DEPARTMENT OF THE PRIME MINISTER AND CABINET
TE TARI O TE PIRIMIA ME TE KOMITI MATUA

Proactive Release

The following document has been proactively released by the Department of the Prime Minister and Cabinet (DPMC), on behalf of the Minister for COVID-19 Response, Hon Dr Ayesha Verrall:

COVID-19 Briefings - August 2022

The following documents have been included in this release:

Title of paper: 01082022 Assurance of System readiness Work Underway to Respond to a Variant of Concern

Title of paper: 03082022 Insights from Recommendations across COVID-19 Response System Reviews

Title of paper: 05082022 Review of New Zealand's COVID-19 Protection Framework and self-isolation settings - 5 August

Title of paper: 05082022 Public awareness campaign to support people who are unable to wear masks

Title of paper: 08082022 Meeting with Strategic COVID-19 Public Health Advisory Group 10 August 2022

Title of paper: 12082022 Preparation for Release of Haumaru Briefing

Title of paper: 25082022 Meeting with Prof. Michael Plank

Title of paper: 26082022 All of Government COVID-19 System Readiness Exercise

Title of paper: 30082022 COVID-19 Community Panel, Chair's Report

Some parts of this information release would not be appropriate to release and, if requested, would be withheld under the Official Information Act 1982 (the Act). Where this is the case, the relevant section of the Act that would apply has been identified. Where information has been withheld, no public interest has been identified that would outweigh the reasons for withholding it.

Key to redaction codes:

- Section 9(2)(a), to protect the privacy of individuals;
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- Section 9(2)(h), to maintain legal professional privilege.

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Aide-Mémoire

Meeting with Professor Michael Plank

To:	Hon Dr Ayesha Verrall Minister for COVID-19 Response		
From:	Alice Hume, Head of Strategy & Policy	**Date:**	25/08/2022
Briefing Number:	DPMC-2022/23-102	**Security Level:**	~~[IN CONFIDENCE]~~

Purpose

1. The purpose of this aide memoire is to support your informal meeting with Professor Michael Plank in Queenstown. Note that while the meeting was planned for, due to external circumstances, it did not proceed

Biography of Professor Plank

1. Michael Plank is a Professor in the School of Mathematics and Statistics at the University of Canterbury, a Fellow of the New Zealand Mathematical Society, and is Programme Co-Lead (with Dr Dion O'Neale[1]) at COVID Modelling Aotearoa (CMA).
2. Professor Plank is an expert in mathematical modelling of complex biological and social systems. He obtained a PhD in Applied Mathematics from the University of Leeds in 2003, before starting as a postdoctoral fellow at the University of Canterbury in 2004, and a permanent academic staff member in 2006.
3. Since 2020, he has been part of a consortium of researchers who provide the government mathematical modelling of COVID-19 in support of New Zealand's pandemic response. He is primarily involved in the development of the now-retired Branching Process Model (BPM) and the Ordinary Differential Equation (ODE) Model, which are used by officials to track COVID-19 cases, hospital bed occupation, and fatalities against expectations.
4. Professor Plank (and his CMA colleagues) works closely with the Modelling Steering Group on the development, refinement, and implementation of models and scenarios.
5. s9(2)(a)

[1] Senior Lecturer, Department of Physics, University of Auckland.

COVID Modelling Aotearoa 2022/23

6. Following an open tender process, COVID Modelling Aotearoa (through the University of Auckland) have been contracted to continue to provide modelling work for DPMC[2] through until June 2023. This work includes:
   - Modelling of COVID-19 to establish expected trajectories for cases, infections, hospitalisations and fatalities; for the current wave of infections, exploring the next wave, the next variant, and future hypothetical variants. Expected features of this modelling would include:
     i. Modelling immunity from vaccination and infection and how these change over time.
     ii. Modelling cases, hospitalisations and deaths by age, ethnicity and region.
     iii. Modelling changes to policy settings e.g. isolation, testing, community restrictions.
   - Contagion modelling, that will enable case seeding to be projected on a geographic and longitudinal scale.
   - Forecasting outbreak trajectories and effective R values for hypothesized variants (note, the models cannot predict the emergence or the properties of future variants).
   - Short term forecasting of cases and hospitalisations.
   - Regional modelling both at the 3-to-12-month timeframe, and for short-term forecasts.
   - Modelling the impact of changes in community behaviour on transmission, both voluntary and formal restrictions. Including data inputs such as on mobility and spending to provide real-time estimates of population level behaviour to inform potential transmission.
   - Epidemiological and clinical collaboration.
7. This contract is worth $2.027 million (GST exclusive).

Ordinary Differential Equation Model

8. You have been briefed on the Ordinary Differential Equation (ODE) Model previously (DPMC-2021/22-2507 refers).

9. The ODE has a similar compartment structure to the previous BPM; it also attempts to model the effect of contact between populations of different age-groups. However, the ODE model is a deterministic model, and does not keep track of individual infections and the full transmission tree. It just tracks the total number of infections. It also ignores stochastic effects observed when infection is rare (e.g., super-spreaders, or stochastic elimination of disease). The models also differ in terms of how they handle intervals between vaccine doses and the dynamics of births, deaths, and ageing. However, given the number of infections that are being reported currently, this only creates small differences in outputs.

10. A significant improvement in the outputs from this model is due to the richer data now available to CMA: new data on hospitalisations and deaths that are *due to COVID*, and the shifting age distribution. CMA has used this richer data to update the model alongside new parameters that accommodate what is now internationally known about the BA.4/.5

[2] This contract will be transferred to the Ministry of Health when modelling is transitioned across from DPMC.

variant. While the original BPM could have utilized such information if it were available at the time.

11. A major benefit of the ODE model is that it is much faster in producing results (within hours as opposed to days), meaning systematic parameter checks can be conducted as the understanding of COVID-19 as a disease continues to increase. In addition this allows officials to commission scenarios with a quick turn-around to answer broad population level questions around disease trajectories.

12. Scenarios modelled from the ODE have informed ongoing advice around mask mandates, contact quarantine, and case isolation. This modelling finds that, while policy changes can have a significant *relative* impact on cases and hospitalisations, the absolute increase in cases and hospitalisations are more muted. This is because accumulated immunity during the BA.5 wave is expected to lead to a 'trough' of cases and hospitalisations over the coming months.

s9(2)(g)(i) [redacted]

[redacted]

Contact for telephone discussion

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