Briefing

Refining and Improving the COVID-19 Elimination Strategy

Date due to MO:	11 December 2020	**Action required by:**	N/A
Security level:	IN CONFIDENCE	**Health Report number:**	20202219
To:	Hon Chris Hipkins, Minister for COVID-19 Response		

Contact for telephone discussion

Name	Position	Telephone
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Minister's office to complete:

☐ Approved ☐ Decline ☐ Noted

☐ Needs change ☐ Seen ☐ Overtaken by events

☐ See Minister's Notes ☐ Withdrawn

Comment:

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Recommendations

We recommend you:

a) **Note** the attached slide pack with advice on options for refining and improving the COVID-19 Elimination Strategy **Yes/No**

b) **Note** that officials from the Ministry of Health and the Department of the Prime Minister and Cabinet will jointly draft a Cabinet Paper which includes the overall framework, articulates the elimination strategy narrative and outlines the forward work programme to your colleagues. We will produce a draft for you by the end of December 2020, to be lodged early in 2021. **Yes/No**

c) **Forward** this report to the Prime Minister, and Ministers of Finance, Health, Immigration, and the Associate Minister of Health (Public Health) **Yes/No**

Ashley Bloomfield
Director-General of Health
Date: 11/12/2020

Hon Chris Hipkins
Minister for COVID-19 Response
Date: 7/01/2021

Refining and Improving the COVID-19 Elimination Strategy

Purpose of report

1. This report provides a slide pack which sets out advice on refining and improving the COVID-19 Elimination Strategy, based on engagement with public health experts, health system stakeholders and other government agencies.

Background

2. The Director-General of Health commissioned a project about refining and improving the COVID-19 Elimination Strategy in September 2020, reporting to Ministers in December 2020. The key question was: *What should change in New Zealand's approach to COVID-19 elimination from a public health perspective?*

3. New Zealand's overall COVID-19 Elimination Strategy is given effect via a range of public health measures and controls. The current strategy was confirmed in early May 2020 and published on the Ministry of Health's website.

4. Since then, the evidence base has grown, based on experience and research in New Zealand and around the world. The Government has adjusted settings over time, as part of decisions on raising and lowering Alert Levels and continuous improvement to the wider system / response. There has been demand from inside and outside government to revisit settings in light of the economic and social impacts of different measures. This work provides a public-health-led perspective to inform those discussions.

5. The timing is right to refine the approach to elimination, given the August resurgence, the new Government, and the fact it is now six months since the original strategy was confirmed.

Process to date

6. The Ministry of Health (the Ministry) has completed its work around refining and improving the Elimination Strategy. The key outputs of this work include:

    a. a framework for the Elimination Strategy, which describes four pillars and the mix of public health control measures that support the aim of elimination (slide B in the attached slide pack)

    b. a set of strategic choices and possible options following engagement with public health experts that could be explored in more detail (slides E-K in the attached slide pack)

    c. There is further material for the project including a full project report and Te Tiriti o Waitangi / Treaty of Waitangi analysis which can be provided to your office.

Key assumptions

7. The key assumptions made when undertaking the work included that:

a. New Zealand continues to pursue an elimination strategy and border restrictions continue in some form

b. delivery of a vaccine is expected during 2021

c. because roll-out of an immunisation programme will take some time, there will be no immediate changes to the mix of public health measures

d. it is essential to continue monitoring both national and international contexts and adjust the strategy accordingly.

There has been engagement across public health, agencies and the wider sector

8. This work has involved:

a. a cross-agency working group, including officials from the Ministry of Health, the Department of the Prime Minister and Cabinet (DPMC), the Ministry of Business, Innovation and Employment (MBIE), and the Treasury.

b. engagement

i. across all of government agencies, and with the Chief Science Advisor Network

ii. with public health experts (internal to the Ministry, the COVID-19 Technical Advisory Group, academics, and public health clinicians)

iii. with health and disability system stakeholders (including DHBs, primary and community care, disability, Māori and Pacific health).

c. buy-in at a range of levels from Chief Executives (eg, COVID-19 Chairs Board, and Border Sector Governance Group) through to the working group level.

9. The process of engagement with public health experts, across agencies, and with the wider health and disability sector resulted in wide-ranging discussions about the strategy. Over the course of eight weeks the project team reached a saturation point where feedback was consistent with, and reinforced previous discussions.

Summary of advice on refining and improving the COVID-19 Elimination Strategy

A revised framework – with four pillars

10. Building on the May 2020 articulation of the strategy, the Ministry now recommends that the COVID-19 Elimination Strategy (December 2020) be described as a system comprising four key pillars:

a. Keep It Out - this pillar covers pre-border and border settings, including managed isolation and quarantine (MIQ).

b. Prepare For It - this pillar includes detection and surveillance, and baseline public health measures established through Alert Level 1 (but that are recommended at all Alert Levels).

c. Stamp It Out - this pillar includes contact tracing and case management, and stronger public health measures (eg, Alert Levels 2-4).

d. Manage The Impact - this pillar is about health system readiness and resilience.

11. This framework (attached as slide B) provides structure to how people think about the Elimination Strategy going forward, and the relative weight of its components or Pillars in decision making. The "Balancing the System" layer in framework maps across the Pillars – linking the described risk measures to Pillars 1-3. This layer calls out the interplay between the human system, the health response and trade-offs made as this response is scaled up or back in proportion to the risk assessment. In particular, it encourages a system view so that the overall set of public health measures is calibrated to the evidence and balanced in its response.

Engagement with public health experts and others has revealed a number of strategic choices

12. Discussion with public health and other experts centred on asking about the measures in different pillars with a view to revealing new evidence or considerations that may warrant refinement or change to the mix of measures in the elimination strategy.

13. There are three key choices that will guide the options in the pillars:

    a. **Re-balancing the system** - Should the balance of measures shift toward greater weight on 'Prepare For It' and contact tracing to 'Stamp It Out', and slightly less on 'Keep It Out' and higher Alert Levels in 'Stamp It Out'?

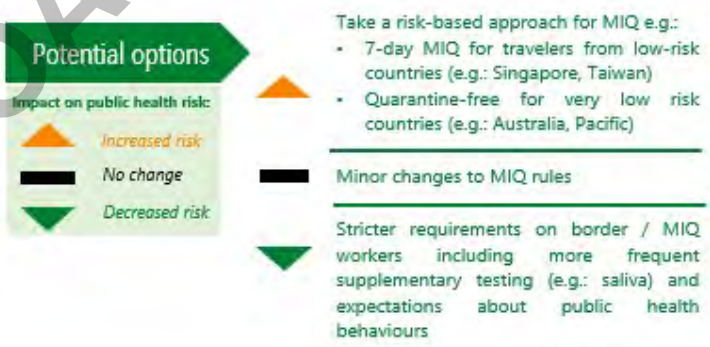
    b. **Universal vs differentiated risk** - Should the types of measures move from a universal approach or to a more context-specific, risk-based and flexible approach?

    c. **Approach to and pace of change** - Should we continue the path of testing / piloting new approaches before larger scale implementation, to build understanding about the impact of changes?

Possible options for consideration in each pillar

14. Across each of the pillars, public health experts were asked about the types of changes or refinements that might be warranted, and asked about what the potential impact on public health risk might be. These possible options have been described for each of the pillars, as shown on slide E (overview) and in more detail in slides F through K.

15. *Keep It Out*: Should slightly more risk be taken at the border to allow greater flows of people? If so, what's the best approach?

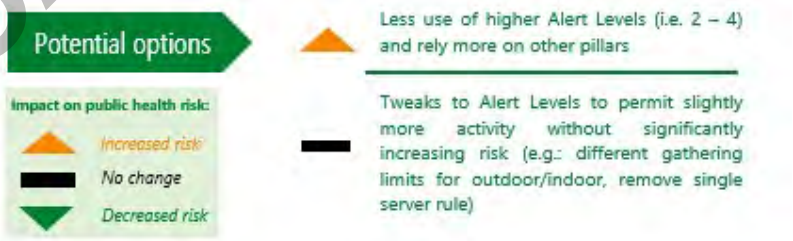


16. *Prepare For It - Detection & Surveillance*: Should surveillance activity be expanded to slightly increase the likelihood of finding a case earlier?

17. *Prepare For It - Public Health Measures*: Should slightly more disruptive measures be introduced to lower the risk of an undetected case spreading widely before it's detected?

18. *Stamp It Out - Contact Tracing & Case Management*: Should the contacts 'net' be cast slightly wider, disrupting more people, but lowering the likelihood of the cluster expanding quickly?

19. *Stamp It Out - Stronger Public Health Measures*: Can more reliance be placed on other pillars so an outbreak can be eliminated at lower Alert Levels?



20. *Manage The Impact*: Based on the engagement with health and disability system stakeholders, there are five key considerations to improve this area:

    a. How can we support the health workforce to ensure that there is ongoing capacity and capability for the response?

b. To support the system to remain in "readiness" and "response" states over the next 12 plus months, what changes could be made to make it sustainable?

c. How can we make sure the Elimination Strategy and resulting decisions better consider Te Tiriti o Waitangi, Human Rights and equity?

d. Can we improve the consistency and timeliness of communication from the centre and from DHBs?

e. Are there ways that technology can help to support ongoing COVID-19 readiness and response?

Many of these remain under active consideration by the Ministry and wider system.

Modelling undertaken by Te Pūnaha Matatini

21. To support this work on the Elimination Strategy, Te Pūnaha Matatini (TPM) was asked to model how potential changes would affect risk. This modelling cuts across multiple pillars in the strategy including Keep It Out, Prepare For It and Stamp It Out. Several key insights are described below.

22. These are preliminary modelling results that may change once finalised. In addition, any modelling is dependent on assumptions made and the limited data available, and should be interpreted in that context. Further modelling using a more detailed network model will also be conducted to corroborate and give insight into these results. The final report will be provided to your office once complete.

23. Any changes to public health measures will require further policy advice. Any changes should be considered based on the finalised results, and potentially further detailed modelling to validate the findings.

A Safe Travel Zone with Australia has the potential to materially increase risk, but policy decisions can mitigate this increase

24. TPM has modelled the potential change in risk from a Safe Travel Zone with Australia. Two risk measures were used:

a. The monthly number of incursions from the border into the community detected in generation 1 (eg, an international arrival or border worker).

b. The monthly number of incursions from the border into the community detected in generation 2 or later (eg, family member, member of the public). These clusters tend to be larger.

25. The change in risk from an Australian Safe Travel Zone can be thought of in three components:

a. The change in risk from existing volumes from Australia being allowed to bypass MIQ.

b. The change in risk from a higher volume of people arriving from Australia.

c. The change in risk from more entrants from other countries filling the MIQ capacity previously used by Australian entrants. This component is not directly related to Australian entrants but can be considered an indirect effect of a Safe Travel Zone.

26. These components are shown in Table 1. TPM estimates that under current settings, around 2 border incursions occur per month, with most of these being through border workers being exposed to the virus and infecting others in the community. Modelling suggests a fully implemented Safe Travel Zone with Australia with 2019 volumes and refilled MIQ capacity could increase risk by over 100%, with expected incursions per month increasing from two to four per month.

Table 1 Potential change in risk from a Safe Travel Zone with Australia

Scenario	Monthly incursions detected at generation 1	Monthly incursions detected at generation 2+
Current settings	1.93	0.3
+ Current Australian entrants no longer going through MIQ	0.03	0.005
+ Increase in Australian entrants from 1,000 to 44,000 per month (2019 level)	1.33	0.21
+ Spare MIQ capacity used for other countries at current mix	0.83	0.15
= Current settings with Safe Travel Zone with Australia	4.12	0.66

27. Roughly 60% of this increase is due an increase in travel volumes from Australia. A further 38% is due to additional entrants into MIQ from other countries. Only 2% of the increase in risk is due to the current volume of Australian entrants being able to bypass MIQ.

28. This modelling is highly dependent on the assumed positivity rate of Australian entrants. A positivity rate of roughly 6 per 100,000 travellers is used, based on the number of cases in Australia over the past month, and the number of positive Australian entrants to MIQ. However, the true positivity rate will depend on the Australian state of origin, and will change over time. Even if this positivity rate was halved (3 per 100,000), this would still result in a roughly 30% increase in risk.

29. While modelling has assumed that MIQ capacity is filled with new entrants from the current mix of non-Australian source countries, policy decisions would determine how this capacity is used in practice. Alternative options exist that would result in a smaller increase in risk, ranging from allocating spare capacity for lower risk countries to retiring MIQ capacity.

30. These results do not take into account the risk of New Zealanders travelling to Australia and potentially returning with COVID-19, which could materially increase risk.

31. Further modelling on other countries can be undertaken to understand the impact on risk. Officials are currently undertaking this analysis for the Pacific.

High frequency, lower accuracy testing can complement PCR testing to catch cases early

32. In New Zealand (and internationally), benchtop reverse transcription polymerase chain reaction (RT-PCR) for detecting SARS-CoV-2 viral ribonucleic acid (RNA) using a nasopharyngeal swab is the gold standard. The policy question that TPM were asked to

consider was centred on what other types of testing may be used to support (not replace) RT-PCR using a nasopharyngeal swab.

33. TPM have modelled how border worker testing regimes affect how quickly incursions are detected and the size of resulting clusters.

34. A conservative scenario was considered where border workers are tested twice weekly with one nasopharyngeal (NP) PCR-based test and another test with 50 percent lower accuracy than a NP PCR-based test. This was compared with a baseline of one NP PCR-based test per week.

35. Table 2 shows that combined testing detects a larger share of cases before any onward transmission occurs. Around 70% of incursions are detected before onward transmission, compared with around 57% in the baseline. Detecting these cases early reduces the share of incursions at larger sizes, with the chance of a large cluster decreasing by between 15 and 40% depending on the size range.

Table 2 Combined testing impact on size of outbreak at detection

	Size at detection				
	1	**2 to 10**	**11 to 20**	**21 to 50**	**51+**
Baseline	57.1%	30.0%	5.0%	5.1%	2.8%
Alternate PCR and low accuracy test (two per week)	71.3%	19.5%	2.9%	4.0%	2.3%
Relative Difference	25%	-35%	-42%	-22%	-16%

36. Further modelling by TPM will consider specific tests, such as saliva PCR-based tests, and consider a range of different frequencies.

A combination of more symptomatic community testing and reduced transmission at Alert Level 1 can catch outbreaks at a lower size

37. TPM have also modelled how the size of an incursion when detected is affected by a combination of community interventions, including:

    a. A larger share of people with cold and flu symptoms being tested (increased from a baseline of 30 percent to 40 percent)

    b. A shorter delay between people developing symptoms and being tested (decreased from a baseline of 6 days to 3 days)

    c. A 12 percent reduction in transmission at Alert Level 1 (a lower reproductive number of 2.2, compared to a baseline of 2.5)

38. This represents clearer public communication of the need to get tested immediately when cold and flu symptoms develop, and the potential introduction of restrictions at Alert Level 1.

39. Table 3 shows that this combination of interventions can reduce the chance of a incursion growing larger than 51 cases by over 50%. This is due to more clusters being detected with one to ten cases. Compared with more frequent border testing, this combination of interventions is more effective at preventing large clusters, but allows a greater number of small clusters to develop.

Table 3 Impact of community interventions on size of incursion when detected

	Size at detection				
	1	**2 to 10**	**11 to 20**	**21 to 50**	**51+**
Baseline	57.1%	30.0%	5.0%	5.1%	2.8%
More, faster testing and lower AL1 transmission	58.1%	32.3%	5.0%	3.4%	1.1%
Relative Difference	1.7%	7.8%	0.0%	-32.8%	-58.4%

The potential for greater risk mitigation in the Stamp It Out pillar is modest

40. TPM modelled how long would it take to stamp out outbreaks of various sizes under the following scenarios:

    a. Alert Level 3 with manual contact tracing as used in the August outbreak (baseline)

    b. Alert Level 3 with manual contact tracing and 80 percent uptake of QR code scanning

    c. Alert Level 3 with manual contact tracing and 80 percent uptake of Bluetooth-based contact tracing.

41. Previous TPM modelling suggests that 80 percent uptake of QR code scanning and Bluetooth-based contact tracing can reduce transmission by 5 percent and 25 percent respectively, by increasing the speed of contact tracing.

42. Table 4 shows the time required at different Alert Levels to eliminate an outbreak of size 100, and the associated reduction in GDP. While more contact tracing options help, in this modelling scenario the reduction in time and cost is modest. Other scenarios may find a large impact from contact tracing options, such as outbreaks where there is limited adherence to Alert Level requirements, or where small to medium sized cluster is being managed at lower Alert Levels.

Table 4 Time required at different Alert Levels to eliminate an outbreak of size 100

Scenario	**Time to eliminate**		**Associated reduction in GDP**
	Alert Level 3	**Alert Level 2.5**	
Baseline	27 days	28 days	$2.8 billion
Manual tracing + QR codes	25 days	27 days	$2.6 billion
Manual tracing + Bluetooth technology	24 days	26 days	$2.5 billion

Our judgement is that Alert Level 2.5 would likely be insufficient to eliminate a large outbreak

43. Alert Level 2.5 refers to the restrictions used in Auckland between 30 August 2020 and 21 September 2020. These were identical to Alert Level 2 restrictions, with extra restrictions on regional travel and gathering sizes.

44. We do not have a reliable estimate of the effect of Alert Level 2.5 (or Alert Level 2) restrictions on community transmission. However, mobility and spending data suggest that transmission at Alert Level 2.5 would be materially higher than at Alert Level 3.

45. The judgement of the Ministry of Health and Te Pūnaha Matatini is that Alert Level 2.5 restrictions would likely have been insufficient to eliminate the August outbreak. Even if elimination were possible, it certainly would have required a significantly longer period with restrictions in place. This is likely to be true even with new contact tracing tools (eg, Bluetooth-based tracking), and further modelling will give insight into this issue.

Balancing risk across the pillars

46. Table 5 summarises the potential change in risk across the interventions considered. These risk measures are not directly comparable, but give a sense of the relative magnitude of changes.

Table 5 Potential change in risk across interventions considered

Pillar	Option	Impact on different risk measures
Keep It Out	Safe travel zone with Australia with current volumes	~0% increase in incursions
	Safe travel zone with Australia with return to 2019 volumes	▲70% increase in incursions
	MIQ capacity filled with current mix of countries	▲40-50% increase in incursions
Prepare For It	Combined NP PCR-based testing and lower accuracy	▼15-40% decrease in risk of large cluster
	More, faster testing and reduced transmission	▼30-60% decrease in risk of large cluster
Stamp It Out	Manual contact tracing and mandatory QR code scanning	▼6% decrease in time to elimination
	Manual contact tracing and Bluetooth enabled contact recording	▼10% decrease in time to elimination

47. Depending on implementation and policy decisions, changes in the Keep It Out Pillar have the potential to materially increase risk, even when only considering arrangements with Australia. In contrast, the potential to mitigate risk in the Stamp It Out pillar is modest. There is limited ability to reduce risk after a large outbreak has been detected.

48. Interventions within the Prepare For It pillar have the greatest potential to reduce risk. More frequent testing of border workers can detect cases earlier, and further modelling work is considering more acceptable forms of testing, such as saliva PCR-based testing. More and faster community testing with lower transmission at Alert Level 1 can also catch clusters at lower sizes.

Equity

49. A Treaty of Waitangi and Equity analysis was undertaken, assessing the status quo and options / proposals as a part of the review of the Elimination Strategy. Some parts of the response to date, such as DHBs partnering with local iwi and kaupapa Māori providers to

deliver testing programmes, has aligned well with Treaty of Waitangi principles, and supported more equitable outcomes. However, other areas, such as the management of community cases in managed isolation and quarantine and the pressures faced by border workers have been less consistent, and less equitable. Ultimately, this analysis uncovered that there are areas to strengthen in the response, which will be used to inform advice on changes to the Elimination Strategy to Ministers.

Forward work programme

50. You have choices about what follows this piece of work, including:

    a. how refinements to the elimination strategy will be communicated with your colleagues, across government, and with the public

    b. further policy and operational work associated with the possible options that have been revealed

    c. evidence and insights work (eg, modelling and analytics)

    d. further strategy-aligned projects, including continuous learning and improvement of the Elimination Strategy.

51. Further advice on the forward strategic work programme for COVID-19 will be provided. The Ministry of Health and DPMC have been working together to articulate a proposed cross-agency work programme based on the elimination strategy framework. There is a sense that reframing the wider COVID-19 work programme/s using the Elimination Strategy as the driver will assist you in navigating decisions coming up both on improvements to the current state and proposed changes for new or emerging settings.

Next steps

52. The Ministry and DPMC will provide you with advice, including a draft Cabinet paper for January 2021 outlining the revised Elimination Strategy, attaching the framework, and outlining the future work programme. This will be provided to you by the end of December, to be lodged early in 2021.

53. Officials are available to discuss the contents of this briefing with you, and your expectations about the Cabinet paper.

Attached documents

A3 Slide pack: Refining and Improving the Elimination Strategy for COVID-19 | KOWHEORI-19.

ENDS.