few other ministers in Wellington, politicians returned to their homes around the country. To ensure that opposition parties would still be able to provide oversight and participate in policy making during the lockdown, parliament set up an Epidemic Response Committee, which met three days a week to debate policy, using video-conferencing platform Zoom to communicate. The committee was headed by Simon Bridges, leader of the opposition National Party, and included members from all of the political parties in New Zealand's parliament.

Though the adjournment of parliament was an unprecedented step, the decision faced limited resistance. "Suspending parliament is an extreme measure for a democracy . . . [but] as a country, we need to come together during this difficult time," Bridges said in an opinion piece for *The Guardian*, in which he suggested epidemic response committees might be good options for other countries entering national lockdowns. "Even though it was my preference that a limited parliament kept going, this [committee] was a good compromise that we agreed to."<sup>23</sup>

The committee's meetings were broadcast live both online and on television. Throughout the lockdown, Bridges invited government ministers, public health experts, and others involved in the response to answer questions posed by the committee. The forum gave opposition members of parliament the opportunity to demand answers from the government and to point out any shortcomings in the response effort.

Job responsibilities for many New Zealanders eased during the lockdown, but the workloads of many government officials increased dramatically. Ministries and agencies had to figure out innovative solutions for ways their sectors could continue functioning as well as possible, and the lockdown caused unexpected problems that had to be resolved quickly. The Ministry of Transport, for example, had to determine how to deal with nonessential cargo that was creating blockages in supply chains so that essential cargo could continue moving unimpeded, and how to support airlines so as to ensure they could keep moving critical freight even when there were no passengers on planes.

Ardern's COVID-19 cabinet committee met regularly to consider proposals to clear bottlenecks caused by the lockdown. The transport ministry, for instance, sought cabinet approval to subsidize flights carrying critical cargo when the lack of passengers made flying unprofitable for airlines.

The all-of-government team helped coordinate through three channels. Crabtree's team worked with ministries and agencies on policy, Bush's team worked with them on operations, and Walsh's team coordinated with government agencies to ensure that information flowed smoothly and quickly across government and out to the public. "We ran as disciplined a process as you could in such a fast-moving and novel environment," Walsh said.

Although the response team had crafted its lockdown policy with a goal of eliminating the virus, it wasn't until the second week of the level 4 lockdown that it confirmed that strategy to the Epidemic-Response Committee and the public. On March 30, a day after New Zealand recorded its first COVID-19 death, National Controller Ombler told the Epidemic Response Committee that the all-of-government team had shifted from a strategy of mitigating the virus to a strategy of “stamping it out and elimination.” Bloomfield confirmed the strategy to the New Zealand public during the daily COVID-19 briefing the following afternoon.<sup>24</sup>

### *Ramping up testing*

The elimination strategy relied on widespread testing across the country to track the spread of the virus and isolate anyone infected. But in late March, New Zealand had capacity to conduct only about 1,500 COVID-19 tests per day. “We had about 10 days’ worth of supplies on hand, so we could do about 15,000 tests with the stock we had,” said Kelvin Watson, an operations management consultant whom the Ministry of Health had hired on March 21 to manage health supply chains during the pandemic. “We knew that was not going to be enough.”

Across the country, district health boards worked with local laboratories to conduct the tests. Some laboratories were owned by local district health boards, and some district health boards contracted privately owned laboratories. All of the laboratories worked closely with the Institute of Environmental Science and Research (known as ESR), a government research institute that had a long-standing contract with the Ministry of Health to collect and manage data on diseases within New Zealand. “ESR stepped into a leadership and coordination role, providing advice and quality assurance,” said Town, the ministry’s chief science adviser.

In late March, not every district health board had a local laboratory that conducted COVID-19 tests. Aside from ESR, six labs were conducting tests: two in Auckland, two in Wellington, one in Christchurch, and one in Dunedin, the second-largest city on the South Island. The capacity to conduct tests did not match the demand for tests geographically. “Capacity was quite lumpy around the country, so we had to do a lot of what we call *load balancing*—making sure that the country’s capacity was being used for the whole country,” said Watson. That meant transporting samples collected in one region to a lab in a different region. “Labs typically worked only with their local district health boards, so the ministry had to provide that coordination.”

Although ESR coordinated testing information with the laboratories, each individual lab was responsible for its own supply chain. Because global supplies of the components needed for COVID-19 tests were severely constrained, the every-lab-for-itself approach resulted in suboptimal results for the country as a whole. The Ministry of Health stepped in to fix the problem. “The labs’ default was to make sure they had enough, but what we focused on was making sure the

country had enough,” said Watson. “That meant making sure that every lab could run for 10 days instead of one lab having 30 days’ supply and another one having none.”

Throughout March, the sourcing of testing supplies was a fraught process. “The labs were going to the suppliers on an individual basis,” said Watson. “Each lab was calling its supplier to say what it needed more of, and suppliers were spending a whole lot of time answering the phone instead of sourcing the products.”

The laboratories all used one of three main systems to conduct COVID-19 tests. The systems were proprietary, meaning that each system had to use components from a specific supplier. Watson’s team established relationships with the three main suppliers and began sourcing test components for labs across New Zealand.

Each supplier had global and regional committees that allocated testing components on a country-by-country basis. The committees based decisions partly on past data—for example, how many tests a country had used the previous week or the week before. Watson’s team had to make the case for why New Zealand needed more supplies to increase testing capacity, because countries were competing for finite resources. “A lot of what we did involved talking to the suppliers about our strategy,” said Watson. “We were able to say, ‘Next week we are expecting to do 5,000 tests [per day] for these reasons, and therefore we will need more than what you gave us this week.’ Because we were providing that information for the supplier, the supplier could go into those allocation conversations and say, ‘Don’t look at the fact that New Zealand did only 2,000 per day last week, because this week they’re going to be doing more.’”

Sometimes top-level officials intervened to bump New Zealand up the list. “In one situation, the prime minister wrote a letter to one of the major suppliers,” said Watson. “In another situation, Ashley Bloomfield was on the phone to an Asia Pacific vice president to set out the expectations and needs that we had.”

In addition to testing supplies, labs had to boost capacity. At the end of March, Watson’s team began coordinating knowledge sharing to ensure the labs were taking measures to increase capacity—for example, by having staff work in two shifts each day or by bringing more machines on. “We got all of the labs together on a call every day,” said Watson. “Once we got everyone on the phone, they could start to talk at an operational level about what they were doing, how they were thinking about staffing structures, how they were thinking about different bits of kits . . . that’s when we started to see growth in capacity within labs.”

As well as boosting capacity within existing labs, the ministry and district health boards worked to increase the number of labs capable of conducting COVID-19 tests. That number grew from six at the end of March to 13 by May. “We set an initial target to get capacity to 4,500 tests per day and to get 50,000 tests able to be completed into the country,” said Watson. “We pushed as fast

and as hard as we could. And we actually got there sooner than we thought we would . . . and then we just get kept going.”

Because demand for tests increased at a rate similar to test supplies, building a stockpile of testing supplies took many weeks. “For a long time, we had 12 to 20 days’ worth of supply,” said Watson. “When we really got the supply chains humming, we got up to 30 days’ supply and it went up from there.”

To get a test, New Zealanders could contact their personal doctors or call Healthline, a long-standing phone service funded by the health ministry. Healthline was staffed by specialists who used a script devised by the ministry to answer callers’ questions and assess whether the callers qualified to be tested for COVID-19. In March, the threshold to qualify for a test was high: a patient had to display COVID-19 symptoms and had to have a recent history of travel to a virus hot spot or be a close contact of someone infected. In April, when Watson’s team at the Ministry of Health sourced more testing supplies, the ministry loosened the threshold to get a test.

Healthline staff directed callers who met the threshold to a testing facility and assigned each a time for a test. Community-based testing centers, set up by district health boards, were staffed by specially trained health-care professionals and designed to ensure physical distancing to reduce chances of spreading the virus. “Somebody in full PPE would go through a basic questionnaire, then do a nasal swab, put that straight into the testing medium, and label it; and then the swabs would be collected every few hours and sent to the nearest lab,” said Town.

The Ministry of Health and the district health boards had to find workarounds to transport the samples to the laboratories, because normal transportation links had been affected by the lockdown restrictions. After samples arrived at a laboratory, lab staff ran tests in batches of 96 samples—a process that took about four or five hours. Then microbiologists analyzed the results, which sometimes meant rerunning the tests in cases in which initial results weren’t conclusive. The labs then submitted forms to ESR, which entered the results in EpiSurv, its disease surveillance database.

#### *Tracing the contacts of those infected*

After EpiSurv was updated, officials from the local public health unit called patients and their doctors to report results. When a patient tested positive, the labor-intensive process of contact tracing began. “The person would be interviewed at length to find out who they had been in contact with, where they had been, and where the source of the infection might have been,” said Town. The officials then called close contacts, advised those people to isolate themselves, and organized tests for them.

By the time New Zealand entered the level 4 lockdown, public health units’ contact tracers were already overwhelmed. During the first week of lockdown, between 58 and 85 new confirmed cases of COVID-19 were reported each day.

With low staffing numbers, it was impossible for public health units to trace the contacts of more than a handful of people. There was no standard format to record, store, and share data between the regional units and the Ministry of Health, further hampering efforts to trace close contacts of confirmed cases.

To build capacity, the Ministry of Health set up a national contact-tracing center and recruited about 200 staff, who worked in two shifts. The ministry also introduced a cloud-based platform to better store and manage data on COVID-19 cases and the close contacts of those infected. Still, the center struggled to reach the contacts of those infected in a timely manner—it often took contact tracers several days to identify and speak with close contacts of newly reported cases.

On April 9, the ministry commissioned Ayesha Verrall—a physician and tuberculosis specialist who had spoken out in the media about the weaknesses of contact tracing—to audit the system. Within 24 hours, Verrall issued a report recommending that the ministry (1) allocate more staff and funding to contact tracing for all the public health units, (2) improve data management and data sharing with the public health units, (3) introduce a reporting and monitoring system that would provide real-time data on the effectiveness of the contact tracing process, and (4) begin building a contact tracing system that could cope with future outbreaks of COVID-19—even if the government succeeded in its elimination strategy and the lockdown was lifted.<sup>25</sup>

Some experts—including Verrall—called for a technological solution, arguing that the ubiquity of mobile phones could reduce the need for a human army of contact tracers, or at least complement the manual contact tracing process. Several countries pursued a digital contact-tracing strategy, but Ardern and Bloomfield were skeptical, citing the lack of uptake of such systems in Australia and Singapore when questioned by journalists on the matter.

Eventually, at the end of May, the Ministry of Health released NZ COVID Tracer, a mobile phone application that acted as a digital diary of where a user had been. Users could scan QR (quick-response) codes with their phones, and the app saved in the user's phone a record of the locations scanned. Businesses could download unique QR codes from the government's COVID-19 website to display on their premises. Uptake was low, however, and a month after its release, less than one eighth of New Zealand's population had downloaded the app; plus, the average user had scanned only two codes.<sup>26</sup>

Fortunately, high compliance with level 4 restrictions meant that most of those infected with COVID-19 throughout April and May had only a few close contacts to trace—mainly people in their own households. As a result, the initially weak contact-tracing system did not cripple the elimination strategy, and the lockdown bought the Ministry of Health time to improve its contact-tracing processes.

*Procuring and distributing personal protective equipment*

As difficult as it was to procure testing components, it was equally difficult to procure PPE. “We were operating in a significantly globally distressed supply chain,” said Watson. “Our normal suppliers were no longer available. The United States, for example, had banned exports by the major suppliers, so the US companies that had been significant global providers all of a sudden no longer were.” With US supplies unavailable, New Zealand—like many other countries—turned to China for help.

Usually, it took several weeks for the Ministry of Health to procure equipment. Orders were finalized only after health officials had checked that supplies were exactly what had been ordered and met certain standards. But in the midst of a global pandemic, there was no time to follow standard procedures. “We were placing orders for PPE in three or four *hours* that we would normally take three or four *weeks* to work through,” said Watson. “It was a situation of buy or miss out.”

As global demand skyrocketed, PPE was suddenly costing 10 times or more what it usually did. If Watson’s team didn’t process orders fast enough, sometimes prices increased even before the order was completed. “In one situation, between getting approval for the order and placing the order, the price had gone up 20%,” recalled Watson.

After making purchases, Watson’s team at the ministry worked closely with the all-of-government team to ensure the supplies made it to New Zealand. Because of decreased demand for travel, flights were irregular, and the team had to closely monitor shipments. “You’d go to bed at night thinking [a shipment] was on a plane to New Zealand, and then you’d find out the next morning that it got offloaded in Qatar or Singapore, and you had to work on getting it on another flight,” said Watson.

Occasionally, unique opportunities arose that required coordination with the Ministry of Foreign Affairs and Trade. “A couple of Lufthansa flights came in that the German government had organized to take its citizens back home, and we were able to get some freight on one of those flights,” said Watson. “It was very much: what flights are coming in and do they link up with the supplies we’ve got.”

The fast pace of procurement raised concerns about the quality of the products being produced by Chinese manufacturers. “The due diligence we would normally do prior to purchase we would do while it was in the air and as it was landing into New Zealand,” Watson said. Although in most cases the equipment purchased ended up being of good quality, in some cases the ministry had to delay distributing supplies while it verified that the equipment complied with standards.

In addition to nationalizing the supply of PPE, the ministry nationalized distribution. Beginning April 1, district health boards as well as organizations outside the health system could apply to the ministry for PPE they required. The ministry then allocated PPE based on how much stock was on hand and how

urgent the applicant's needs were. Health boards were responsible for supplying PPE to all publicly funded health-care services within their districts.

*Transitioning out of lockdown*

Throughout the lockdown period, the all-of-government team worked on a plan to transition the country out of level 4, even though any such plan depended on the unclear outlook for success in eliminating community spread of the virus. "If we didn't kill community transmission, all of the modeling was saying it was just going to come back again," said Clinton Watson of Crabtree's strategy team. "We would be in this cycle of lockdown–unlock–lock–unlock–lock . . . I came to the clear view that we just had to stay at level 4 for as long as was necessary to eliminate the thing and to avoid going into these horrible cycles. If we did eliminate, we could get back to life as normal, and consumers would have confidence to venture out."

To convince politicians and the public to stick to the strict lockdown rules even when case numbers dropped significantly, it was important to explain the link between virus elimination and economic recovery. Crabtree and his team communicated the economic and health risks of lifting lockdown restrictions too early, but it was up to Ardern and her government to make the political calculation with regard to when to ease alert levels and reduce restrictions. "Some people were saying another week in lockdown is going to break business," said Crabtree. "We were saying another week is better for business, because then we will have certainty that we are on top of this thing, and we won't see cases bounce back." Maintaining support for that approach "became harder and harder later in lockdown."

Ardern said throughout lockdown that she would give New Zealanders 48-hour notice of any change in alert level. Because she had said the level 4 lockdown would last a minimum of four weeks, the earliest an announcement regarding a change in alert level would be on April 20, which was 26 days after the country entered level 4 lockdown. On that day, the Ministry of Health confirmed nine new cases of COVID-19; Ardern announced that she would extend the lockdown until April 27; and the country would then spend a minimum of two weeks at alert level 3. Restrictions at level 3 were very similar to level 4 restrictions: schools, public facilities, and most businesses would remain closed. However, restaurants and cafés were allowed to reopen for take-out or delivery services.

Meanwhile, Crabtree's policy team worked to refine specific guidelines for the lower alert levels, trying to ensure they had answers for any questions that came up. "Unsurprisingly, people wanted certainty regarding their particular situation," said Crabtree, whose team was working closely with ministries on the intricate details of each alert level. "For example, what were the transportation rules, how should you interact with transportation providers, and what was the appropriate spacing that was going to be required?"

Daily new case numbers kept dropping, and on May 4, the Ministry of Health reported the first day with no new cases. A week later, Ardern announced that on May 13, the country would move to alert level 2, which meant businesses could reopen—with strict requirements to ensure physical distancing.

As businesses reopened, many used bright yellow images and material from the Unite against COVID-19 campaign to encourage customers to adhere to physical-distancing protocols. “As we were going to more-permissive levels, I saw yellow everywhere, and it was not we who were responsible for putting that up,” said Walsh. “It was businesses, organizations, and individuals, taking what our campaign had created and using it for their own purposes.”

Even as case numbers remained low, New Zealanders generally continued to obey public health directives. “On the way up [the alert-level system], from 2 to 3 to 4, we saw very high levels of engagement, acknowledgment of the message, and people self-reporting that they were doing the right behavior,” said Walsh. “The engagement levels did fall a bit as we went down alert levels, but they still remained very high.”

Throughout May, political pressure grew on Ardern to move to level 1. On most days, the Ministry of Health reported no new cases. Rival politicians—including Deputy Prime Minister Peters—called for an immediate easing of restrictions. On June 5, Bloomfield revised his advice, clearing the way for Ardern to move to level 1. “I previously recommended that a move to level 1 should not happen until at least 28 days after fully implementing level 2,” the director general of health advised in a report to the health minister. “However, given the time with zero new cases and the fact that there is only one active case remaining, it is prudent to revisit that recommendation. Level 2 controls incur significant social and economic costs and we should therefore move as soon as it is safe to do so.”<sup>27</sup>

On June 8, Ardern announced that the country would move to alert level 1. It had been 17 days since the last case had been reported, suggesting the country had conquered the virus—or at least brought it to heel. At level 1, all businesses and schools could operate normally again, and crowd sizes no longer had limits. The border, however, remained closed to non–New Zealand residents.

Since its first case on February 28, New Zealand had 1,154 confirmed cases of COVID-19 and 22 deaths from the disease.

## OVERCOMING OBSTACLES

Throughout New Zealand’s response, eliminating the threat of community transmission required strict controls on new arrivals into the country. If officials could isolate anyone infected with COVID-19 before that person entered, they could stop the virus from breaching New Zealand’s borders. However, despite efforts by officials from the Ministry of Health and members of the all-of-government team, management of the border situation was tricky.

In mid-March, when policy decisions were being made at lightning speed, the response team had to communicate policies to immigration officials and police in real time—sometimes without checking that the policies could be implemented effectively. For example, when the government announced that all incoming arrivals had to self-isolate for 14 days, immigration officials and police had no system for advising and monitoring them. Similarly, the government didn't immediately have systems in place to isolate new arrivals when the country entered lockdown. It wasn't until April 10—more than two weeks after the level 4 lockdown began—that the response team dropped the self-isolation policy in favor of a stricter so-called managed-isolation system. The response team rented out hotels—which were largely vacant due to reduced tourism—and set them up as managed-isolation facilities. The managed-isolation system cost the government an estimated NZ\$5,700 (about US\$3,800) per person for a 14-day stay at the facilities.

After the lockdown ended, many New Zealanders abroad decided to return home, but the response team significantly underestimated the number of arrivals, and to make sure that isolation facilities did not exceed capacity, the team had to cap the number of people allowed on incoming flights. As more and more hotels were converted to isolation facilities, the cost of the operation ballooned. By July, 32 hotels across the country were serving as managed-isolation facilities. One hotel in Auckland served as a more strictly managed quarantine facility for travelers who had suspected cases of COVID-19 or tested positive for the virus. The total cost of running the facilities was expected to reach NZ\$500 million (about US\$320 million) by the end of 2020.

Despite the significant cost of operating the facilities, a bungle in mid-June made clear that managed isolation was not working as intended. Two women who arrived from the United Kingdom were given a compassionate exemption to leave their managed-isolation facility on June 13, just six days after their arrival in the country. Neither of the two were tested for COVID-19, and the health ministry allowed them to travel by car from the facility in Auckland to a relative's funeral in Wellington—a distance of more than 600 kilometers. Both women tested positive for COVID-19 in Wellington, and the case sparked outrage across the country, as New Zealanders worried that that incident and others like it could put the country back into lockdown.

Ardern, too, was outraged. “This case represents an unacceptable failure of the system,” she said. “It should never have happened, and it cannot be repeated. It is totally unacceptable that procedures we were advised were in place, were not . . . Our borders and the controls at our borders must be rigorous.”<sup>28</sup> Bloomfield immediately halted all compassionate exemptions to isolation and investigated why the women hadn't been tested on day 3 and day 12 of isolation, as required by protocol. Ardern instructed Air Commodore Darryn “Digby” Webb, who had been seconded to the operations center since April, to conduct an audit of the managed-isolation systems and take charge of managing them. The audit found there had been confusion as to who was

responsible for what regarding managed isolation and that policies had not been implemented consistently.

The response team had initially set up managed-isolation facilities as a short-term strategy to manage arrivals. However, as the pandemic escalated globally and as other countries were having less success than New Zealand was in containing the virus, it became clear that the facilities would have to remain in place for a much longer period. “When we realized that this was going to be a very enduring piece of work, we had to lift and shift into another agency,” Bush said. “It is going to be completely owned by the Ministry of Business, Innovation and Employment.”

The challenges of managing new arrivals grew over time. “Initially, the returnees were very compliant,” said Bush. “It got more and more complex when demand increased and the level of compliance became more challenging . . . Initially, no one was busting out, and now we’ve had people absconding out of those facilities for personal reasons.” July saw several breakouts from managed-isolation facilities, and police had to chase down escapees. Those charged faced a maximum penalty of six months in prison or a fine of NZ\$4,000 (about US\$2,560).

Ensuring high compliance with the isolation requirements was an ongoing challenge for both police and military personnel. “Inside a hotel you can have only so much security; these facilities are not prisons,” said Bush. “There is still a need for trust and for people to do the right thing. If they are disposed to not doing the right thing, 90% of the time we will be able to prevent that. But if people can break out of high-security prisons, then if they really want to, they can break out of hotels. And that is a real risk to the community.”

Minimizing the risk of community transmission was one of Bush’s main goals in July. “At the moment, we are doing an analysis right across the system to learn whether there are vulnerabilities and to prevent any community transmission,” he said. “We are analyzing the entire landscape to ensure we have filled every gap so we can prevent anything from happening.”

Despite those efforts, a new outbreak announced on August 12 was evidence that not all of those gaps had been filled. Four members of one Auckland family tested positive for COVID-19, and health officials were unable to determine the source of the infections. Ardern immediately reintroduced level 3 restrictions for the city and level 2 restrictions for the rest of the country. A day later, the cluster had grown to 17 cases, and the Ministry of Health scrambled to trace and test the close contacts of those infected.

Fortunately, the ministry had used the long period with no new cases within New Zealand’s borders to prepare for a resurgence. Kelvin Watson and his supply chain team, for example, used the country’s 102 days with no community transmission to build a stockpile of testing supplies and good-quality PPE. “Because we didn’t have community transmission, that gave us the space to set up really good processes around PPE,” Watson said. “Even though the global

market was still significantly distressed, we were able to put some safeguards in place.”

With a stockpile of supplies and improved procedures, laboratories quickly increased testing. From about 4,000 tests completed on August 11—the day the first new case of COVID-19 was confirmed—the daily average during the next seven days increased to more than 20,000 tests. The Institute of Environmental Science and Research (ESR) also used the time to build up its testing capabilities—for example, by using genome-sequencing tests to trace specific strains of the virus, which helped health officials track the chain of infections. Throughout May, June, and July the health ministry also boosted its contact tracing capacity substantially, and public health units and the national contact tracing center were better prepared to cope with the new outbreak and quickly trace close contacts of those infected.

By August 24, the new cluster had grown to over 100 cases. Despite being unable to identify the original source of the outbreak, the Ministry of Health’s improved contact tracing and ESR’s genomic sequencing helped establish that all of the cases were linked to the same source.

## ASSESSING RESULTS

After April 5, when the Ministry of Health reported 89 confirmed new cases of COVID-19, the daily number of new cases quickly dropped off. The Level 4 lockdown worked. From April 13 on, no more than 20 new cases were reported each day.

On June 5, the health ministry declared the World Hereford Conference cluster of cases closed. (Clusters were declared closed after 28 days with no new cases from the date when the last case completed 14 days of isolation.) A total of 39 people had become infected by attending the gathering or coming in contact with someone who had.

Prior to the outbreak in August, the last case of community transmission (when health officials were unable to determine when and where an infection originated) was reported on May 1. New cases continued to appear after that date—for example, household members of known cases or New Zealanders arriving with the virus from overseas—but the number of new cases each day remained very low. Throughout May, most days saw zero new cases added to New Zealand’s total, and in early June, Ardern declared that there were no active cases of COVID-19 in New Zealand. The country had “eliminated” the virus—at least for the time being.

New Zealand’s success in minimizing the spread of COVID-19 stood in stark contrast to the rest of the world. By mid-August, more than 20 million people worldwide had been infected with the virus, and more than 750,000 had died. At that time, New Zealand had reported about 1,200 cases and just 22 fatalities.

Prime Minister Ardern frequently referred to her response team being “a team of 5 million” (New Zealand’s population reached 5 million for the first

time in March 2020 as New Zealanders living overseas returned home in the midst of the pandemic). The sweeping communication strategy deployed by Ardern and the all-of-government team encouraged strong public support for the government's public health directives—a crucial result that many other countries struggled to achieve. Through empathy, expertise, evidence, and clear messaging, the government won public trust. “In the face of the greatest threat to human health that we have faced in over a century, Kiwis have quietly and collectively implemented a nationwide wall of defense,” Ardern told New Zealanders during her afternoon address on day 15 of the level 4 lockdown.

At least until the return of restrictions in August, the early lockdown strategy—coupled with increased government spending to support citizens and businesses—seemed to have resulted in strong outcomes not just for citizens' health, but also for the economy. Although the COVID-19 pandemic pushed the whole globe into an economic recession, businesses in New Zealand were able to reopen at full capacity and citizens could travel domestically with no risk of becoming infected. In many other countries the ongoing risk of infection saw consumers unwilling to venture out, with many businesses forced to close or operate at reduced capacity. Professional rugby matches in New Zealand attracted capacity crowds at the same time sports events abroad were being held in empty stadiums—if at all.

But ongoing challenges meant the relative success of New Zealand's response—and its full impact on the local economy—remained an unanswered question as the pandemic continued to play out around the world in the latter half of 2020. The country's economic recovery depended not just on its own response but also on efforts by other countries. “Maybe we can continue to be successful at keeping the disease out of the country, but we are in a worldwide recession that is just going to get worse, and we are a trading country,” said Walsh. “We've got a really big economic headwind to battle through.” During an interview in mid-July, Walsh was conscious of the challenges ahead. “The disease isn't disappearing overseas, and we have a false sense of reality in New Zealand at the moment,” he said. “Despite the very fine work that continues to be done, we are still at risk of the disease coming back.”

As of August, the reopening of New Zealand's borders—and bringing back the tourists and international students who would help stimulate the economy—was still a distant prospect.

## REFLECTIONS

In an April 2020 interview with Radio New Zealand, Abdi Mahamud, the western Pacific incident manager for the World Health Organization, described New Zealand's COVID-19 response as “one of the strongest in the world,” adding that the WHO was impressed with how the New Zealand government had communicated and how its citizens had complied with social restrictions.<sup>29</sup> Indeed, the two were closely linked. Clear and consistent communication from the prime minister and senior officials and simple, easy-to-understand messaging

had been critical in convincing the public to comply with the restrictions of the alert-level system.

Strong leaders—both elected politicians and civil servants—played major roles in the successful communications. John Walsh, who headed the communications effort, described Ashley Bloomfield, the director general of health, as “a remarkable communicator.” “Governments are big machines, but it is individuals that people look to,” Walsh said. “In Dr. Bloomfield, New Zealanders saw someone they trusted, someone they could relate to, and someone they could have confidence in.” Prime Minister Jacinda Ardern also won praise for the way she communicated with the public. “Jacinda is a brilliant communicator and an empathetic leader,” said Michael Baker, a professor of public health who worked on the Ministry of Health’s COVID-19 technical advisory group, in an interview with the BBC.<sup>30</sup>

Although communications played an important role in mobilizing the public, Walsh gave credit to citizens who cooperated as a matter of civic duty. “New Zealanders got that this was a massive problem and that we had to pull together as a country to solve the problem,” Walsh said. “We knitted that together through the campaign, through the prime minister, and through Dr Bloomfield, but it was New Zealanders that did it: it was the team of 5 million.”

Crucially, Ardern chose to elevate the role of scientists during the pandemic. She relied heavily on her science advisers, epidemiologists, and infectious disease experts and deferred to them for policy recommendations. “The science was clear, and she was always very clear that her decisions would be based on the evidence,” said Juliet Gerrard, the prime minister’s chief science adviser, in a podcast interview.<sup>31</sup>

Bloomfield, Brook Barrington (chief executive of the Department of Prime Minister and Cabinet), and other top officials working on the response surrounded themselves with high-caliber staff that excelled at working under pressure. “We benefited from being able to draw together people with a depth and breadth of skills and experience . . . people who had resources at their disposal and a lot of experience in delivering big programs under pressure,” said Peter Crabtree, who led strategy and policy for the all-of-government team. “When you have a crisis like this, everyone goes above and beyond in their personal commitments, abilities to work together, and abilities to problem-solve.”

Ardern and her response team always acted quickly throughout the response effort, opting to make pivotal decisions that sometimes were based on limited information. “We were constantly thinking, What do we need to do in two weeks’ time?—and then we did it that day,” Bloomfield said during the 1 p.m. public briefing on April 29. Crabtree stressed that accelerated decision making was essential given the fast-moving nature of the crisis. “You’ve got to work at pace,” said Crabtree. “You need to identify when you need to move, do it quickly, and bring people along with you.”

New Zealand's small size and strong ties between individuals working on all aspects of the response meant the government could adapt quickly to the fast-shifting situation. "The New Zealand civil service has a very strong sense of service and ethics, a very strong cadre of people who have moved around and worked together, and a very strong sense of trust," said Crabtree. "Social capital is deep. Our response was successful because social capital enabled us to adapt and work outside our systems. If we had stuck to the pandemic plan or stuck to our individual agencies, we would not have achieved what we did."

When an opposition member of parliament suggested that luck was largely responsible for New Zealand's success in corralling the virus during the first half of 2020, Barrington was adamant. "I reject emphatically the suggestion that we are where we are because of luck," he told the parliamentary committee. "I've seen the work that was done by a relatively small number of people day in and day out. I've seen the quality of the advice given to government and the quality of the decision making. None of this has happened by luck . . . We are where we are because of brains and hard work."<sup>32</sup>

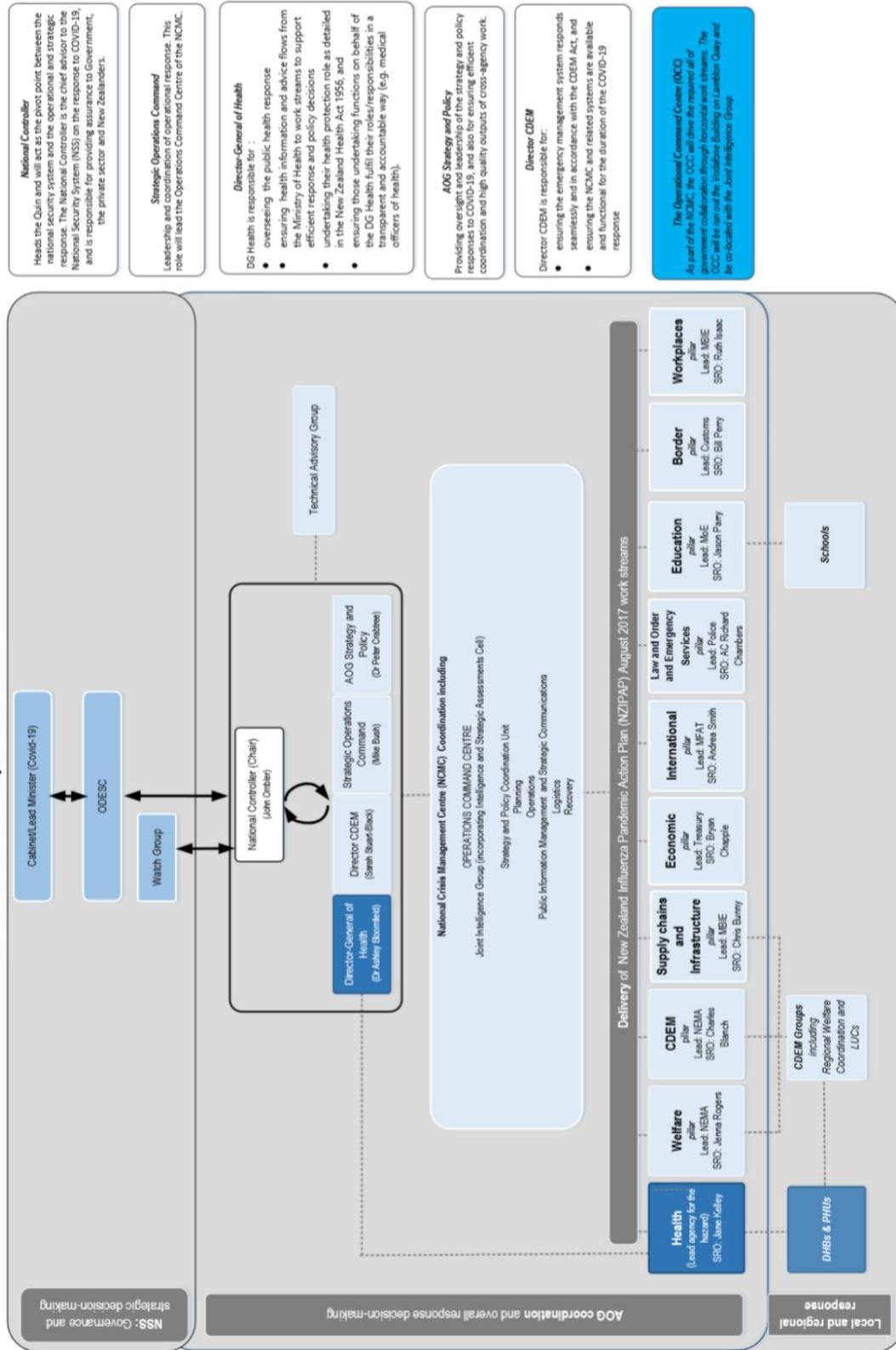
Several special factors, however, did play in New Zealand's favor. "We benefit from a very large moat," said Ardern, referring to the Pacific Ocean, when she announced the launch of the managed-isolation system on April 9. That isolation from the rest of the world meant it took longer for COVID-19 to reach New Zealand than most other countries, thereby giving the government more time to learn from other countries' responses. And because New Zealand is not accessible by land, it was easier for the government to shut down the border to new arrivals.

Public health experts said New Zealand could have been better prepared—for example, by having a better-funded health sector with more intensive-care beds and better systems in place to prepare for disease outbreaks. Sir David Skegg, an epidemiologist at the University of Otago, told the Epidemic Response Committee that the New Zealand health system had been "neglected for decades" and suffered "chronic underfunding."<sup>33</sup> As a result of resource constraints, the health sector operated using antiquated systems—something the Ministry of Health's chief science adviser, Ian Town, conceded. "EpiSurv [New Zealand's disease surveillance system] had not been upgraded to the most recent version. It relied on manual entry of data from manual forms," said Town. "The ideal would have been a cloud-based system that had been tried and tested."

Other countries—for example, Taiwan—were better prepared for a pandemic and had strong response systems in place before the pandemic took hold. As of August, those systems had helped Taiwan avoid implementing a lockdown. "Even though we have been successful, we had to do a lockdown to get to this point," said Clinton Watson, Crabtree's lead analyst. "Ideally, we wouldn't have had to do that."

Although the outbreak in August proved COVID-19's resilience, government officials and public health experts said the country was in a good position to quash the virus once again. "The government has taken very decisive measures to investigate and contain the outbreak," Baker told the BBC on August 13. "I think New Zealand will succeed and get rid of it again."<sup>34</sup>

Exhibit 1: Response Organizational Structure



**National Controller**  
Heads the Quin and will act as the pivot point between the national security system and the operational and strategic response. The National Controller is the chief advisor to the National Security System (NSS) on the response to COVID-19, and is responsible for providing leadership to Government, the private sector and New Zealanders.

**Strategic Operations Command**  
Leadership and coordination of operational response. This role will lead the Operations Command Centre of the NCMC.

**Director General of Health**  
DG Health is responsible for:  

- overseeing the public health response
- ensuring health information and advice flows from the Ministry of Health to work streams to support efficient response and policy decisions
- undertaking their health protection role as detailed in the New Zealand Health Act 1956, and ensuring those undertaking functions on behalf of the DG Health fulfil their roles/responsibilities in a transparent and accountable way (e.g. medical officers of health).

**AGG Strategy and Policy**  
Providing oversight and leadership of the strategy and policy responses to COVID-19, and also for ensuring efficient coordination and high quality outputs of cross-agency work.

**Director CDEM**  
Director CDEM is responsible for:  

- ensuring the emergency management system responds seamlessly and in accordance with the CDEM Act, and ensuring the NCMC and related systems are available and functional for the duration of the COVID-19 response.

**The Operational Command Centre (OCC)**  
As part of the NCMC, the OCC will have the required all of government collaboration through horizontal work streams. The OCC will be run out of the Vodafone Building on Lambton Quay and be co-located with the Joint Intelligence Group

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