



# BRIEFING

## CovidCard implementation design options

<b>Date:</b>	15 July 2020	<b>Priority:</b>	High
<b>Security classification:</b>	In Confidence	<b>Tracking number:</b>	2021-0159

Action sought		
	Action sought	Deadline
Hon Kris Faafoi <b>Minister of Broadcasting, Communications and Digital Media</b>	<b>Forward</b> this briefing to the Prime Minister's Office	15 July 2020

Contact for telephone discussion (if required)				
Name	Position	Telephone		1st contact
James Hartley	General Manager, Commerce, Consumers and Communications	04 460 1396	9(2)(a) [redacted]	✓
Elisabeth Numan	Policy Director, Commerce, Consumers and Communications	-	9(2)(a) [redacted]	
Chris Moses	Policy Advisor	04 897 6386	-	
Stephen Tat	Senior Policy Advisor	04 897 5060	-	

**The following departments/agencies have been consulted**

Department of Internal Affairs, Ministry of Health, Ministry of Justice, Ministry of Transport, and the Treasury. The Department of the Prime Minister and Cabinet and GCSB were informed.

**Minister's office to complete:**

- |                                               |                                              |
|-----------------------------------------------|----------------------------------------------|
| <input type="checkbox"/> Approved             | <input type="checkbox"/> Declined            |
| <input type="checkbox"/> Noted                | <input type="checkbox"/> Needs change        |
| <input type="checkbox"/> Seen                 | <input type="checkbox"/> Overtaken by Events |
| <input type="checkbox"/> See Minister's Notes | <input type="checkbox"/> Withdrawn           |

**Comments**



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### Purpose

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This paper explores the high level design options for implementation of a Bluetooth-enabled CovidCard to support contact tracing.

### Recommended action

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The Ministry of Business, Innovation and Employment (**MBIE**) recommends that you:

- a **Note** that high public uptake is critical in determining whether a CovidCard could improve contact tracing methods in New Zealand.

*Noted*

- b **Note** the NZ COVID Tracer phone app and Bluetooth-enabled tracing systems overseas all have low public uptake.

*Noted*

- c **Note** MBIE is not confident that the issue of public uptake can be resolved through the implementation design for CovidCard.

*Noted*

- d **Discuss** the high level design options with MBIE officials and indicate whether further work should be undertaken

*Agree / Disagree*

- e **Forward** a copy of this briefing to the Prime Minister's Office.

*Agree / Disagree*

James Hartley  
**General Manager**  
Commerce, Consumers and Communications,

15 July 2020

Hon Kris Faafoi  
**Minister of Broadcasting, Communications  
and Digital Media**

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## Purpose

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1. This paper explores the high-level design options for implementation of a Bluetooth-enabled CovidCard to support contact tracing.

## Background

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2. The COVID-19 Response Public Private Partnership Group (PPP) has proposed a Bluetooth-enabled CovidCard to support contact tracing. The CovidCard would record when it comes into 'close contact' with another card (within 2 metres for 15 minutes) and, with consent, would be given to contact tracers if a cardholder tests positive. Cards would be identified by serial numbers and would not store personal details. Cardholder contact details would be stored in a separate database.
3. The Government Chief Digital Office (GCDO) has been leading the proof of concept work of a CovidCard, working with the PPP [GDS202000160 refers]. This has involved a technical independent review of the PPP's proposal. The Department of Internal Affairs (DIA) is currently preparing advice on options for an expanded trial of the CovidCard to confirm that they work as intended at a level of scale. DIA is also examining the value of the information collected for contact tracing and its epidemiological benefit [GDS202000205 refers].
4. In parallel with this work, you have asked MBIE officials to lead the development of implementation design options ahead of a decision on whether to proceed with CovidCard. Noting that a significant amount of work has already gone into the proof of concept led by GCDO, we do not address any outstanding questions on the technical feasibility and security of the CovidCard (noting that these issues are still being worked through by other agencies).
5. This paper outlines:
  - our understanding of the rationale for digital contract tracing systems and the CovidCard in particular
  - current contact tracing methods and how a CovidCard could add value
  - factors Government should consider in making a decision on whether and how to deploy CovidCard
  - high-level design options for deployment (attached as **Annex One**).
6. In preparing this paper, we have drawn on available documents including the PPP's proposal document; papers on system overview, security specifications, service delivery platforms and distribution; papers drafted and commissioned by officials. We also consulted agencies that have been involved in developing of the proof of concept.
7. This paper does not examine how the role of contact tracing fits within the broader Government strategy of COVID-19 elimination, nor what alternative public health measures could be pursued to achieve Government objectives instead of a CovidCard. We also do not address the specific business model and commercial arrangements involved with the PPP's CovidCard proposal. Any decision to proceed with CovidCard deployment still leaves room for procurement decisions, including to address security matters, individual elements of the business model and the details of implementation.

## Rationale for digital contact tracing systems

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8. Contact tracing is one of the pillars in the Government's COVID-19 response strategy (alongside border controls, physical distancing and hygiene, testing and vaccine).

9. New Zealand has a target of tracing 80 per cent of close contacts within 48 hours of a case being notified to a local Public Health Unit (PHU).
10. A well-functioning manual contact tracing system is central, as trusted relationships with cases and contacts is critical for the identification of close and casual contacts and supporting effective quarantine and isolation. Digital systems are widely considered as complementary to manual contact tracing, not a replacement for it.
11. New Zealand currently only has a low number of cases and all within the border management system (managed isolation and quarantine facilities). However, as has been seen overseas, there is a risk of further waves of COVID-19 in the community.
12. The contribution that digital devices such as a Bluetooth-enabled card have been stated to make are:

- Corroboration of the close contacts identified through interviewing cases, increasing confidence that all close contacts are identified. The issue is that people may not record or remember contacts or duration of time spent. 6(b)(i)
- Speed of access to contact details for close contacts where the case does not have those details or the close contacts are unknown to them. Relatedly, enabling targeted identification and reducing blanket testing and isolation of anyone in a location within a window of time.

The Ministry of Health found that during level 4 lockdown only 60 percent of contacts could be easily reached by phone, either because of incorrect contact details in the National Health database or because the calls went unanswered. However, this issue was largely addressed when the National Contact Tracing Solution (NCTS) gained access to additional data sets and with the launch of the NZ COVID Tracer app.

- Potential to identify and notify close contacts of close contacts at the same time the close contacts of the case are notified ('recursive tracing'). This could enable isolation of potentially infected people before they reach the infectious stage of the disease. However, this is still largely theoretical as there is currently no evidence to indicate that recursive tracing improves contact tracing for COVID-19.
  - Automatic recording of close contacts, reducing the compliance fatigue from manual diary keeping and QR code scanning, potentially contributing to higher levels of recording of close contacts than might otherwise be the case.
13. We note also that the PPP proposal draws links between deploying a CovidCard and avoiding level 4 lockdown while also opening the border. We have found no analysis to support this.

## **Current contact tracing process and how CovidCard could add value**

14. We understand that contact tracing currently operates as follows:
  - Person takes a test and self isolates while awaiting the result (up to 2 days – often same day). Close contacts of that person are *not* advised to self-isolate (with the exception of household members, who may be asked to self-quarantine if there is a high likelihood that the person who took a test has COVID-19). If the test is positive, then:
  - Local PHU (or National Investigation and Tracing Centre (NITC) for high numbers of cases) contacts the person (case) to:

- i. advise of a positive test result (via automated process)
  - ii. instruct to self-isolate for 14 days (if not already in managed isolation) and if in managed isolation, arranges transfer to quarantine facility
  - iii. understand the symptoms of the person, identify any health interventions that may be required, and seek information on close contacts using an interview process. The case may draw on recall, electronic calendars or diaries and communications (including the New Zealand COVID Tracer app) and other sources (such as workplace security records, bank records, public and private transport records, etc).
- Depending on the outcome of the case interview, the PHU/NITC may choose to contact localities where the case has visited for which there may be close contacts unknown to the case. Public notifications are made about those localities (eg. using the evening news) or using the alert function on the New Zealand COVID Tracer app.
  - The PHU/NITC contacts suspected close contacts by phone or other means, asks them to take a test (at a specific time after exposure) and to self-isolate. This may involve multiple calls if unsuccessful in making contact.
15. New Zealand has a target of tracing 80 percent of close contacts within 48 hours of a case being notified to a PHU (this is currently at 98% within 48 hours, though with admittedly low case numbers and cases confined to managed isolation).
16. In the event of a return to community transmission and high case numbers, what could frustrate achieving the contact tracing target is:
- case has incomplete/inaccurate memory of close contacts
  - potential close contacts not returning call/not answering
  - backlogs in a PHU due to high case volumes relative to personnel resulting in delays in engaging with cases and following up contacts
  - too much information or identifying too many false positives increasing the number of calls required, without improving the self-isolation rate of those that are cases.
17. We note that the end-to-end success of case management also involves testing and monitoring and enforcement. There are a range of potential issues that could frustrate success but these are beyond what CovidCard could potentially address.

### **Environments and situations where CovidCard could add value**

18. The potential contribution a CovidCard could make to improving the accuracy, speed and overall efficiency of contact tracing will vary by environment and situation. The environments and situations where CovidCard could have the most impact are:
- Mass gatherings – a CovidCard could enable the identification of individual contacts (not everyone at a venue) and timely contacting of those individuals. The benefit would be a reducing the risk of second order transmission and a reduction in the number of people asked to isolate and get tested (enabling health resources to be focused on highest risks).
  - Communities with low density of mobile device use, where other digital tools to aid record keeping are limited - a CovidCard could aid in filling in gaps in memory reducing likelihood of a close contact not being identified.

- Highly mobile patient histories – a CovidCard could aid in filling in gaps in memory reducing likelihood of a close contact not being identified (the recall risk has been noted to increase with reduction in alert level).
  - Busy stations or public transport hubs where people may not be traceable by electronic ticketing records.
19. We note that the PPP proposal includes provision for “recursive” contact tracing. If this feature were enabled, a further situation where CovidCard could have impact is where there is significant community transmission and social distancing compliance has reduced.
20. We note that CovidCard would not add value in situations where there has been intimate contact (eg an embrace) for a short duration, as this would require a change in the card algorithm that would vastly increase the number of contacts. Manual methods are more efficient in this context. Additionally, CovidCard would not add value where a contact is not also wearing a CovidCard.

## **Factors Government should consider in making a decision on whether and how to deploy**

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21. Previous advice from officials has set out several considerations in a decision to deploy – some are about the technical design, security and privacy, integration into manual contact tracing systems, manufacture, governance and operation (that apply regardless of high level deployment option) – while others are option-specific.
22. In assessing the high level design options for a CovidCard we have considered the following factors:
- effectiveness – specifically, the impact each option could have on the accuracy (corroboration and identification of close contacts) and speed of contact tracing
  - what public administration would be required and the degree to which that varies between options – specifically, logistics and distribution, governance, central administration of database, and regulatory requirements
  - matters the detailed design would need address for the option to be successful
  - challenges or issues that cannot be addressed through detailed design (eg public acceptance, even if adequate privacy protections are in place).
23. We have not addressed cost at this stage. We note the estimated costs for full deployment by the PPP (\$100 million for a national rollout, plus \$64 million each subsequent year), but we have not yet verified those estimates nor estimated the costs of the alternative high-level options. However, we expect the costs associated with the targeted options to be less than those that involve Government procurement of cards for all residents.

## **High level design options for deployment**

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24. We have identified five high level design options for deployment of a CovidCard. While there are multiple permutations of options, the five we have chosen are distinctly different and provide a full spectrum for deployment.
25. We note that the PPP report states that only a national rollout with mandatory use is viable. The objective in exploring different high level options is to draw out the design considerations – and particularly the degree to which challenges with a mandatory regime could be addressed through alternative option design.
26. The table in Annex One explores the following five options for CovidCard deployment:

## Design implications

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28. Setting aside questions about whether CovidCard is a sound technological solution for contact tracing, there are many details that would need to be worked through should Government decide to proceed with implementation, including security.
29. All options presented in Annex One would involve substantial policy and operational work to set up the systems and legislative tools required to deploy CovidCard. This work would need to be undertaken in partnership with Māori to ensure the Crown meets its obligations under Te Tiriti o Waitangi, and to build trust needed to support the tracing system. We also note that, in MBIE's experience, it is difficult to fully assess feasibility and associated risks of different high-level options before carrying out a detailed system design.
30. We have not provided recommendations on relative preferences between the high-level design options. High uptake of CovidCards is critical to the potential success of every design option. We note that there has been low public uptake of the NZ COVID Tracer app and of other Bluetooth-enabled contact tracing solutions overseas in Singapore and Australia. We are not confident that achieving sufficient uptake can be resolved through the detailed implementation design.
31. We note the options do not address what broader public health alternative options could be considered instead of a CovidCard.

## Annexes

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Annex One: Assessment of high-level design options for deployment

## **Annex One: Assessment of high-level design options for deployment**

Appendix withheld under 9(2)(f)(iv)

