Codesign report - Evaluation of the codesign process of the Te Whatu Trial of the Bluetooth-enabled Contact Tracing Card.

January 2021

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Disclaimer

This report has been prepared for the Ministry of Health and contains personal identification of a sensitive nature. All names must be removed prior to public dissemination. All efforts were taken to include multiple perspectives.

Preface

This report has been prepared as a key contribution to the Contact Tracing Technologies Prototype Research Programme (Programme), specific to the Field Trial stream of work.

It sits alongside the Te Whatu trial and wider Programme; *Research Report - Te Whatu Trial of the Bluetooth-enabled Contact Tracing Card (Research report)* (University of Otago) and *Mana Whakaora/ Equity Report - A Review of the Contact Tracing Technologies Research Programme (Equity report)* (University of Waikato).

All three reports have a particular focus area; the research report out of the Trial, evaluation of the codesign process of the trial and equity across the Programme. Each should be read independently noting that there may be references to each across all three Reports.

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Acknowledgements

Without the contribution of the multiple partners and stakeholders in the Te Whatu trial, this evaluation would not have been possible.

Firstly, we would like to thank the Programme Manager Brett Annan from the Ministry of Health for providing the funding to undertake this evaluation and prioritising the need for an evaluation of the codesign process for the Te Whatu trial. A special thanks also to Project Manager Reade Thompson-Trott who provided logistical support to the partners on the Te Whatu trial.

Secondly, to the Te Arawa Covid-19 Recovery Hub (Hub) is thanked. The efforts taken by the Hub to protect Te Arawa whānau and the wider community is inspirational. A special mention to the following members, Tā Toby Curtis, Monty Morrison, Kirikowhai Mikaere, Eruera Keepa, Aroha Morgan, Mataia Keepa. The Shine Collective: Jacky James, Stacey Main, Lakes DHB: Phyllis Tangitu, Te Puni Kōkiri: Anahera Waru, Dr Tepora Emery, Manaaki Ora Trust: Hingatu Thompson.

Many thanks to the University of Otago team specifically Tim Chambers for your involvement in the Te Whatu trial.

We would like to acknowledge the Ngongotahā residents including the local Iwi and hapū Ngāti Tura Ngāti Te Ngākau, Ngāti Ngararanui and Ngāti Rangiwewehi, who participated in the Te Whatu trial.

A special thanks to Vanessa Clark and Bridgette Masters-Awatere for your expertise lended to support Nikki Barrett to complete this evaluation study.

Finally, due acknowledgement needs to also be accorded to Te Arawa for partnering in the Te Whatu Community Field Trial as Te Arawa but also on behalf of ngā iwi Māori.

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Extended Summary

Context and Aim

A community field trial was a stream of work within the Contact Tracing Technologies Prototype and Research Programme. A key objective of the Te Whatu trial was to determine whether codesign could be carried out effectively during a pandemic. As such, an evaluation of the codesign process of the Te Whatu trial between the Te Arawa Covid-19 Recovery Hub, the Ministry of Health, and the Universities of Otago and Waikato was needed. The He Pikinga Waiora (HPW) Implementation Framework (Oetzel et al, 2016) with its eight guiding principles, was designed to support the development and implementation of health interventions into communities. The framework contained assessment criteria to measure the extent to which each principle was applied over the course of the intervention. The HPW incorporates elements central to codesign and was used to evaluate the Te Whatu trial. Prior to the commencement of the Te Whatu trial a clear and transparent definition of codesign was not agreed upon by all partners. With that context understood, this evaluation used the HPW framework to provide clarity of codesign elements and then assess the extent to which the Te Whatu trial was codesigned.

Objective

In order to achieve the evaluation aim, three objectives were developed to focus the data captured within this evaluation. They were to identify partner (Te Arawa Covid-19 Recovery Hub, the Ministry of Health and the University of Otago):

1. Expectations prior to implementation of the Te Whatu trial.
2. Experiences of the Te Whatu trial process over the course of the Te Whatu trial, and
3. Strengths, barriers, and learnings of the Te Whatu trial process over the course of the Te Whatu trial.

Methods

The methods used within this evaluation study comprised of;

1. Observational field notes from the Lead Evaluator that captured comments from participants in both planned and unscheduled events over the duration of the Te Whatu trial. Such notes informed the questions for the codesign evaluation wānanga (focus group interviews), and guided data analysis.
2. An electronic survey was disseminated to the three partners through the Te Arawa Covid-19 Recovery Hub communication team, on 17th November 2020, with a close off date of 1st December 2020. The purpose of the survey was to capture each partner's perspectives

regarding the level of satisfaction/engagement in the Te Whatu trial. The survey took participants approximately 15 to 20 minutes to complete. Participants then selected one of the following groups that best reflected their part in Te Whatu trial as; a Hub partner, an Academic partner or a Funding partner.

3. Codesign evaluation wānanga (focus group interviews) via zoom and kanohi ki te kanohi (face to face) were completed with each of the three partners, in separate clusters. Each of the three clusters had representatives that highlighted differing expectations and perceptions of the design and delivery process of the Te Whatu trial.

Findings

When assessed against the HPW implementation framework, the extent to which the codesign of the Te Whatu trial was implemented overall was deemed as, **medium.** The eight principles of the HPW framework with a description, summary, assessment rating and corresponding recommendation, is provided.

Community Voice - Rated: Low

Community voice considers the participation of community members as end-users, or the intended primary beneficiaries of a programme/service, in contributing to the definition of the problem, and developing the solution.

Both the Academic and Funding partners approached the Hub partner with a predetermined problem definition “lack of accurate and timely contact tracing” and solution pathway “the Bluetooth-enabled Contact Tracing Card” (Chambers et al. 2020). Community input was prioritised as a factor for the success of the trial, though this was not a reality until the design and implementation phases of the Te Whatu trial, not during the problem identification and solution development stage.

Recommendation Community Voice

Include community voice from the outset. During the current climate of a global pandemic consideration of the local lived experiences are central to identifying problems, and developing responsive solutions.

Reflexivity – Rated: Medium

Reflexivity considered how the implementation team was reflexive, which resulted in adjustments to the intervention. This assessment component examined how the power and privilege of the researcher was recognised, and to what extent this influenced the intervention team, and in turn, the intervention.

Effectively the Funding partner determined what was needed, Academic partner developed the Te Whatu Research Protocol and the Hub partner led the implementation of the Te Whatu trial. The implementation team comprising members from (each partner) made numerous adjustments to the Te Whatu trial during implementation. However, the extent to which these adjustments were as a result of reflexivity, or the implementation team's expertise and knowledge when working with their community, was not clear.

Recommendation Reflexivity

Incorporate implementation team during the design of the research intervention, providing a more accurate representation that adjustments made to the intervention were as a result of reflexivity.

Structural Transformation and Resources - Rated: Not undertaken

Structural transformation and resources explored how the intervention results in significant structural transformation and resources which are sustainable over time. This HPW principle is outside the scope of this evaluation as the Te Whatu trial was not intended to be a long-term intervention, therefore a rating could not be provided.

Adequate resourcing was provided during the implementation of the Te Whatu trial, however the idea of shared partnership was questioned during the trial as the sharing of resource- budget, infrastructure, personnel/expertise- was controlled by one partner.

Recommendation Structural Transformation and Resources

Structural transformation is more appropriate for consideration at the wider Contact Tracing Technologies Prototype and Research Programme level. With regards to the evaluation, the Ministry of Health would be better suited to consider structural transformation at the broader programme level.

To demonstrate shared partnership, Iwi partners must be provided with equitable resourcing -budget, infrastructure, personnel/expertise- to design and implement future programmes or interventions.

Community Engagement - Rated: Medium

Community engagement considered the level of involvement, impact, and trust with community members. Central to strong community engagement is bi-directional leadership, decision making, and communication.

During the implementation of the Te Whatu trial, communication between the partners and the Ngongotahā residents was two-way. The employment of Ngongotahā residents as kaiāwhina for the Te Whatu trial enabled the partners to utilise the knowledge and expertise of the Ngongotahā

residents and ensure high uptake for the Te Whatu trial. The leadership and expertise of kaiāwhina, the majority of whom were Ngongotahā residents, was privileged in the implementation of the Te Whatu trial. The time restrictions of the Te Whatu trial impacted the breadth of communication between the Hub partner and the Ngongotahā residents.

While a partnership was formed amongst the three partners (Hub, Academic and Funding) critical decisions were not shared amongst the community, such as the decision to change the card from CovidCard to the CTC.

Recommendation- Community Engagement

Ensure appropriate time is awarded to prioritise communication with community stakeholders; allowing appropriate engagement processes to occur, i.e. kanohi ki te kanohi with Iwi and Hapū leaders and wider whānau.

Recommendation- Community Engagement

Ensure the community are involved in the inception of interventions as an equal partner. These actions go toward mitigating potential issues of mistrust and suspicion that could arise during community engagement.

Integrated Knowledge Translation – Rated: High

Integrated knowledge translation explored the process of bi-directional learning that resulted in information tailored to knowledge-user needs.

The bi-directional learning evidenced across the three partners (Hub, Academic, and Funding) and the kaiāwhina, resulted in a tailored Te Whatu trial for Ngongotahā residents. The incorporation of the kaiāwhina, at the insistence of the Hub partner, into the Te Whatu trial implementation, had positive impacts in regard to Te Whatu trial participant recruitment. Though there was a gap in supporting the training of the kaiāwhina team, due to time restraints, it was recognised that this could be mitigated in the future by ensuring adequate training is prioritised.

Recommendation - Integrated Knowledge Translation

Involvement of knowledge-users, such as the local community, in the design of the intervention. Information can then be tailored at the conception of the research as opposed to during the implementation of the intervention.

System Perspectives – Rated: High

System perspectives examined multiple perspectives, world views and values within an intervention. Central to system perspectives was the extent to which the intervention considered multiple causes, had a broad focus, and offered multiple solutions.

Each of the three partners provided a systems perspective in the implementation design of the Te Whatu trial, which was then applied in the trial. Both the Academic and Funding partner considered multiple causes and solutions to the problem, "*lack of accurate and timely contact tracing*", and proposed a solution with high equity considerations for: Māori, vulnerable communities and the elderly. Led by the Hub partner, these considerations were applied throughout the trial and evidenced by the multiple perspectives, world views and values of the three partners. The inclusion was evident despite the absence of contribution from the Hub partner or Ngongotahā residents at the initial stages of the research design for the Te Whatu trial. Commitment of the Hub and Ngongotahā to ensure the success of CTC positively contributed to this area.

Recommendation System Perspectives

Involve multiple perspectives in the programme design of the intervention to ensure multiple world views and values underpin the entire project from the outset and not just the implementation stage.

System relationships – Rated: Medium

System relationships examined whether an understanding of the complex relationships between the following variables, feedback loops, time delays and multi-level effects, were considered for the Te Whatu trial.

A moderate understanding of system relationships was evidenced. For instance, time constraints resulted in a lack of clear and accurate communication amongst the partners. Details about the Te Whatu trial to kaiāwhina (recruiters) was incomplete, and consequently Te Whatu trial participants were misinformed.

The critical decision to change the card supplier from CovidCard to Bluetooth-enabled Contact Tracing Card (CTC) resulted in, delays communicating with Ngongotahā residents, and extended the Te Whatu trial start date.

Recommendation system relationship

Incorporate the use of an assumptions and risk register and ensure variables such as feedback loops, time delays and multi-level effects are identified, and clearly documented, during the design and development of the intervention.

System Levels – Rated: High

System levels consideration related to the ways in which the intervention targeted change across the macro, meso and micro levels (Oetzel, 2016).

Throughout the entirety of the Te Whatu trial, including the design, development and implementation phases, the intervention targeted change at the macro level (Iwi and national), meso level (Hapū and wider community) and micro level (whānau/family and individual).

Recommendation System Levels

Ensure future interventions continue to consider the complexities of the different macro, meso and micro levels and demonstrate how these factors will impact the implementation.

Overall Recommendations

On the basis of the findings provided in this report, the Te Whatu trial codesign process was not an accurate representation of codesign. However, the learnings from the Te Whatu trial codesign process can be implemented into future health pandemic interventions for authentic codesign to be achieved.

In relation to the Contact Tracing Technologies Prototype and Research Programme of work, this report has identified specific actions that can be applied to ensure a genuine partnership is achieved across the remaining programme of work, and future initiatives. The following four high level recommendations were developed after considering the findings and action-oriented recommendations against each of the principles of the HPW assessment framework.

1. Immersion of Iwi, and by extension community, as equal partners, demonstrated by providing Iwi with equitable resourcing -budget, infrastructure, personnel/expertise- and sovereignty to design and implement the continuation of the Contact Tracing Technologies Prototype and Research Programme. During the current climate of a global pandemic consideration of local lived experiences and the nuances are central to identifying problems, and developing responsive solutions.
    - ***Recommendation Community Voice***
      Include community voice from the outset. During the current climate of a global pandemic consideration of the local lived experiences are central to identifying problems, and developing responsive solutions.
    - ***Recommendation Structural Transformation and Resources***
      Structural transformation is more appropriate for consideration at the wider Contact Tracing Technologies Prototype and Research Programme level. With regards to the evaluation, the Ministry of Health would be better suited to consider structural transformation at the broader programme level.
      To demonstrate shared partnership, Iwi partners must be provided with equitable resourcing -budget, infrastructure, personnel/expertise- to design and implement future programmes or interventions.

- ***Recommendation- Community Engagement***
  Ensure the community are involved in the inception of interventions as an equal partner. These actions go toward mitigating potential issues of mistrust and suspicion that could arise during community engagement.
- ***Recommendation System Relationship***
  Incorporate the use of an assumptions and risk register and ensure variables such as feedback loops, time delays and multi-level effects are identified, and clearly documented, during the design and development of the intervention.

2. Immersion of Iwi- and by extension community- in the design of future health pandemic interventions; reinforcing the inclusion of multiple world views and values to underpin the entire project, and not just implementation stage.

   - ***Recommendation Reflexivity***
     Incorporate implementation team during the design of the research intervention, providing a more accurate representation that adjustments made to the intervention were as a result of reflexivity.
   - ***Recommendation Integrated Knowledge Translation***
     Involvement of knowledge users, such as the local community, in the design of the intervention. Information can then be tailored at the conception of the research as opposed to during the implementation of the intervention.
   - ***Recommendation System Perspective***
     Involve multiple perspectives in the programme design of the intervention to ensure multiple world views and values underpin the entire project from the outset and not just the implementation stage.
   - ***Recommendation System Relationship***
     Incorporate the use of an assumptions and risk register and ensure variables such as feedback loops, time delays and multi-level effects are identified, and clearly documented, during the design and development of the intervention.

3. Ensure appropriate time is awarded to communicate with key stakeholders in the lead up to the intervention; allowing appropriate engagement processes to occur, i.e. kanohi ki te kanohi with Iwi and Hapū leaders and wider whānau.

   - ***Recommendation- Community Engagement***
     Ensure appropriate time is awarded to prioritise communication with community stakeholders; allowing appropriate engagement processes to occur, i.e. kanohi ki te kanohi with Iwi and Hapū leaders and wider whānau.

4. Ensure future interventions continue to consider the complexities of the different macro, meso and micro levels and demonstrate how these factors will impact the implementation.

   - ***Recommendation System Levels***
     Ensure future interventions continue to consider the complexities of the different macro, meso and micro levels and demonstrate how these factors will impact the implementation.

Glossary

The table below provides the reader with a list of key events referred to throughout this report.

Table 1- List of events referred to throughout the report

Event	Date	Description
First codesign hui	21st September 2020	Whananungatanga (a relationship through shared experiences and working together). The first hui for all partners involved in the Te Whatu trial. The hui was an opportunity to outline details of the Programme, the field trial within Te Arawa, and the roles of the different participants in attendance
Second codesign hui	25th September 2020	Scoping hui to discuss the detail of the research activities surrounding the Te Whatu trial.
The Ngongotahā hub open day	22nd October 2020	A blessing and open of the space for the implementation team and greater Te Whatu working group. The Ngongotaha hub is an office space coined the 'Hub' by the three partners and the base of operations for the Te Whatu working group and implementation team
Te Whatu trial launch	30th October 2020	A whakatau (welcome) led by local Hapū and Iwi leaders from the Ngongotahā area to welcome then Minister for Government of Digital Services Kris Faafoi, as well as local Ngongotahā residents. A **whatu** is a talisman once used by tohunga to host a deity that would protect a house, canoe, and garden. For humans however, the whatu is intangible, internal, and known widely as ethos [For example, the beating heart of a person is akin to the whatu]. In the context of a "Bluetooth-enabled Contact tracing Card", we are replicating the whatu through the Card so that it is tangible, accessible, and used as a measurement of Mauri. This heightens the individual's awareness of any extrinsic forces and acts as a signpost to any risk and potential dangers
The Waiteti Marae information evening	4th November 2020	An information session held at Waiteti Marae to provide detail about the trial to Ngongotahā residents.
The Ngongotahā Whānau day	7th November 2020	The Whānau Day was an opportunity to recruit new Te Whatu trial participants as well as thank the community for their support of this kaupapa.
Te Whatu trial 'go-live' start date	9th November 2020	Data collection of the CTC technology commences
Te Whatu trial end date	16th November 2020	Data collection of the CTC technology concludes
Codesign evaluation wānanga Funding partner	2nd December 2020)	Kanohi ki te kanohi (face to face) hui with the funding partner.
Codesign evaluation wānanga Hub partner #1	8th December 2020	Kanohi ki te kanohi (face to face) hui with first Hub partner participants.
Codesign evaluation wānanga Academic partner	17th December 2020	Zoom hui with first Academic partner.
Codesign evaluation wānanga Hub partner #2	30th December 2020	Zoom hui with second Hub partner participants.

Background

This section provides a background into how the Te Whatu trial was established.

COVID-19 pandemic

The impact of COVID-19 has devastated the health and economic systems of countries globally. In Aotearoa, New Zealand (referred to as Aotearoa from here), people living in high levels of deprivation, the elderly and Māori, in particular suffer health inequities (Bécares, Cormack, Harris, 2013). These groups are therefore at greatest risk of COVID-19 infection and developing severe COVID-19 symptoms (New Zealand Government, 2020). For example, it is estimated Māori are 50% more likely to die from COVID-19 than non-Māori (Steyn et al, 2020.)

To control COVID-19 infection rates countries have adopted contact tracing practices. Contact tracing involves informing people when they have been in close proximity of someone with, or showing symptoms of, the infectious disease by tracking where they have been and who they have been in proximity with. Once informed, people are asked to self-isolate, hence stopping the spread of infection. There are several digital contact tracing solutions being designed and tested globally to assist with contact tracing, however there is limited evidence or evaluation of the current contact tracing system's performance for Māori specifically. Given current systemic inequities in health delivery in New Zealand (Sheridan et al, 2011) there is a risk that any solutions developed may perform better for non-Māori than Māori.

Contact Tracing Technologies Prototype and Research Programme- (Programme)

Acknowledging that the COVID-19 pandemic response requires accurate and timely contact tracing, Cabinet prioritised the Contact Tracing Technologies Prototype and Research Programme (Programme) of work. Appendix 1, is the Programme Charter, the guiding document for the Programme. The goal of the Programme being, to explore "the potential impact of different bluetooth digital contact tracing aids being considered for Aotearoa" (Ministry of Health & Te Tari Taiwhenua Internal Affairs, 2020, p. 1). The guiding principle of the Charter is, "COMMITMENT TO UPHOLDING THE TIRITI O WAITANGI - Our efforts reflect commitment to partnering with Māori as tangata whenua (Ministry of Health & Te Tari Taiwhenua Internal Affairs, 2020, p. 1). This guiding principle has been embedded across all the streams within the Programme. In relation to this evaluation study, there was an expectation of application of this principle, in the community field trial (discussed below). As a result, this guiding principle, aligning with the HPW implementation framework criteria, has been incorporated within the evaluation study as a success marker for codesign.

Field Trial (Community Technology Use).

One of the eight deliverables of the Contact Tracing Technologies Prototype and Research Programme is a field trial. The purpose of the trial is to test the efficiency and acceptability of the CTC within a living community.

Te Arawa involvement with the Public Private Sector Partnership team

Prior to the Contact Tracing Technologies Prototype and Research Programme of work, a group named the Public Private Sector Partnership (PPP) worked on a solution for digital contact tracing - The CovidCard. Kirikowhai Mikaere, representative of the Data Iwi Leaders Group (Data ILG), was invited onto the PPP Governance and working group, mandated through the Iwi Chairs Forum[1].

Kirikowhai explains, "the aim of our involvement (Data ILG/ National Iwi Chairs Forum) in the development of the CovidCard was privacy and equity by default and design" (codesign evaluation wānanga Hub partner #2, 30th December 2020). A key reason for Te Arawa's involvement in the PPP working group was the recognition that the current New Zealand COVID-19 tracer app is not an equitable solution for Māori. A trial to test the CovidCard was initially proposed in a Māori community. However, the proposed trial did not proceed. Kirikowhai's involvement in the PPP working group concluded and certainty regarding the future of the CovidCard was unclear.

On 27th July 2020, a separate hui (meeting) between the Data Iwi Leadership Group (a group of the National Iwi Chairs Forum that included Tā Toby Curtis and Kirikowhai Mikaere on the day) and the Government Chief Digital Officer, and his team, took place in Rotorua. During an informal conversation the topic of the CovidCard was raised. The Contact Tracing Technologies Prototype and Research Programme of work had commenced and a community field trial was being organised. The idea for a trial in Rotorua was seeded, subsequently, conservations occurred for a trial based in Te Arawa-Rotorua.

Ministry of Health

In August 2020, the Ministry of Health was officially tasked with leading the Contact Tracing Technologies Prototype and Research Programme (Programme) of work; including the proposed trial. Te Arawa and other partners (discussed in detail on page 19) were then brought into both the trial, and the Programme.

[1] "A platform for sharing knowledge and information between the tangata whenua of Aotearoa" (Iwi Chairs Forum, 2021).

Te Arawa Covid-19 Recovery Hub

The Te Arawa Covid-19 Recovery Hub ('The Hub' hereafter) is comprised of numerous representatives from various local, regional, and national organisations, driven by a Te Arawa centric approach. Central to the Te Whatu trial were the following; Te Arawa Iwi, The Shine Collective, Lakes DHB, Te Puni Kōkiri, Lakes DHB, Toi te Ora and Manaaki Ora Trust.

The Hub was established in response to the first COVID-19 lockdown with the fundamental objective of "keeping our people safe" (First codesign hui 21st September 2020). Simply, the Hub "didn't want anyone from Te Arawa dying of Covid-19". Being embedded in the community The Hub felt they have the trust and confidence of their community members to provide support. The Hub has been an instrumental force in managing the COVID-19 response for its Iwi members and wider community within its tribal boundary. Since the first Aotearoa Level 1 lockdown in March 2020, the Hub have mobilised their workers to identify and respond to the needs of their community, ensuring whānau have the supplies (including food, medication, heating) they need, when they need it.

Rationale for the field trial

Impact of contact tracing on Māori

During the first Aotearoa national lockdown (25th March 2020) the Hub needed to identify the health and wellbeing status of their whānau. As the Hub was built under the umbrella of Te Arawa Lakes, there was an initial agreement across PSGE[2] entities to start with collective databases (especially for contacting koeke- elderly), that would then contribute to the overall database number with over 26,000 individuals.

In response, the Hub disseminated an electronic whānau needs survey to identify the support needs of whānau, such as kai, bedding, heating, and access to health services. The Hub received responses from more than 4500 individuals. The whānau needs survey, identified 40% of respondents have underlying health conditions. *"We know our community is more susceptible and vulnerable, so we want to keep our whānau safe"*-Hub partner. Understanding that effective contact tracing has major implications for vulnerable populations, the Hub acknowledged the need to be a key partner in a trial that can enhance contact tracing for Te Arawa, other Iwi, and Aotearoa as a whole. As one of the Hub members summarised *"we are the most vulnerable, [the trial has] huge implications for equity, age groups, wellbeing and health. Protect our whakapapa, stay one step ahead!"* –Hub member at The Waiteti Marae information evening 4th November 2020.

[2] A PSGE is the body that receives and looks after settlement redress received from the Crown as part of the claimant groups historical Treaty of Waitangi settlement

Initial engagement between Te Arawa Covid-19 Recovery Hub and Ministry of Health

The Ministry of Health worked closely with Te Arawa Covid-19 Recovery Hub to determine the rationale for a field trial within Te Arawa. To ensure the Hub had full understanding of the CTC technology, The Ministry of Health facilitated a session with Shayne Hunter (Deputy Director-General Data and Digital) and his team. As a result Hub members felt a sense of belief in the technology with one Hub member explaining how this technology would have been valuable for kaumātua and vulnerable communities during the first lockdown (codesign evaluation wānanga Hub partner #1, 8th December 2020). Further, the Hub partner explains, "from a Te Arawa Covid-19 Recovery Hub perspective we saw our kaumātua and our vulnerable communities first. And we saw this technology as a really viable tool to protect them" (codesign evaluation wānanga Hub partner #1, 8th December 2020). Thus began the collaboration between The Ministry of Health, and the Hub.

With the Hub's expertise and proven ability to effectively engage with their community, and the Ministry of Health's proposed solution an agreement to have a Te Arawa led community field trial was formed.

Formation of the Te Whatu field trial

The University of Waikato was approached by the Ministry of Health in September 2020 at the request of the Te Arawa Covid-19 Recovery Hub to provide a Māori health researcher to codesign the research protocol for the trial in Te Arawa. The Ministry of Health commissioned the University of Otago to design a research protocol for the community field trial. The initial draft research protocol for the field trial was constructed from a former Nelson trial of the CTC, and adapted for the field trial, location confirmed by the ministry of Health as Ngongotahā, a community located in the Te Arawa region.

Evaluation of the Te Whatu codesign trial process

During consideration of a CTC field trial, the Ministry of Health was committed to supporting a genuine partnership trial with Te Arawa. During initial communications with the University of Waikato, the Ministry of Health insisted on a codesigned trial. An example of this codesign was the focus not only on the outcomes of the trial but on *how* the trial outcomes would emerge. The Programme Manager explained that a codesigned trial was "an opportunity to get it right" (codesign evaluation wānanga Funding partner, 2nd December 2020). Initial involvement from the University of Waikato was for the Māori health researcher to codesign the research protocol, however at the conclusion of the second codesign hui on 25th September 2020, it was evident that The University of Otago had already developed the draft research protocol for the trial, effectively meaning that codesign did not occur at that stage of the trial. In response to The University of Waikato's query regarding the lack of codesign

in the initial stages of development, The Ministry of Health and Te Arawa Covid-19 Recovery Hub were positive of a codesign process moving forward.

Aware that different groups have various understandings of what codesign means, the University of Waikato articulated the need for an evaluation of the codesign process. There are several studies that show health programmes and initiatives targeting Māori, been created without appropriate monitoring, and evaluating processes (Glasgow, Klesges, Dzewaltowski, Estabrooks, & Vogt, 2006). Impacts from such initiatives can result in, resentment from end-users toward the developers, withdrawal from future health programmes, and greater health inequities.

Therefore the Ministry of Health commissioned the University of Waikato to undertake an evaluation of the codesign process of the Te Whatu trial. This report is the commissioned evaluation.

Structure of the Te Whatu trial

Figure 1 provides a visual representation of the different roles and responsibilities of each of the groups and individuals referenced in this report; a detailed description of these roles follows.

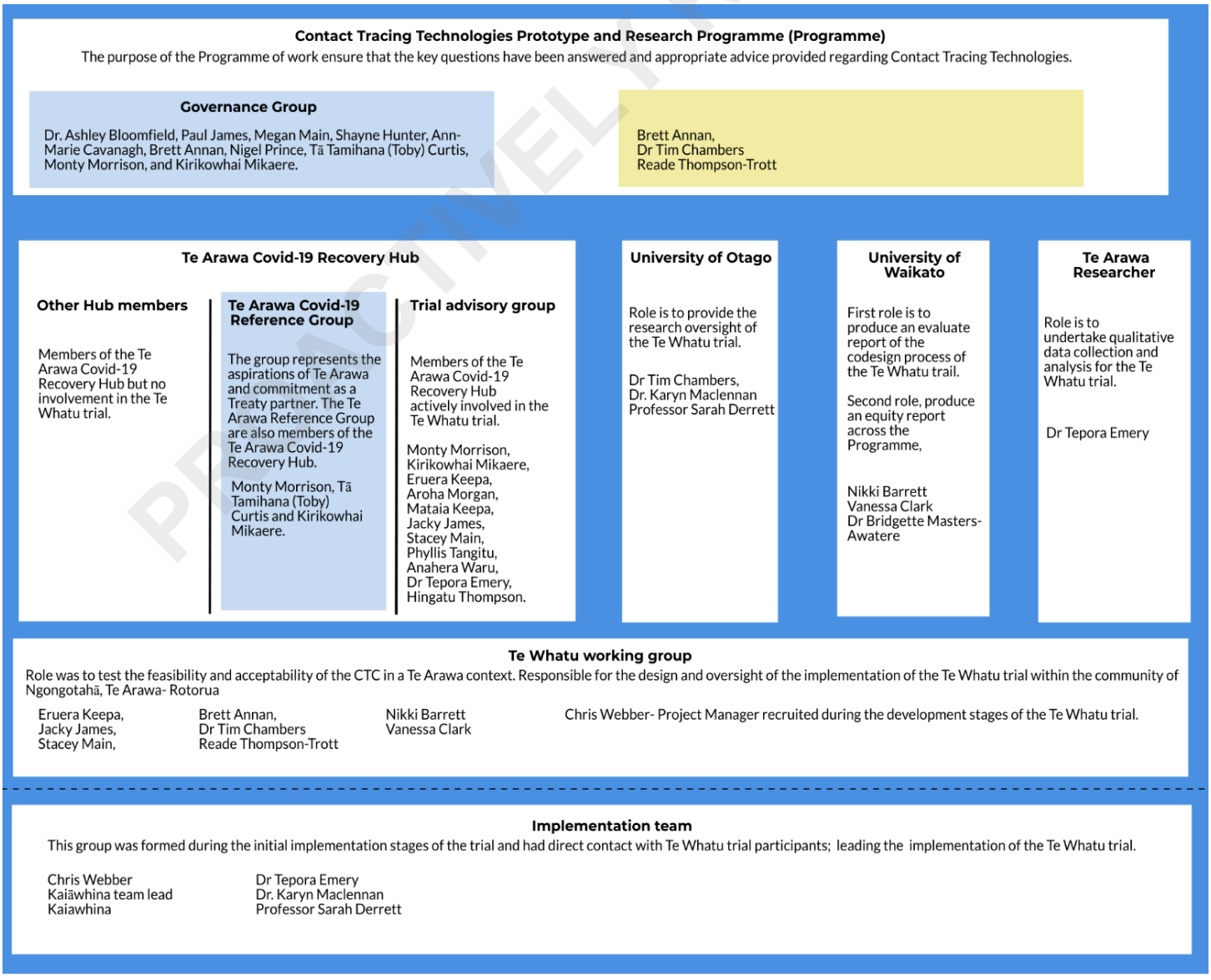

Figure 1- Structure of roles and functions of individuals and groups within the Te Whatu trial.

Partner Summary

Contract Tracing Technologies Prototype and Research Programme Governance group

The Governance Group for the Contract Tracing Technologies Prototype and Research Programme consist of, Dr. Ashley Bloomfield, Director of Health; Paul James, Chief Executive, Department of Internal Affairs, Government Chief Digital Officer; Megan Main, Ministry of Business, Innovation and Employment; Shayne Hunter, Deputy Director General, Data and Digital Ministry of Health, Ann-Marie Cavanagh, Deputy Government Chief Digital Officer, Department of Internal Affairs; Brett Annan, Ministry of Health (Chair) and Nigel Prince, Department of Internal Affairs. Te Arawa Reference Group is also part of the Contract Tracing Technologies Prototype and Research Programme Governance Group.Te Arawa Covid-19 Recovery Hub Reference Group

The Te Arawa Reference Group is comprised of Tā Tamihana (Toby) Curtis (Ngāti Pikiao), Monty Morrison (Ngāti Whakaue, Ngāti Tūwharetoa) and Kirikowhai Mikaere (Tuhourangi, Ngāti Whakaue). The group represents the aspirations of Te Arawa and commitment as a Treaty partner. The Te Arawa Reference Group are also members of the Te Arawa Covid-19 Recovery Hub.

Te Arawa Covid-19 Recovery Hub

The Te Arawa Covid-19 Recovery Hub is comprised of numerous representatives from various local, regional, and national organisations, driven by a Te Arawa centric approach. Hub members involved in the Te Whatu trial and present during the first codesign hui (meeting) held on 21st September 2020 were; Monty Morrison, Kirikowhai Mikaere, Eruera Keepa, Aroha Morgan, Mataia Keepa, Jacky James, Stacey Main, Phyllis Tangitu, Anahera Waru, Dr Tepora Emery, and Hingatu Thompson.

Ministry of Health

Brett Annan is Programme Manager for the Contract Tracing Technologies Prototype and Research Programme.

Reade Thompson-Trott was the Project Manager for the trials across the Contract Tracing Technologies Prototype and Research Programme.

Dr Tim Chambers had a dual role, named as part of the Contract Tracing Technologies Prototype and Research Programme, title Health and Science, as well as the Lead Researcher for the University of Otago.

University Partners

University of Otago

Dr Tim Chambers was the lead Researcher from the University of Otago. He developed the research protocol for the technical trial approved by Cabinet [CAB-20-MIN-0175] in June 2020. The University of Otago team included;

Tim Chambers, Senior Research Fellow (Department of Public Health), Dr. Karyn Maclennan Taranaki (Ngā Mahanga), Research Fellow, Ngāi Tahu Maori Health Research Unit and Professor Sarah Derrett, Department of Social and Preventative Medicine.

University of Waikato

The University of Waikato was approached by the Ministry of Health in September 2020 at the request of the Te Arawa Covid-19 Recovery Hub Reference Group, to assist with the Programme in two respects. Firstly, to identify a Māori health researcher to codesign the research protocol and proposed trial in Te Arawa and secondly to identify a data and technology specialist to provide an equity lens across the Programme. At the conclusion of the second codesign hui held on 25th September it was clarified that the University of Waikato would undertake an evaluation of the codesign process of the Te Whatu trial.

The assembled team were:

Nikki Barrett (Ngāti Hauā, Ngāti Pōrou) Lead Evaluator and Māori health researcher, Dr. Bridgette Masters-Awatere (Te Rarawa, Ngai te Rangi, Tūwharetoa ki Kawerau) Māori health advisor and Vanessa Clark (Waikato) in the capacity of data and technology specialist.

Te Arawa Researcher

Dr Tepora Emery (Te Arawa) Kaupapa Māori Research Leader was approached by The Ministry of Health to work as a kaupapa Māori researcher specifically involved in the qualitative data collection and analysis for the Research Report of the Te Whatu trial.

Te Whatu working group

On the 21st September 2020 the first codesign hui amongst the Te Arawa Covid-19 Recovery Hub, Ministry of Health, University of Otago and University of Waikato was held. This hui provided attendees with an outline of the Programme, the field trial within Te Arawa, and the roles of the different participants in attendance. In summary, the name given to the field trial was ‘Te Whatu’.

The role of the Te Whatu working group in the Te Whatu trial was to test the feasibility and acceptability of the CTC in a Te Arawa context. This involved the design and implementation of the Te Whatu trial within the community of Ngongotahā, Te Arawa- Rotorua.

The implementation team

The implementation team comprised of members, from the Te Whatu working group, kaiāwhina (recruiter) team leads, and Ngongotahā residents employed as kaiāwhina (recruiters).

After the second codesign hui held on 25th September 2020, two people were identified by individual Hub partners, to join the implementation team.

Chris Webber joined the Te Whatu trial as an operations project manager for implementation of the Te Whatu trial commissioned by Lakes DHB. Chris has prior experience working in health, specifically on a Covid-19 related project, and has worked within the Ngongotahā community. Chris was also part of the Te Whatu working group.

Laurie Watt has a role as the Iwi Relationship Co-ordinator for the Te Arawa Workforce Hub. Laurie's role involves identification of opportunities for whānau who have lost their job due to the Covid-19 pandemic, to gain employment and was tasked with identifying and supporting local community members to become kaiāwhina (recruiters) for the Te Whatu trial. Laurie was the kaiāwhina team lead.

Together with project manager Reade Thompson-Trott, these three roles led the implementation team with oversight and support from the Te Whatu working group.

Context of the evaluation study

Kaupapa Māori evaluation (KME)

The need for evaluation of health interventions are a necessary process for both developers and end-users. For developers, evaluations can ensure accountability and assess the extent of success (Rarere et al, 2019). Kerner (2008) argues that without appropriate evaluation processes in place accountability of intervention outcomes can be misdirected or overlooked. For end-users, evaluations can identify the extent to which the intervention involves, impacts and influences end-user attitudes and behaviours. Māori are one end-user group that have been subjected to inappropriate and harmful health interventions (Reid & Robson, 2000). Kaupapa Māori Evaluation (KME) is a process that can be implemented into health intervention programmes to ensure a culturally appropriate assessment is undertaken. Carlson, Moewaka Barnes and McCreanor (2017) argue that KME can meet the "aspirations of co-ownership, mutually beneficial outcomes and shared power" (p.1). KME also takes into account evaluation processes that recognise Māori values, self-determination, and aspirations. These elements have shaped the rationale for a Kaupapa Māori evaluation for the Te Whatu trial codesign process.

Partnership

Rarere et al (2019) explains that partnerships should actively adopt critical reflection processes to help "build strong trust and synergy, power sharing and effective sustainable implementation practices" (p. 478). The Ministry of Health, University of Otago, and the Hub agreed to a codesign process of this trial, grounded in true partnership. The Treaty of Waitangi defines the principle of partnership as, "the obligation on both parties to act reasonably, honourably and in good faith" (State Services Commission, 2005, p. 14).

Recent literature, specific to health research in Aotearoa, has found that the term 'partnership' has been saturated in many studies and the word partnership is applied either too liberally or has no meaning for community/end-users. Matheson, Howden-Chapman, and Dew (2005) argue that a definition of partnership is inconsistent across scholarship and disciplines; for those that provide a definition, most focus on community critique as opposed to the role of the government partner. Partnership and participation are noted as being intertwined and as Matheson, Howden-Chapman, and Dew (2005) explain, "participation is most often described as levels of community involvement, from information sharing and consultation, to shared decision making and responsibility" (p. 8). Lynch (2002) argues that partnership is seen as a higher end of a continuum of participation. From the literature above, the dominating factors that contribute to partnership are community involvement, shared decision making, and responsibility; these factors have been used in the assessment of this

evaluation report to determine the extent to which partnership was demonstrated throughout the Te Whatu trial.

Codesign

Codesign is a relatively new term used to describe a "philosophical approach and evolving set of methodologies for involving people in the design of the services, strategies, environments, policies, processes- that impact them" (Mark & Hagen, 2020, p. 4). Research has found that codesign has the potential of transformational, positive change, but also has possible consequences if the necessary commitment needed is not followed through and delivered on (Boyd, McKernon, Mullen, & Old, 2012; Cochran, P. A. L., Marshall, C. A., Garcia-Downing, C., Kendall, E., Cook, D., McCubbin, L., et al. 2008; Mark & Hagen, 2020). Though there is scholarship and literature both nationally and internationally centring on codesign practices, their definition and implementation has been inconsistent and variable in quality (Mark & Hagen, 2020). As a result of the inconsistencies regarding a definition of co-design, this evaluation will incorporate the principles of partnership, as discussed in the previous paragraph, and use the He Pikinga Waiora Implementation framework to then assess the extent to which codesign was incorporated in the Te Whatu trial.

He Pikinga Waiora (HPW) Implementation framework

The HPW implementation framework is a guide to support the successful development and implementation of health interventions (Oetzel et al, 2016). Developed in 2016, the HPW has been applied to a handful of health interventions within Aotearoa. In particular a study by Oetzel, Rarere, Wihapi, Manuel, & Tapsell (2020) assessing a lifestyle intervention to reduce weight in Māori men at risk of diabetes, cardiovascular disease and obesity. This study concluded that the "HPW framework is useful for guiding the co-design work, particularly as a self-monitoring tool to conduct process evaluation" (Oetzel, et al, 2020, p. 9).

Attached as appendix 2 is the HPW framework to guide the reader through the following sections. At its core, the HPW framework has Indigenous self-determination, ensuring that implementation of interventions are grounded in practices of Indigenous decision making. The HPW framework consists of four elements: Cultural Centeredness -Ko tōku reo, tōku ohooho, Ko tōku reo, tōku Māpihi Maurea, Community Engagement -He urunga tangata he urunga pāhekeheke, he urunga oneone mau tonu, Systems Thinking -He tina ki runga, he tāmore ki raro and Integrated Knowledge Translation -Toi te kupu, toi te mana, toi (Oetzel, et al, 2016). Cultural centeredness considers how communities have culture, including shared understandings, ways of doing, being, understanding and interacting with one another; being mindful of the everyday realities of the community. Community engagement centres on the partnering of researchers and the community throughout the project. Integrated

knowledge translation considers the integration of knowledge translation activities within the context of the community. Systems thinking explores the layers within society, individuals, communities, and national levels. Within the four principles are eight criteria that will provide the foundation for assessing the extent to which codesign was achieved throughout the Te Whatu trial; community voice, reflexivity, structural transformation and resources, community engagement, integrated knowledge translation, systems perspectives, systems relationships, and system levels (Oetzel, et al 2016). These eight criteria will be discussed in detail in the findings section of this report.

All elements of the HPW framework have "conceptual fit with Kaupapa Māori aspirations including indigenous knowledge creation, theorizing, and methodology" (Oetzel, et al 2016). As the Te Whatu trial is grounded in a Te Arawa centric worldview, these aspirations are at the core of the Te Whatu trial. Though the HPW framework was not applied to the design and implementation of the Te Whatu trial, the assessment criteria includes the elements identified by the Ministry of Health and Te Arawa Covid-19 Response Hub, that were at the core of codesign, such as partnership and community driven. For these reasons, the HPW framework will be used to assess whether the objectives of this evaluation were met.

Introduction

Evaluation aim

A community field trial was a stream of work within the Contact Tracing Technologies Prototype and Research Programme. A key objective of the Te Whatu trial was to determine whether codesign can be carried out effectively during a pandemic? As such, an evaluation of the codesign process of the Te Whatu trial between the Te Arawa Covid-19 Recovery Hub, the Ministry of Health and the Universities of Otago and Waikato was needed. The He Pikinga Waiora (HPW) Implementation Framework is a tool to support the development and implementation of health interventions into communities. Attached to the framework is an assessment criteria to measure the extent to which each principle is applied over the course of the intervention. The HPW incorporates elements central to codesign. Acknowledging that a clear and transparent definition of codesign was not agreed upon by all partners prior to the commencement of the Te Whatu trial, this evaluation will use the He Pikinga Waiora framework to assess the extent to which the Te Whatu trial was codesigned.

Evaluation objectives

In order to achieve the evaluation aim, three objectives were developed to focus the data captured within this evaluation. They were:

1. Identify partner (Te Arawa Covid-19 Recovery Hub, the Ministry of Health and the University of Otago) expectations prior to implementation of the Te Whatu trial.
2. Identify partner experiences of the Te Whatu trial process over the course of the Te Whatu trial, and
3. Identify partner strengths, barriers, and learnings of the Te Whatu trial process over the course of the Te Whatu trial.

The Evaluation Team

The University of Waikato were approached in September 2020 to identify a Māori health researcher to codesign the research protocol and proposed trial in Te Arawa. Due to a fast-approaching trial start date, and workload of current academics, a PhD candidate was approached to lead the evaluation team, supported by Bridgette Masters-Awatere and Vanessa Clark.

With less than a month to determine the scope and design of the evaluation study before the Te Whatu trial began, the evaluation team worked tirelessly to develop a robust evaluation study. Below is an introduction to the team and their roles in the evaluation:

Nikki Barrett (Ngāti Haua, Ngāti Pōrou) is a PhD candidate and Māori health researcher. As the Lead Evaluator, Nikki has prior experience as a Senior Project Manager at Te Puna Oranga Waikato DHB,

designing, developing, and implementing health initiatives targeting priority whānau. Although Nikki is a current PhD candidate, her prior experience in research and Māori health coupled with the supervision and mentorship of experienced academics, made her a more than capable and competent Lead Evaluator for this evaluation study.

Dr. Bridgette Masters-Awatere (Te Rarawa, Ngai te Rangi, Tūwharetoa ki Kawerau) Has over 20 years experience with conducting and assessing evaluations. She is considered one of the country's leading experts on indigenous evaluation. As one of the Principal Investigators that developed the He Pikinga Waiora Implementation framework (that provides the central frame for the evaluation), Bridgette's expertise was invaluable, guiding and advising the Lead Evaluator.

Vanessa Clark (Waikato) provided a mentoring role for the Lead Evaluator, as well as being a Māori Data and Technology Advisor for the Te Whatu trial. Vanessa provided guidance and insights into inclusion of kaupapa Māori approaches, insight, and guidance.

Evaluation limitations

This evaluation report had the following acknowledged limitations;

Firstly, a short time frame to design the evaluation study resulted in Ngongotahā residents being absent as participants in this evaluation study. Although the Hub provides a local perspective of the Te Arawa region, the voice of trial participants was not incorporated in the evaluation study design. However, the voices, concerns and experiences of the kaiāwhina (who were employed from the Ngongotahā area) were reflected by the Te Arawa Covid-19 Recovery Hub participants.

Secondly, all communication regarding participant recruitment, dissemination of electronic survey (discussed on proceeding page), and the coordination of the codesign evaluation wānanga (with Hub partners, also discussed on proceeding page) was overseen by the Hub communications team. The need for this approach was to manage the frequency and prioritisation of communications amongst all the partners. Due to the speed of the Te Whatu trial, information regarding the evaluation study was deferred on multiple occasions, i.e. intended survey dissemination (date 13th October 200), actual dissemination of survey (17th November).

Thirdly, delays to the survey dissemination and low response rate, meant a process evaluation during the Te Whatu trial could not be completed. Though a process evaluation would have provided insight into the codesign process during the Te Whatu trial, and by extension, an opportunity to be reflexive to implement change, a retrospective evaluation provides insight into successes and learnings that can be implemented into future interventions.

Finally, the low response rate for the electronic survey resulted in a change of analysis to the evaluation study. Briefly, the quantitative data collected from the electronic survey was to be analysed against the HPW framework, to support the qualitative data captured in the codesign evaluation wānanga. Consequently, the low response rate for the electronic survey response resulted in a need for the evaluation team to undertake a qualitative interpretivist analysis only against the HPW framework, which was then used to assess the extent of the codesign process.

Methods

Ethical statement

A University of Waikato Human Research Ethics Application was submitted to the Human Research Ethics Committee on 2nd October 2020.

The application was for an evaluation study of the codesign process of the Te Whatu trial. One purpose of the evaluation study was to ensure the Te Whatu trial was an authentic representation of the 'by Te Arawa, for Te Arawa' premise the Te Whatu trial was founded on.

Approval for the evaluation study was received on Tuesday 6th October 2020 by the Human Research Ethics Committee (Health) of the University of Waikato under HREC (Health) 2020#73, which included retrospective observational data collected (see appendix 3).

Evaluation participants and expectations of the Te Whatu trial

Participant recruitment and consent

Participants for the evaluation study were recruited from each of the three partners listed below. Participants consented to being part of the evaluation study at various intersections of the evaluation study. Accompanying each of the consent forms was a participant information sheet (see appendix 4). Four participants consented using an electronic consent form (see appendix 5), disseminated to participants by the Hub communications team, via a link to the electronic survey (detailed in the subsequent data collection section). Six participants completed a paper-based consent form (see appendix 6) during the corresponding codesign evaluation wānanga (detailed below). Whilst two participants expressed their consent verbally (one during the codesign evaluation wānanga on the 8th December 2020, the other during the codesign evaluation wānanga on 30th December), after thorough explanation of the evaluation study and participation in the codesign evaluation wānanga. Consent within a Māori landscape such as this (codesign evaluation wānanga), which involves opportunity to ask questions before participating, and withdrawal during the wānanga, aligns to Kaupapa Māori research processes of consent.

Partner expectations of the Te Whatu trial

A method of data collection for this evaluation study was observational notes by the Lead Evaluator (discussed in the subsequent data collection section). These observational notes captured the expectation/s of each partner, of the Te Whatu trial, recorded during the first codesign hui held on Monday 21st September 2020. These expectations provide the foundation for the evaluation study and in conjunction with the HPW criteria, will assess the extent to which the Te Whatu trial was codesigned.

Hub partner (Te Arawa Covid-19 Recovery Hub)

The Te Arawa Covid-19 Recovery Hub (Hub partner) identified five key expectations for the Te Whatu trial.

1. Te Arawa led and driven with support from other agencies,
2. Te Arawa to retain data sovereignty, specifically in regards to personal identification data of Te Whatu trial participants,
3. Clear and accurate communication to all stakeholders,
4. Trust, open transparency and accountability, and
5. Opportunities for Te Arawa, Iwi Māori, and Aotearoa.

Academic partners (University of Otago and Independent Māori researcher)

The University of Otago upheld responsibility for providing a robust, timely, and responsive Te Whatu Trial Research Protocol. Combined with Hub partners' knowledge of the local region and expertise in community engagement, The University of Otago produced a research protocol to support the delivery of a community led trial. Within the Te Whatu research study, both the University of Otago qualitative researchers and the independent Māori researcher (refer to page 21) were responsible for the collection and analysis of the qualitative kanohi ki te kanohi (face to face) interviews with Te Whatu trial participants. Within the evaluation study, only the Lead Researcher from the University of Otago and the independent Māori researcher were participants. It should be noted the independent Māori researcher had a dual role as a Hub partner, and also as an Academic partner. They gave feedback from both perspectives within the Hub partners codesign evaluation wānanga on 8th December 2020.

Funding partner (Ministry of Health)

As well as the rationale given on page 17 of this report, the Ministry of Health's expectation in this trial was to one, provide necessary resources to support a community driven and designed trial, and two, provide the wire framing to support The Hub partner to create appropriate and accurate Te Whatu trial messaging.

Evaluation team (University of Waikato)

As well as leading the evaluation study process outlined in this report, specific tasks of the Lead Evaluator included, providing critical input to all partners during the Te Whatu trial, contributing to trial design and implementation, and feeding into key documents, such as the Te Whatu Research Protocol, and/or events where relevant. As an evaluator the need to be 'seen in the community' is a necessity (Smith, L.T., 1999), and the Lead Evaluator ensured visibility throughout the Te Whatu trial.

Positioning oneself as an Indigenous, Māori evaluator involves layers of complexity in relation to culture, relationships and interactions, and high levels of obligation and accountability to the Māori communities that are involved in the evaluation, whether there is a genealogical connection or not (Master-Awatere & Nikora, 2017). Further, Masters-Awatere and Nikora (2017) contend that evaluation should not privilege objectivity, instead posit that evaluation be socio-culturally situated. To that end, there are four perspectives that will be privileged in this evaluation study, Te Arawa Covid-19 Recovery Hub partners (Hub partners), Academic partners (University of Otago), Funding partner (Ministry of Health) and Evaluation team (University of Waikato).

Data collection

Qualitative methods

The use of qualitative research methods, specifically in health-related research and evaluation, has gained both popularity and credibility amongst several scholars (J. Creswell & Poth, 2017; Denzin & Lincoln, 2005; Lewis, 2015; Rice & Ezzy, 2000). Hastie and Hay (2012) explain that qualitative research is "….about exploring issues, understanding phenomena and answering particular types of research questions" (p. 92). Process evaluations can assist in understanding why a program was or was not successful (Bartholomew, Parcel, Kok, & Gottlieb, 2001; Steckler & Linnan, 2002). By using a process evaluation approach, the qualitative research methods align with the aims and objectives of this evaluation study. In turn, these compliment the Research report of the Te Whatu trial. As Voyle & Simmons (1999) state, process evaluation "implies an emphasis on looking at how an outcome was produced, rather than looking at the outcome itself" (p. 1041). Within this evaluation study, three methods of data collection were used. These are explained below:

Observations

During the three months of the Te Whatu trial the Lead Evaluator, and wider evaluation team, attended scheduled events including;

- Codesign hui (first 21st September 2020 and second 25th September 2020),
- The Ngongotahā hub open day (22nd October 2020),
- Te Whatu trial launch (30th October 2020),
- The Waiteti Marae information evening (4th November 2020),
- Kaiāwhina recruitment on boarding and training (3rd November 2020),
- The Ngongotahā Whānau day (7th November 2020); as well as
- Reoccurring events such as research team hui, and daily Te Whatu working team hui.

In addition to observations at planned events, the Lead Evaluator immersed herself in daily operations to observe process protocols and dynamics.

The observational field notes from the Lead Evaluator captured comments from participants in both planned and unscheduled events noted above. Such notes informed the questions for the codesign evaluation wānanga (focus group interviews), as well as guided the data analysis.

Survey

An electronic survey (see appendix 7) was disseminated to the three partners through the Te Arawa Covid-19 Recovery Hub communication team, on 17th November 2020, with a close off date of 1st December 2020. The purpose of the survey was to capture participant's perspectives regarding the level of satisfaction/engagement in the Te Whatu trial. The survey was expected to take approximately 15 to 20 minutes to complete. Participants then selected one of the following groups that best reflected their part in Te Whatu trial, one, a Hub partner, two, an Academic partner or three, a Funding partner.

Of the n=17 participants invited to participate, one participant completed the entire survey, and an additional three participants partially completed the survey.

Codesign evaluation wānanga (focus group interviews)

Codesign evaluation wānanga (focus group wānanga) via zoom and kanohi ki te kanohi (face to face) were completed with each of the participants, in three separate clusters: one, a Hub partner, two, an Academic partner or three, a Funding partner. Each of the three clusters had representatives with differing expectations and perceptions of the design and delivery process of the Te Whatu trial. Each wānanga ranged in duration from 50 minutes to 120 minutes depending on the number of participants. Due to the limited availability of different Hub members, two Hub partner codesign evaluation wānanga occurred, details are set out below;

- Codesign evaluation wānanga Funding partner- 2nd December 2020, kanohi ki te kanohi
- Codesign evaluation wānanga Hub partner #1- 8th December 2020, kanohi ki te kanohi
- Codesign evaluation wānanga Academic partner- 17th December 2020, via zoom
- Codesign evaluation wānanga Hub partner #2- 30th December 2020, via zoom

The interview questions were created based on the expectations of each of the partners, developed in the first codesign hui held 21st September 2020 (discussed on page 30 of this report), as well as the limited data collected from the survey responses, and observational notes taken throughout the Te Whatu trial. The questions were open ended and aligned to the objectives of this evaluation which shaped the success markers determined by the partners.

All interviews were recorded and transcribed, except for the Funding partner codesign evaluation wānanga where the recording technology only captured some of the wānanga discussions.

Data analysis

Researchers have voiced that the analysis of data is a vital, yet undervalued step in the research process (Iphofen, & Tolich, 2018; Flick, 2013, & Smith, 1999). Scholars have explained how some researchers are more concerned with the data they collect and give little consideration to what is done with the data once they have it. In the case of research on Indigenous peoples, specifically Māori, this oversight was routinely practised and led to a misinterpretation from Western academics causing mistrust and harm to Māori communities (Smith, 1999). These concerns have been given thorough consideration in the evaluation study and specific steps (detailed below), were taken to ensure data integrity was upheld, and accurate reflection of findings conveyed.

The transcription and interpretation of the codesign evaluation wānanga was central to the analysis of this evaluation study. "Transcription can powerfully affect the way participants are understood, the information they share, and the conclusions drawn" (Oliver, Serovich, & Mason, 2005, p. 1273). Though the period from the last codesign wānanga (30th December 2020) and the comprehensive draft report submission date (11th January 2021) was short, the Lead Evaluator ensured a through process of data reflection. This process involved the transcribing of all recordings, periods of reflection, which scholars Oliver, Serovich, and Mason (2005) concur is "useful in addressing important transcription issues" (p. 1286). Finally, a cross reference of some of the data gathered and interpretation by the evaluation team.

Interpretative analysis

The He Pikinga Waiora framework is used to assess the codesign evaluation wānanga results. A process of data integrity checks was used during the codesign wānanga to ensure notes were an accurate reflection of the corresponding partners' view. These notes were presented in the form of quotes made by partners of that specific group, i.e. statements made by Hub partners were used in the Hub partner codesign wānanga. These quotes were cross referenced, within the relevant codesign evaluation wānanga, to determine the accuracy of interpretation. Partners were provided with context for the statements and then asked if they agreed that this was an accurate account. For example, a statement noted by the Lead Evaluator during the Waiteti Marae evening event on the 4th December 2020 by a Funding partner was, "we couldn't have gotten this far without the community…and this trial is an example of the community leading and driving it". Within the codesign evaluation wānanga with the Funding partner, the Lead Evaluator confirmed the accuracy of this observation and obtained consent to use within the evaluation study.

The statements were also used as discussion points relating back to the initial expectations raised in the first codesign wānanga held on 21st September 2020.

The evaluation team were very conscious of the importance of fairly managing verbal data and ensuring the reliability and validity of the evaluation process. Within a Kaupapa Māori evaluation context, the dissemination and review of data interpretation, demonstrates the respected value of the partnership. Therefore, a final data quality check was employed in this evaluation study, which involves the sharing of the draft report with all partners.

Evaluation Findings

Survey response

Of the electronic survey disseminated on the 17th November 2020 n=4 responses were received; three from Hub partners and one from the Academic partner. The results of the survey are detailed below under the following subheadings, aligning to the survey questionnaire.

Overall usefulness of the codesign hui held on 21st September

In relation to the overall usefulness of the codesign hui held on 21st September, three participants found the hui to be 'very useful', while one found the hui to be 'all useful'. Overall, the hui was viewed as a useful process, as one participant summarises,

> *the coming together of very different entities to agree a common vision to work in and achieve e.g. Iwi aspiration (protection of Iwi) MoH - (Trial the card contribute to COVID containment, Universities validate the trial and support a Maori centric research process (stunning) DHB - support all of the above, and ensure DHB can support in whatever way was needed*- Academic partner.

Reasons for how you found the hui useful

Explanations given by the Hub partner on how they found the hui useful included, "getting to know who was behind the project", "meeting face to face", "establishing relationships", and "ensuring Te Arawa was represented and had a voice". Reasons for why the Academic partner found the hui useful, "understanding of what was required in the trial for COVID contact Tracer, had initial discussions with the MoH [Ministry of Health] on identifying a community. The trial, intended process, and streams were identified".

What did you like about the hui?

Responses ranged from "open dialogue", "meeting face to face to establish the relationships", and "Te Whatu, - a joint Co-design process".

What did you least like about the hui?

The two responses included, "lack of clarity of the role of Government vs the role of Iwi; perhaps there needs to be more work on the importance of a health/clinical focus and how this works within an Iwi context" and "short time frame".

What extent was codesign achieved in the hui held on Monday 20th September 2020?

One participant completed the matrix table that utilised a rating scale to determine the extent to which participants agree or disagree with statements. The questions were formulated using the HPW framework principles to assess the extent of codesign in the Te Whatu trial.

The respondent indicated scores of 'moderate' or 'great extent' to each of the questions. The final statement, 'The Te Arawa Covid-19 Field Trial [initial name of the Te Whatu trial] has been genuinely co-designed by Te Arawa Covid-19 Hub, the Ministry of Health and Universities of Otago/Waikato', received a response of **'great extent'** from the participant.

Codesign evaluation wānanga (focus group) interviews results

The codesign evaluation wānanga provided a valuable retrospective of the Te Whatu trial process. The following codesign evaluation wānanga interview results from each of the three partners, as well as key observational notes from the Lead Evaluator, have been collated and organised using the HPW reflection matrix. As discussed earlier in this report, the HPW framework consists of four elements: Cultural Centeredness -Ko tōku reo, tōku ohooho, Ko tōku reo, tōku Māpihi Maurea, Community Engagement -He urunga tangata he urunga pāhekeheke, he urunga oneone mau tonu, Systems Thinking -He tina ki runga, he tāmore ki raro and Integrated Knowledge Translation -Toi te kupu, toi te mana, toi (Oetzel, et al, 2016).

Within the four elements are eight variables used to ultimately determine the extent to of codesign in the Te Whatu trial. Appendix 2, provides a visual representation of the He Pikinga Waiora Implementation Framework rating criteria. The following codesign evaluation results have been collated under the corresponding variables. Within each section, a description of the criterion is given followed by an interpretation statement of how that variable aligns to this evaluation study. Findings related to the assessment criterion have been presented. The criterion table as per the HPW criteria framework is provided and based on the findings a rating has been allocated.

Community voice

Community voice considers the participation of community members as end-users, or the intended primary beneficiaries of a programme/service, in contributing to the definition of the problem, and developing the solution. This assessment component examines to what extent the community voice was engaged in the problem definition and solution-finding activities.

Within this evaluation, the identified problem was defined as a lack of "accurate and timely contact tracing" by the Ministry of Health (Chamber et al. 2020). The solution proposed by the Ministry of Health to this problem was the Bluetooth-enabled Contact Tracing Card (CTC). Within this evaluation, community is defined as both, the 'Hub partners' who have provided a local perspective of the Te Arawa region, and the Te Whatu trial participants (Ngongotahā residents) who were people living and working in Ngongotahā (Chambers et al. 2020). These two groups collectively contribute as the 'community' partner perspective. However, each group is also separate, and may within the report be distinguished as either, 'Hub partners' or 'Ngongotahā residents'. As stated in the 'methods' section of this report, the Ngongotahā residents are not participants within this evaluation study, however views from Ngongotahā residents will be represented through the Hub partner.

Problem definition

All partners - Hub, Academic and Funding - affirm that the problem and solution were not determined by the community.

> *The problem and solution were already pre-identified before we went into the process, meant that there was no real opportunity for community engagement on that level. Even to some extent the research objectives, even though we had those couple of hui to talk through them, like 95% of everything we had already done before that point was implemented. So arguably there was not much input [from the Hub partners and Ngongotahā residents] into the problem statement, the solution, or even the trial structure.*
>
> (Academic partner).

Prior to the Te Whatu trial the Academic and Funding partner had undertaken extensive work in the area of contact tracing and the issues, risks, and concerns associated if an equitable solution was not developed. Noting these concerns, the Academic and Funding partner presented a problem and potential solution that was well received by the Hub partner. Though both the problem and solution, identified above, was well received by the Hub partner, all partners acknowledged that the Te Whatu Research Protocol "wasn't codesigned" (Chambers, 2020).

As discussed on page 21 of this report, the first codesign hui held on 21st September 2020 established the formation of the Te Whatu group. For many attendees, including members of the Hub partner, this was the first time receiving information about the proposed field trial.

Further, it was confirmed that the voice of Ngongotahā residents' in the problem and solution identification, was absent, by a Hub partner. The partner explained that the Ngongotahā residents had not been part of any communications ahead of the trial's implementation in the community. "Given the developments and short timing we want to get our 'ducks lined up' before engaging [Ngongataha residents] with some certainty and confidence" (Hub partner- Male B).

During the codesign evaluation wānanga (2nd December 2020) with the Funding partner, they acknowledged that the research protocol was not codesigned but confident that the remaining process of the Te Whatu trial was codesigned. *"I was worried because the protocol that [University of Otago] had done was not codesigned, but the implementation was"*- Funding partner. The Hub partner agreed with that assessment noting that *"the research was done, that wasn't codesigned it was the implementation process around it"* –Hub partner Female C (codesign evaluation wānanga Hub partner #1, 8th December 2020).

Development of the solution

As discussed in the background section of this report, one of the Hub partners was part of the PPP team responsible for designing the CovidCard Solution. The Hub partner worked closely with the PPP team on security and privacy issues. The CovidCard had the same purpose as the CTC; to record and store information of contacts made with other card holders (Chambers et al, 2020). Though the Hub partner had worked previously on the CovidCard, it was not the solution used in the Te Whatu trial. The CTC that was used, had no involvement from Hub partners in its development or design; hence the Hub partner had no involvement in the specific solution trialled in the Te Whatu trial.

The problem and solution identification lacked a community voice however the Hub partner acknowledged that this trial was a response to a health pandemic and this aspect of the "problem," was not up for debate. The Hub partner agreed with the Funding partner, that the identified problem, accurate and timely contact tracing, and the CTC being a possible solution to protect vulnerable communities, was a matter of urgency for Māori, vulnerable communities, and Aotearoa as a whole.

Reflections on the problem and solution for the Te Whatu trial

During the codesign evaluation wānanga (8th December 2020) the Hub partners vocalised learnings from the Te Whatu trial and stressed the importance of the community voice, specifically the need for the Ngongotahā residents' voice in the early stages of the research design. *"If it is truly codesigned,*

come to us at the inception and conception, at the research concept, and the actual development of the proposal" –Hub partner Female A (codesign evaluation wānanga #1, 8th December 2020). The Hub partner goes further to explain the reason for employing a community voice at the inception of a research intervention.

> *When you are involved from the start you have a much better idea of the research design, whereas when you see it at the end and it is fed to you in an hour [referring to the second codesign hui held on 25th September 2020]… you try to make it work without full understanding of the whole thing. It is hard when you are not involved at that stage.*
>
> (codesign evaluation wānanga #1, 8th December 2020).

On the basis of the data gathered from each of the partners, the extent to which community voice was implemented was **low**.

Table 2- Community voice criteria from the HPW implementation framework

Community voice (how groups, that the intervention is focused on, are involved in defining the problem and solutions)			
High	Medium	Low	Negative
Community involved in defining the problem and developing the solution.	Community involved in either defining the problem or developing the solution.	Community only informed but has no direct involvement in the definition of problem or solution development.	Intervention implemented in the face of significant community opposition.

Reason for this rating

Both the Academic and Funding partners approached the Hub partner with a predetermined problem definition and solution pathway. The aim of the trial was to test the feasibility and acceptability of a Bluetooth-enabled Contact Tracing Card, to ultimately determine whether this solution could be rolled out nationally (Chambers et al. 2020). Community input was prioritised as a factor for the success of the trial, though this was not a reality until the design and implementation phases of the Te Whatu trial, not during the problem identification and solution development stage. Despite this, the Hub partner was extremely responsive and appreciative for the potential solution this intervention could provide to vulnerable communities.

Recommendation Community Voice

Include community voice from the outset. During the current climate of a global pandemic consideration of the local lived experiences are central to identifying problems, and developing responsive solutions.

Reflexivity

Reflexivity considered how the implementation team is reflexive, identifying needed adjustments to the intervention. Berger (2015) defines reflexivity as the ability to "recognize and take responsibility for one's own situatedness within the research and the effect that it may have on the setting and people being studied, questions being asked, data being collected and its interpretation" (p. 220). This assessment component examined how the power and privilege of the researcher was recognised, and to what extent this influenced the intervention team, in turn, the intervention. Success markers of reflexivity examined the extent to which the position of power and privileged had been identified by the Academic partner, and the impact these have had on the implementation team, and in turn adjustments that have been made to the Te Whatu trial as a result.

Within this evaluation, the implementation team is comprised of all partners; the Hub, Academic and Funding partner. Ngongotahā residents employed as kaiāwhina where an integral part of the implementation team, and though they have not contributed directly to this evaluation study, their voice has been reflected, where possible, through the various Hub partners.

Development of the Te Whatu Research Protocol

Echoing the findings in the community voice section of this report, all three partners agreed that the initial research protocol drafted by the University of Otago was a preconceived document with no formational involvement from the Hub partner. The first codesign wānanga occurred on 21st September 2020 between the three partners. Planned Te Whatu "go-live start date" was proposed to take place between 12th October to 25th October 2020 leaving only three weeks to develop a codesigned research protocol, obtain ethics from both the University of Otago Ethics Committee as well as the Office of the Privacy Commissioner, and commence recruitment for data collection. Although the timeframe was short, the Academic partner completed the Te Whatu Research Protocol and obtained ethics approval through The Human Ethics Committee at The University of Otago Committee on the 2nd October 2020.

Upon reflection, given the short time frame to develop the Te Whatu Research Protocol, the Academic partner understood there was not enough opportunity for adequate input from the Hub partner into the protocol (codesign evaluation wānanga Academic partner, 17th December 2020). Therefore the Academic partner intentionally provided a high level description of the Te Whatu trial, in the Te Whatu Research Protocol, to allow the Hub partner to implement and deliver the Te Whatu trial in a manner that was appropriate for Ngongotahā residents.

We had left it vague in the research protocol because we thought the best way for this to be rolled out would be for the community to decide and to do it. That entire process had limited input from the researchers as we didn't want to try and impose what we think would work, where obviously they [Hub partner] provided advice on what they suggested and I think the community came up with the best option.

Academic partner.

Position of the researcher

During the codesign evaluation with the Academic partner (17th December 2020), the Academic partner demonstrated an awareness of reflexivity and recognising the necessity to incorporate other perspectives in the research;

From a research point of view, I came in with an open mind in terms of taking on feedback about the research protocol and trying to implement it exactly as it was. I mean we [researchers] *purposely left, bits that we thought community involvement was really an essential pillar, vague in the research protocol so they could be filled in. That was space for collaboration on those fronts.*

The Academic partner continued explaining efforts to address power imbalances, including "being flexible", "coming into the trial with an open mind", but also acknowledging that this could be difficult as sometimes researchers can "get stuck in their own research paradigms and things must be done a certain way".

Interpretation of the Te Whatu Research Protocol

The Academic partner constructed the Te Whatu Research Protocol in a manner that allowed for flexibility of implementation, however, there were challenges noted by the Hub partner regarding the interpretation of the Te Whatu Research Protocol, which then impacted implementation.

During the codesign evaluation with the Hub partner (8th December 2020) the partners discussed the Te Whatu Research Protocol. One Hub partner explained how the Te Whatu Research Protocol was a document that informed the Te Whatu trial but during implementation another protocol was formed;

"It was quite visible, we could read the document, the research protocol put up by Otago. But virtually beside that stood a Te Whatu protocol that, like a carving, was yet to be carved out of wood, and we knew in our heads, as things went along, this is what seems to be right, that was the protocol that was emerging. -Hub partner Male A.

As noted above, the implementation team had to make decisions and interpretations to ensure the Te Whatu Research Protocol was followed, whilst also ensuring these decisions were in the best interests of the Te Whatu trial participants.

An example of how the implementation team demonstrated reflexivity was in regards to the criteria for people to be participants in the Te Whatu trial. The Te Whatu Research Protocol (2020) states, "we will actively recruit participants that live in Ngongotahā West and East. We will also permit people who live outside these boundaries but work within the Ngongotahā Village as we are primarily concerned with interactions in public places" (p. 19). An "on the ground" interpretation of this definition was "If you live or work in Ngongotahā you can be part of the trial" (Te Arawa Covid-19 Recovery Hub, 2020a). During recruitment it became apparent that this narrow definition 'live and work' in Ngongotahā excluded active members of the community. One interaction observed by the Lead Evaluator (3rd November 2020) involved an interested community member enquiring about the trial but when asked if they live and/or work in Ngongotahā, their response was no-however, they would visit Ngongotahā most week days and on weekends. As a result of this, the implementation team (comprised of the three partners and kaiāwhina) reinterpreted the Te Whatu Research Protocol to include, those who identify *"themselves as being part of that community"* (Hub partner). This example demonstrates a privileging of the Ngongotahā residents' realities and an ability of the implementation team being effectively reflexive.

Implementation of the Te Whatu Research Protocol

The Ngongotahā boundary was a topic of discussion first raised in the second codesign hui held on 25th September 2020. Specifically the question, what are the parameters of the Ngongotahā boundary? Within the Te Whatu Research Protocol (2020) a map of the greater Ngongotahā area is included, with sections colour coded to indicate Ngongotahā East, Ngongotahā South, Ngongotahā Valley and Ngongotahā West, however the map was not provided as a reference for attendees during the hui. One of the Hub members provided an alternative Te Ao Māori explanation of the boundary using landmarks such as awa (river), maunga (mountain) and hapū boundaries. Though this explanation was well received and used in conversations by the implementation team during the Te Whatu trial, the protocol was not modified to reflect the lived realities of Ngongotahā residents.

The boundary became a focal discussion point for a second time, during the Waiteti Marae information evening held on Wednesday 4th November 2020. Only four days prior to trial go-live date. Messages to recruit potential trial participants included the line, "If you live and work in Ngongotahā you can be part of the trial" (Te Arawa Covid-19 Recovery Hub, 2000a). This message caused some confusion for community members with one member seeking clarity on what was meant by

Ngongotahā? The same individual from the Hub who provided the initial explanation in the second codesign hui, provided the Te Ao Māori interpretation of the boundary area. After this clarification, the member of the community explained that they do fit within the trial parameters. They also went further to stress that they do not consider themselves to be "in Ngongotahā" as the current definition does not encompass the boundary explanation provided by the Hub partner, and suggested changing the messaging of what the boundary was to ensure that other community members understand this difference. Despite being an identified barrier to effective implementation by, and for, Ngongotahā residents, neither the protocol nor promotional material for the Te Whatu trial were reflective of this suggestion.

During the codesign evaluation wānanga with the Hub partner (8th December 2020) the boundary interpretation was discussed, and identified as a complex topic; and though there were efforts to incorporate the Te Ao Māori boundary explanation, an exact definition was difficult to identify. "When you talked to ten different people, [prominent Kaumātua and Hub partner] being one of them, and a Kaumātua from out there [Ngāti Whakaue] being another, they all have a different view of what the geographic space of Ngongotahā is" -Hub partner. Despite not obtaining a clear definition of the boundary, the Hub partner explained that an "on the ground interpretation" of the boundary was incorporated during the Te Whatu trial, that was guided by the knowledge of the kaiāwhina (tāngata whenua of the area) This suggests limitations in the reflexivity of the implementation team. Choosing to privilege the Academic protocol in the final decision. However, the 'on the ground' efforts of the implementation team to be responsive is also noted and speaks to a reflexive intention.

Another challenge the Hub partner had to overcome was the inability to modify The University of Otago participant information sheet or consent form. As the University of Otago Human Ethics committee had already received the protocol and associated documents, such as the participant information sheet and exit survey questions, these could not be modified without an amendment to the ethics application, requiring more time that was already extremely limited. However, the Hub partner was able to produce a solution that satisfied both the ethics conditions as well as ensuring that targeted messages were appropriate for end users- Ngongotahā residents; *"We [implementation team] put a frequently asked question sheet over top of the participant information sheet so that the information was relevant and appropriate for the community. We essentially tailored the information so that they could consume"* (Hub partner Male A).

As the trial progressed, the implementation team relied heavily on *"the reinterpretation of the Te Whatu Research Protocol"* (Hub partner Male A, codesign evaluation wānanga Hub partner #1, 8th December 2020) and were left to coordinate the Te Whatu trial as they believed was best, noting that

there were elements that could not be modified, such as the participant information sheet. This disconnect between the Te Whatu Research Protocol and the 'on the ground' implementation raises the question of whether this was a reflexive process or a demonstration of the implementation teams' expertise.

Reflexivity amongst the partners

A unique feature of the Te Whatu trial was the development of a data management process. During the first codesign hui (21st September 2020) one expectation of the Hub partner was to ensure that the personal information of their community was protected and secure. As a result of this, a data management process was established to maintain the anonymity of participants and to allow the Hub partner to maintain sovereignty over data collection and storage. The development and implementation of the data management process required reflexivity from all partners. *"We [partners] did have a lot of negotiation about what data there was, who would have access, and how it would be used"* (Academic partner).

The data management process had its challenges. Noted in the codesign evaluation wānanga with Academic partner (17th December 2020), this process of data acquisition and use was different to standard research data collection and storage practices. The process of requesting and receiving timely data was a hurdle as those that had permission to access the data were already limited in availability. Another challenge was the misunderstanding amongst partners as to what was considered "personal identifiable information and communication". Within academia for instance, using an e-text platform to contact participants would not necessarily require a specific mention in an ethics application, and there was an assumption that texting participants for the trial would not require a permission request, therefore was not initially incorporated into the data management process during the initial development (codesign evaluation wānanga Academic partner, 17th December 2020). For the Hub partner, there was a level of protection for participants to ensure they were not bombarded with information and thereby, unintentionally put off from participating in the trial. In response the e-text platform was made part of the data management process.

The data management process was an example of reflexivity amongst the implementation team.

On the basis of the data gathered from each of the partners, the extent to which reflexivity was implemented was **Medium**

Table 3- Reflexivity criteria from the HPW implementation framework

Reflexivity (How the power and privilege of the researcher, relative to the community, is recognised and dealt with.)			
High	Medium	Low	Negative
The implementation team explicitly states their reflexivity and identifies adjustments to the intervention as a result.	The implementation team identifies efforts to engage in reflexivity or states they were aware of it; adjustments to the intervention are unclear.	No evidence that the team was reflexive about its processes or no changes made in response to team learnings.	Victim blaming, unintended bias or overt racism in intervention design, implementation or evaluation.

Reason for this rating

The reason for this rating is, examples of reflexivity and adjustments made to the Te Whatu trial were evident. The boundary clarification for instance was recognised by the implementation team as a critical component in the recruitment of trial participants. However, no adjustment was made to the recruitment promotional material for the Te Whatu trial nor the Te Whatu Research Protocol. Still, the team demonstrated flexibility by adjusting the criteria of participation in response to community feedback.

Effectively the Funding partner determined what was needed, Academic partner developed the Te Whatu Research Protocol and the Hub partner led the implementation of the Te Whatu trial. The implementation team comprising members from (each partner) made numerous adjustments to the Te Whatu trial during implementation. However, the extent to which these adjustments were as a result of reflexivity, or the implementation team's expertise and knowledge when working with their community, was not clear.

Recommendation Reflexivity

Incorporate implementation team during the design of the research intervention, providing a more accurate representation that adjustments made to the intervention were as a result of reflexivity.

Structural transformation and resources

Structural transformation and resources explores how the intervention results in significant structural transformation and resources which are sustainable over time. This HPW principle is outside the scope of this evaluation as the Te Whatu trial was not intended to be a long-term intervention. Never the less, this section can speak firstly, to the resources provided during the Te Whatu trial, and secondly, activities that occurred during the Te Whatu trial with the intention of carrying on post-trial, and finally, possible future opportunities.

Throughout the Te Whatu trial the Funding partner made it clear that they would *"provide the necessary resources to support a community driven and designed trial"* (Codesign evaluation wānanga with Funding partner, 30th December 2020). The Funding partner was passionate about making the trial a success, *"if we get this right, what else can we do? A huge learning opportunity to do more with partnership learnings"* (codesign evaluation wānanga Funding partner, 2nd December 2020). An example of the Funding partner providing support to the Hub partner was, direct access to the communication manager of the Contract Tracing Technologies Prototype and Research Programme. This resource was provided to support the Hub partner to create consistent messages that aligned with the nationwide Ministry of Health COVID-19 messages. The presence provided by one of the Funding partners within the Ngongotahā hub meant the implementation team could ask questions and get support for the technology, i.e. IPads, if, and when required. The Hub partners were appreciative of the support they received and note specifically the sincerity with which the Funding partner voiced the importance of this trial and the crucial role the Hub partner had in ensuring the Te Whatu trial's success.

Control of the budget was noted as an important factor in determining the extent of codesign. During both codesign evaluation wānanga with the Hub partner (30th December 2020), concerns were raised around the transparency of the budget and the question of whether this was true codesign if one partner has control over the budget. The Funding partner provided the budget and deliverables for the Te Whatu trial but negotiations of budgets and need for justification from the various partners resulted in delays for, final approval of terms of reference, budget confirmation, and payment. These delays continued well into the implementation stages of the Te Whatu trial and demonstrates the high trust model the Hub partners operated under, working without written confirmation.

Hub partner Female D, from the codesign evaluation wānanga on 30th December 2020, identified two key components that are needed for codesign, one, "sharing of authority, effectively sharing of power", and two "sharing of resource". The Hub partner goes further to offer a solution of how that can be achieved. "*To get greater equity [of outcomes you need equity of investment]...funding could*

sit with the Iwi partner". The reason being, *"it changes the dynamic of the conversation, it changes the dynamic of the mana that we [Iwi] hold [over decision making] and therefore the dynamic of the outcomes"* (Hub partner Female D).

A second Hub partner from the codesign evaluation wānanga on 8th December 2020 shared their view of steps needed to ensure structural transformation. "There is another step after [codesign] enablement! It does not end at Codesign, co-partnership, co-construct, there is a more transformational step after that and it's empowerment" -Hub partner Male B.

Within the parameters of the Te Whatu trial, the sharing of resources and budget was not at a partnership level. Resourcing was provided to the Hub partner but not in a manner that demonstrates shared partnership. Instead it was clear that funding was controlled by one partner, and with that, the power to question, and make critical decisions. The Hub partner stressed that being in a codesign partnership entails sharing of power and resource to ensure the mana over the decisions that need to be made (codesign evaluation wānanga Hub partner #2, 30th December 2020).

Future opportunities

During the Te Whatu trial, the Hub partner identified an opportunity to enhance the current contact tracing method, known in Aotearoa as case investigations. Case investigations for Covid-19 begins with notification that someone has the infectious disease. They are asked to recall their contacts, going back two to three days before symptom onset. This is time-consuming and does not always provide an accurate account of events. A data collection point for the Te Whatu trial was to invite participants to undergo a contact tracing interview (modified case investigation), to compare the current contact tracing method against the Bluetooth-enabled Contact Tracing Card (CTC). Identified in the second codesign hui (25th September 2020) was an opportunity to train up local Māori, with the intention that in the future if a Covid-19 outbreak reoccurred, they can undertake current practice of contact tracing interviews. The Te Whatu Research Protocol (2020) was modified to include the following;

> *Standardised case investigations are currently conducted by PHU qualified health professionals, however as a result of our codesign process, the team, including lead staff from the Toi Te Ora PHU and Lakes DHB, have noted that, as there are no medical related questions, members of the research team can be trained up to deliver these phone interviews. Therefore, these phone interviews will be carried out by a mix of PHU case investigators, and the research team.*
>
> (p. 30).

The Funding partner was also supportive of this development and expressed a desire for follow up training for Te Arawa post-trial.

As previously stated, the trial was a short term intervention, however there were transformational intentions as a result of the Te Whatu trial. The outcomes from the Te Whatu trial study, which can be found in the Te Whatu Research Report, will inform vital next steps in regards to contact tracing technologies (Chamber et al, 2020). The outcomes of this codesign evaluation report can be used to support the design, development and implementation of future programmes.

On the basis that this HPW principle was out of the scope of this evaluation it would be unreasonable to provide a rating, therefore a rating cannot be given.

Table 4- Structural transformation and resources criteria from the HPW implementation framework

Structural transformation and resources (How much the system is improved to better fit community needs)			
High	Medium	Low	Negative
Significant structural transformation and resources which are sustainable over time.	Intervention receives significant resources but has a limited focus on structural transformation.	Significant structural transformation and resources which are sustainable over time.	Intervention receives significant resources but has a limited focus on structural transformation.

Reason for this rating

The reason a rating cannot be provided is, the expectation of all partners was to implement a trial that was only for a short period of time. It would be unfair to provide a rating for this section of the HPW when the criteria identifies structural transformation and resources sustainable over time, when the trial was a short term intervention. Nevertheless, it is encouraging that adequate resourcing was provided during the implementation of the Te Whatu trial, however the idea of shared partnership was questioned during the trial as the sharing of resource- budget, infrastructure, personnel/expertise- was controlled by one partner.

Recommendation Structural Transformation and Resources

Structural transformation is more appropriate for consideration at the wider Contact Tracing Technologies Prototype and Research Programme level. With regards to the evaluation, the Ministry of Health would be better suited to consider structural transformation at the broader programme level.

Community engagement

Community engagement considers the level of involvement, impact, and trust with community members. Central to strong community engagement is bi-directional leadership, defined by Vaughn et al (2017) as shared leadership, decision making, and communication.

Within this evaluation, the assessment will focus on the interactions amongst the Hub, Academic and Funding partners and their engagement with the Ngongotahā residents, first during the trial design, and second, during the Te Whatu trial implementation. Success measures will examine the extent to which the Ngongotahā residents were involved in the Te Whatu trial, the extent to which they were impacted by the Te Whatu trial, and whether trust from the Ngongotahā residents was evidenced by the three partners. Examples below will centre on the bi-directional leadership, decision making and communication of the partners.

Amongst the Hub partner group, there was an acknowledgement that the timeframe did not allow for thorough community engagement. One Hub partner explained the value community voice, from the beginning and wholly representative, would have had in the Te Whatu trial.

> *We would have got the buy in from the start. I felt that we had to as we were going through [the Te Whatu trial] because we were always explaining… We would have been able, if we had time, to go to the different pockets, which we found afterwards, and got that community buy in fully. Even though we got it along the way. The main reason we got it, is because everyone felt positive about the project itself, about the device, because they could see the benefits.*
>
> Hub partner.

Te Whatu trial design

Informing Ngongotahā residents of the Te Whatu trial

All three partners agreed that communication with Ngongotahā residents was developed and led by the Hub partner, supported by the Academic and Funding partner. Noted in previous sections, the Hub partners developed a communications strategy to inform the Ngongotahā residents about the approaching trial, as Ngongotahā residents were absent during the initial design of the Te Whatu trial. The communications strategy included key objectives, challenges and opportunities, target audiences and strategy implementation. The strategy was tailored toward the most vulnerable members within the Te Arawa region, Māori.

Māori are the highest vulnerable or looked upon, and in some cases we are, because we don't have the technology and we knew that, we knew our kaumātua and kuia are the highest vulnerable -Hub partner

(codesign evaluation wānanga #1, 8TH December 2020).

Targeting Māori aligns to the objectives of the Te Whatu trial (Chambers, 2020) as well as the aspirations of the Te Arawa Covid-19 Recovery Hub (first codesign hui, 21st September 2020). This understanding grounded the communications strategy and subsequent delivery of the Te Whatu trial, by incorporating a Te Arawa and Te Ao Māori worldview. The Hub partner took pride in the Māori engagement and communications aspect of their implementation efforts (codesign evaluation wānanga Hub partner #1, 8th December 2020).

Within the Hub's communications strategy was a tier of local stakeholders (see appendix 8). The purpose was to identify key stakeholders from the Ngongotahā area, the appropriate channel of communication for the different stakeholders, and the level of engagement (i.e. kanohi ki te kanohi (face to face), hui, public meeting or mass communication). For instance, Marae leaders would receive a kanohi ki te kanohi hui, in the first instance led by two Hub partners who also sit on the Governance group of the Contact Tracing Technologies Prototype and Research Programme, then supported by relevant members of the Te Arawa Covid-19 Recovery Hub. For the Hub partner Male B, this was a fundamental process as *"key Iwi leaders from that area and key community leaders … required a 'mana to mana' korero"* (codesign evaluation wānanga Hub partner #1, 8th December 2020).

An outcome the Hub partner tried to avoid by working diligently to follow the communications tier structure of the communications strategy was, the pre-emptive announcement of a trial, upsetting key stakeholders. Specifically the Hub partner was concerned residents may inform media before other stakeholders had been informed, potentially causing Ngongotahā residents resentment toward the Te Whatu trial and wider team.

The changing of the card supplier, from CovidCard to Bluetooth-enabled Contact Tracing Card (CTC), was another challenge the Hub partner had to contend with in regards to community engagement and communication. The decision to change supplier, and therefore change the card name, was made after the Hub partner had already invested resource, *"developed all our assets, booked all our advertisements, and made a video"*-Hub partner Male B (codesign evaluation wānanga Hub partner #1, 8th December 2020). A significant amount of time, and effort had been spent on the Te Whatu marketing campaign. From the Hub partners perspective, the decision threatened to negatively impact the community buy in; *"Our community can identify much better with a CovidCard than a*

Bluetooth-enabled Contact Tracing Card" -Hub partner male B (codesign evaluation wānanga Hub partner #1, 8th December 2020). The change of card supplier also resulted in a change of trial start date, from intended date of 12th October 2020 to actual start date, 9th November 2020.

Though the initial change of card supplier and name was a surprise for the Hub partner, the decision did provide an opportunity to capitalise on existing implementation plans;

> *A key part for accepting a later live date was risk mitigation for the community to ensure key decisions/timeframes and consequences for the community could be well managed. A successful trial involves relationships of trust between the partners and community support, so ensuring enough notice is provided for implementations with the community was necessary.*
>
> (email communication from Hub partner, 21st October 2020).

The Funding and Academic partners demonstrated their belief in the Te Whatu trial and respect for Ngongotahā residents and the wider Te Arawa community, through attendance and active participation in all community events organised by the Hub partner. These events included the opening of the Ngongotahā Hub (22nd October 2020), the Trial Launch (30th October 2020), Waiteti Marae information evening (4th November 2020) and Whānau day (7th November 2020). During the Waiteti Marae information evening event the Funding partner remarked how grateful and impressed they were with how receptive the community had been at that stage of the Te Whatu trial. "I am grateful with how welcoming and receptive the community has been- I'm absolutely blown away"- Funding partner (codesign evaluation wānanga Funding partner 2nd December 2020). The Funding partner went further to acknowledge the Hub partner and Ngongotahā residents collectively, and exclaim that progress to date was a result of, "*working in partnership [and that] key people from the community have gotten us to this point"* (codesign evaluation wānanga Funding partner 2nd December 2020). This example demonstrates a high level of involvement from the partners to ensure effective community engagement with Ngongotahā residents.

Implementation of the Te Whatu trial

Involving Ngongotahā residents in the Te Whatu trial

During the second codesign hui, held on 25th September 2020 one of the Hub partners expressed a desire for the recruiters for the Te Whatu trial to be, Māori and/or from Te Arawa or local Ngongotahā residents. As a result, the Hub and Funding partner actively recruited residents from Ngongotahā and the surrounding area to become kaiāwhina (staff) for the Te Whatu trial. One outcome of this action saw the implementation team, including kaiāwhina strategically target key local areas and events to

recruit Te Whatu trial participants, demonstrating bi-directional leadership during trial implementation.

Communication between partners and Ngongotahā residents

During the recruitment of the Te Whatu trial participants, engagement with several key local stakeholders was achieved, evidenced by the breadth and range of stakeholders attending events such as the Te Whatu trial launch (30th October 2020), the Waiteti Marae information evening (4th December 2020) and the Whānau day (7th December 2020). One Hub partner remained in contact with Iwi leaders in the area both during, and following, the Te Whatu trial.

> *I met individually with most of those kaumātua post implementation, feedback has been extremely positive. Took a lot of pride in [the trial. They] were really thankful to us for choosing the community…not just meetings but giving them phone calls two or three times a week, off record, just to keep them up to date- Hub partner Male B*

(codesign evaluation wānanga Hub partner #1, 8th December 2020).

Reflections of the Te Whatu trial and community engagement

Upon reflection of the Te Whatu trial, in the Hub partner codesign evaluation wānanga 8th December 2020, the impact of not having any community voice during the design face, impeded the efficacy of the subsequent implementation processes and community engagement. The Hub partner repeatedly used an analogy of "'building the plane as we fly it'" to describe the Te Whatu trial. The Te Whatu research protocol and trial "had already been shaped…everything was dictated [timeframes, budget, research protocol] here's a plane can you fly it?...figure it out…and there could be some pieces missing so could you just build them?" -Hub partner Male A (codesign evaluation wānanga Hub partner #1, 8th December 2020). However, the preceding examples above and subsequent examples below, demonstrates community engagement was exercised.

During the codesign evaluation wānanga with the Hub partner (8th December 2020) there was an acknowledgement that the capacity of Hub partners during the trial was limited, as most people had other roles or positions in addition to working on the Te Whatu trial. As a result, future improvements were identified in regard to the delivery of the community engagement plan, as outlined in the communications strategy. For instance, one Hub partner reflected on the trial launch day event held on 30th October 2020. Although there was a community presence a question of whether this was the targeted community group needed for the trial, was raised by?

> *There are layers in Māori communities and when I look at that launch day was it Iwi Māori elitist? If we were to look at it from a visual point of view it was all our Iwi leaders but there weren't many of our vulnerable or communities there. Was that a true reflection of our vulnerable communities? Could our vulnerable communities see themselves there? Could our vulnerable people see themselves there, was that the appropriate place? From an Iwi perspective yeah, but should we have gone to the skate park instead? You know that's where we might capture those vulnerable communities as they feel much safer there. So I don't know this is just a bit more of a critical lens.*
>
> Hub partner.

The quote above highlights the complexities and realities when engaging with Māori communities; emphasising that within a Māori worldview there are multiple layers that need to be prioritised and given appropriate consideration. This also indicates the awareness of the Hub partner and a sign of their intention to be as engaging with the whole of the community as possible, in future.

Another discussion point in the codesign evaluation wānanga with the Hub partner (8th December 2020) was, the need to ensure participants were well informed about the upcoming Te Whatu trial; *"By letting the whānau know, this is the Te Whatu trial before it actually happens"* –Hub partner Female B, directly impacts the outcomes. However, The Hub partner acknowledged the short timeframe as a barrier to achieving this, "*as much as we tried to, it [the Te Whatu trial] was on a timeframe and we weren't able to give participants all the information about the trial"* –Hub partner Female B (codesign evaluation wānanga Hub partner #1, 8th December 2020).

One Hub partner also recognised the importance of specific people within the community during the codesign evaluation wānanga (8th December 2020). The Hub partner spoke of a key role and space that was significantly underestimated pre- 'go-live start date' (9th November 2020), but then emerged as a key contributor to the Te Whatu trial. That role was the kamahi (staff) who worked in the Ngongotahā hub. Originally the Ngongotahā hub was viewed simply as a space to host the implementation team, but the space and the kaimaihi in the Ngongotahā hub became an integral piece of the trial. The Ngongotahā hub was available for all partners to utilise and was the central point of contact for Ngongotahā residents, during the Te Whatu trial. Although a koha was given for the space, there was no formal expectation of payment for its use. Below the Hub partner explains the impact of the Ngongotahā hub and the kamahi;

During the planning phase, I was part of some of those meetings and discussions [with the kamahi in the Ngongotahā hub] I didn't realise how critical that part of the puzzle was going to be. When I first had a hui with [kamahi] at the office I just said 'oh yeah we might just use this space for a couple of weeks, we'll just grab a table in the corner there, you know and we'll just sign people up like that, is it ok to just have one person here in the corner?'

(codesign evaluation wānanga Hub partner #1, 8th December 2020).

As the Te Whatu trial progressed, the Ngongotahā Hub provided access for Ngongotahā residents to trial personnel and information. The kamahi found themselves becoming active promoters for the Te Whatu trial, providing information about the trial to Ngongotahā residents. In the kaiāwhina debrief hui (3rd December 2020) one kamahi voiced that Te Whatu trial participants may still come into the office and that the kamahi can provide additional information to them if necessary, guided by the Hub partner. This demonstrates kamahi were committed to engaging their community with thought and care. The kamahi noted that they will be seen by Ngongotahā residents as fronting the Te Whatu trial, and had the trial not been positive, this offer to channel information to the Ngongotahā residents may not have been offered.

Dissemination of Te Whatu trial findings to Te Whatu trial participants

A planned activity of the post-implementation phase of the Te Whatu trial was a dissemination of results, and communication of thanks and appreciation, to all Te Whatu trial participants. The dissemination of findings from the Te Whatu trial was a high priority for both Hub and Academic partners (codesign evaluation wānanga Hub partner #1, 8th December 2020 & codesign evaluation wānanga Academic partner, 17th December 2020). Due to reporting deadlines, the Academic partner was unable to present the trial participants a copy of the report before submission to the Funding partner. Once the Funding partner disseminates the report for pubic release the Academic partner intends on sharing this with the community kanohi ki te kanohi, led by the Hub partner. Upon reflection, the Academic partner notes that *"a community round table would have been helpful"* for the sharing of findings when they first became available.

On the basis of the data gathered from each of the partners, the extent to which community engagement was implemented was: **medium**.

Table 5- Community engagement criteria from the HPW implementation framework

Community engagement (The level of involvement, impact, trust and communication with community members)			
High	Medium	Low	Negative
Strong community or bi-directional leadership. Decision-making and communication is shared and strong partnership is identified throughout the intervention process.	Communication is two-way and there is co-operation to implement the intervention with a partnership becoming apparent.	Communication primarily flows from intervention team to community and the intervention team has ultimate control over the intervention and relevant communication.	Intervention is placed in the community with no consultation with community organizations or stakeholders responsible for implementation.

Reason for this rating

During the implementation of the Te Whatu trial, communication between the partners and the Ngongotahā residents was two-way. Examples presented above demonstrate the involvement of Ngongotahā residents in the Te Whatu trial. The employment of Ngongotahā residents as kaiāwhina for the Te Whatu trial enabled the partners to utilise the knowledge and expertise of the Ngongotahā residents and ensure high uptake for the Te Whatu trial. The leadership and expertise of kaiāwhina, the majority of whom were Ngongotahā residents, was privileged in the implementation of the Te Whatu trial. The time restrictions of the Te Whatu trial impacted the breadth of communication between the Hub partner and the Ngongotahā residents.

While a partnership was formed amongst the three partners (Hub, Academic and Funding) critical decisions were not shared amongst the community, such as the decision to change the card from CovidCard to the CTC.

Recommendation- Community Engagement

Ensure appropriate time is awarded to prioritise communication with community stakeholders; allowing appropriate engagement processes to occur, i.e. kanohi ki te kanohi with Iwi and Hapū leaders and wider whānau.

Recommendation- Community Engagement

Ensure the community are involved in the inception of interventions as an equal partner. These actions go toward mitigating potential issues of mistrust and suspicion that could arise during community engagement.

Integrated knowledge translation

Integrated knowledge translation explored activities within the context of the community in which knowledge is applied. There is a process of bi-directional (shared) learning established so that information is tailored to knowledge user needs (Oetzel, 2016). Within this evaluation, integrated knowledge translation will centre on engagement between the Hub partner, Academic partner, and Funding partner and the role each played in the design and implementation of the Te Whatu trial. As well as examining the extent to which the Te Whatu trial was tailored for end-users, Ngongotahā residents.

All three partners were involved to varying degrees in the design and implementation of the Te Whatu trial. As discussed earlier, the Hub partner was responsible for leading the implementation of the Te Whatu trial.

During the design of the Te Whatu trial

The first codesign hui on 21st September 2020 established the formation of the Te Whatu working group comprised of members from the Hub, Academic and Funding partners, refer to figure 1 page 19. After the second codesign wānanga held on 25th September 2020, two people were identified by individual Hub partners, to join the implementation team. First, a project manager for on the ground operations commissioned by Lakes DHB. The project manager had previous experience working in health, specifically on a Covid-19 related project, and has worked within the Ngongotahā comunity. A second person was brought as a kaiāwhina (recruiters) team lead. Their current employment role involves identification of opportunities for whānau who have lost their job due to the Covid-19 pandemic, to gain employment. Specifically, they were tasked with identifying and supporting local community members to become kaiāwhina for the Te Whatu trial. These two roles led the implementation team with oversight and support from the Te Whatu working group.

As mentioned in the community engagement findings section of this report, the Hub partners expressed a desire for the recruiters to be Māori and/or from Te Arawa or the local Ngongotahā community (first codesign hui, 21st September 2020). The Hub partner, with support from the Funding partner, actively recruited members of the Ngongotahā and surrounding area to become kaiāwhina for the Te Whatu trial. There were several reasons identified during the course of the Te Whatu trial for employing local community members as kaiāwhina. One reason was, *"to give our people paid work"* -Hub partner (second codesign hui, 25th September 2020). Another reason highlighted in the second codesign hui (25th September 2020) was because local residents can provide insights into their community, which assisted the implementation team to build trust with the trial participants. Ultimately, the reason Ngongotahā residents were recruited was to recognise their knowledge and

mana as being the *"right people to recruit for the trial"* -Hub partner Female B (codesign evaluation wānanga Hub partner #1, 8th December 2020).

During implementation of the Te Whatu trial

Employing Ngongotahā residents to be kaiāwhina had immediate positive impacts on trial recruitment numbers. For instance, the project manager explained to the Lead Evaluator how one of the Hub partners spent three hours in the main street of the Ngongotahā Township recruiting participants for the trial and had an approximate one in 10 success rate. In contrast to one kaiāwhina from the community who signed up 75 recruits in less than two hours.

During the trial, one kaiāwhina shared with the Lead Evaluator and some of the Hub, Academic, and Funding partners, how they recruited a local business family where English was not their first language. When the family was first approached about the trial, by another kaiāwhina, they declined. However, the second kaiāwhina identified that the trial was not explained to the family in a way they understood. The kaiāwhina, who identifies as Māori and has whakapapa (genealogy) connections to the hapū around the Ngongotahā area, then approached the family to discuss the trial speaking their native Punjab. The kaiāwhina had a conversation with the family in their first language and used an example that resonated with them;

> *If someone from the community went to Auckland, like I do all the time, and got Covid and didn't know, and then came back here and was in contact with you, you wouldn't know. This card [shows Bluetooth-enabled Contact Tracing Card] could identify who that person has been in contact with, like you, and you would be contacted to go and get a test done straight away. –as explained by the kaiāwhina.*

(personal communication, November 6th 2020).

The kaiāwhina input demonstrated the need for a community perspective to ensure the information was tailored for Ngongotahā residents.

A further example of this was when the three partners gave coined the working space, "Ngongotahā Hub/Hub". Unbeknown to the partners, there was already a place in Ngongotahā known to locals as 'the Hub.' Locals were unclear which 'hub' was meant when the message was for people to "come to the Hub". The kaiāwhina informed the partners they would not make reference to the space as the 'Hub' when speaking with the Ngongotahā residents, to avoid confusion. Demonstrating the bilateral flow of learning, in this case, from community ground level all the way up to Academic and Funding partners.

Post implementation of the Te Whatu trial

At the conclusion of the Te Whatu trial the Hub partner hosted a debrief lunch for the kaiāwhina team to one, thank them for their efforts and two, an opportunity for kaiāwhina to provide feedback on the Te Whatu trial. The Hub invited both the Academic and Funding partner to be participants in the session with the understanding that the session was primarily for the kaiāwhina. Information was collected by the Hub partner and some of these learnings were discussed at the Hub partner codesign evaluation wānanga, held on the 8th December 2020.

One of the learnings that the kaiāwhina identified was the need for greater support during training for the kaiāwhina role. The timeframe for active recruitment of kaiāwhina commenced on Friday 30th October 2020 through to the 7th November, just over one week. Participants for the Te Whatu trial needed to be recruited before the 'go-live' start date 9th November. Therefore, although there were attempts to provide training to kaiāwhina, not all kaiāwhina received adequate training. As a result, many of the kaiāwhina had minimal or no understanding of the background and details of the Te Whatu trial, such as what the contact tracing interview involved, how they would be completed, and who would be completing them. As a result, much of the information the kaiāwhina had was either incomplete or inaccurate. Consequently, this lack of information meant the kaiāwhina were ill-equipped to convey accurate information of the Te Whatu trial to participants. Upon reflection, a thorough orientation for all kaiāwhina would provide clarity and certainty for the team (codesign evaluation wānanga Hub partner #1, 8th December 2020). This is an example of a failure of information to flow from higher up down to the ground.

Therefore, on the basis of the data gathered from each of the partners, the extent to which integrated knowledge translation was implemented was **high**.

Table 6- Integrated knowledge translation criteria from the HPW implementation framework

Integrated knowledge translation How involved the people delivering the intervention (knowledge users) are in designing the intervention.			
High	Medium	Low	Negative
There is a process of mutual or bi-directional learning established so that information is tailored to knowledge users needs.	Medium level support for knowledge user by intervention team for implementing the intervention. Intervention is not tailored to the knowledge user.	Minimal or no support for implementing intervention or outsiders implement the intervention for the knowledge users.	Knowledge users have major concerns which they are not able to discuss with the intervention team.

Reason for rating

The reason for this rating is, the bi-directional learning evidenced across each of the three partners (Hub, Academic, and Funding) and the kaiāwhina, resulted in tailored a Te Whatu trial for Ngongotahā

residents. The incorporation of the kaiāwhina, at the insistence of the Hub partner, into the Te Whatu trial implementation, had positive impacts in regard to Te Whatu trial participant recruitment. Though there was a gap in supporting the training of the kaiāwhina team, due to time restraints, it was recognised that this could be mitigated in the future by ensuring adequate training is prioritised.

Recommendation - Integrated Knowledge Translation

Involvement of knowledge-users, such as the local community, in the design of the intervention. Information can then be tailored at the conception of the research as opposed to during the implementation of the intervention.

System perspectives

System perspectives examined multiple perspectives, world views and values within an intervention. Central to system perspectives is the extent to which the intervention considers multiple causes, had a broad focus and offered multiple solutions (Oetzel et al, 2016). This evaluation focused on the Hub, Academic, and Funding partner and the extent to which multiple perspectives, world views and values of the three partners was used in determining and implementing the solution of the Bluetooth-enabled Contact Tracing Card (CTC).

Problem definition

Explained in the background section of this report is the impact COVID-19 has had on world health and economic systems. In Aotearoa, people living in high levels of deprivation, the elderly and Māori, in particular suffer health inequities (Sheridan 2011). These groups are therefore at greatest risk of COVID-19 infection and developing severe COVID-19 symptoms (James, 2020). For example, it is estimated Māori are 50% more likely to die from COVID-19 than non-Māori (Steyn et al, 2020).

To control COVID-19 infection rates countries have adopted contact tracing practices. Contact tracing involves informing people when they have been in close proximity of someone with, or showing symptoms of, the infectious disease, by tracking where they have been and who they have been in proximity with. Once informed, people are asked to self-isolate, hence stopping the spread of infection. However this process is time consuming and does not always provide an accurate account of events.

Multiple factors are related to the cause of why there is a lack of accurate and timely contact tracing and have been evidenced in the Te Whatu Research Protocol. These factors take into account a broad range of causes and international and national scholarship.

Solution Definition

Several digital contact tracing solutions are being designed and tested globally to assist with contact tracing. The Te Whatu Research Protocol documents how digital contact tracing can be used as an alternative or accompaniment to the current case investigation practice. The Te Whatu Research Protocol considered numerous solutions to contact tracing issues and identified the potential short-comings of a digital contact tracing solution. Specifically for the following groups with low digital access/literacy; low-income households, elderly, vulnerable and at-risk groups (Chambers, 2020). These factors have been considered when exploring the issue, lack of accurate and timely contact tracing, and were central in the solution selection for the Te Whatu trial, the CTC.

The CTC solution proposed to the Hub partner was met with positivity and enthusiasm. The Hub partner regularly referred to the CTC as a solution that has the potential to save lives.

> *Our driver has always been our people not dying. When we first set out with the Card that was our number one resolve, save our people's lives. That's why we did the trial. If we can show that this works, we will hopefully save our people's lives - Hub partner.*

(codesign evaluation wānanga Hub partner #2, 30th December 2020).

During the first codesign hui held on 21st September 2020, the Hub partner maintained that the solution to contact tracing *"has to work for our most vulnerable communities, because those communities are most at risk from COVID-19"* -Hub partner. The current NZ COVID tracer app is a digital contact tracing application employed nation-wide. Those who use the app can record and store locations they have visited using the QR scan code or Bluetooth function (Ministry of Health, 2020). However the Hub partner recognised the NZ COVID tracer app was not an equitable solution due to issues of digital exclusion and poor digital literacy.

> *We have the COVID contact tracing app, but not everyone can use it, such as those who don't own a smart phone to download the app or who feel they aren't 'tech savvy' enough to operate it. It also relies on people keeping their phone charged, on them at all times, and remembering to scan everywhere they go.*

(Te Arawa Covid-19 Recovery Hub, 2020b, para 4)

System perspective in the Te Whatu trial

The Hub partner provided an invaluable local perspective of the Te Arawa region. In the first codesign wānanga (21st September 2020) the one Te Arawa Covid-19 Recovery Hub member described how they earned and maintain the trust and confidence of the community, and that *"our whānau want to hear from our whānau"*, indicating that Hub partners were not just working for the community, but were actively part of the community. This perspective was crucial in providing a Te Arawa worldview into the Te Whatu trial. An example of the Te Arawa worldview in practice was the launch of the trial held on 30th October 2020. A whakatau (welcome) led by local Hapū and Iwi leaders from the Ngongotahā area was observed to welcome then Minister for Government of Digital Services Kris Faafoi, as well as local Ngongotahā residents. The launch set the tone for the remaining communications which had a "by Te Arawa, for Te Arawa" focus.

During the Te Whatu trial it was evidenced that some of the trial participants had seen benefits with using the CTC. An example of this is a quote in the New Zealand Herald (2020) from a trial participant who expressed their opinion of the CTC in relation to the NZ COVID-19 tracer app. "I do feel the card is a much better solution [than the Covid-19 tracer app] because you don't need an email address" (Whaitiri, 2020, para 2). Another respondent stated, "I think it's a really good thing to do and it makes me feel better because if I was to be infected, it's far easier to track my steps than try and rely on my memory" (Whaitiri, 2020, para 12). This feedback demonstrates that the solution has taken into account previously identified problems with current contact tracing methods to produce a solution that encompasses multiple perspectives.

On the basis of the data gathered from each of the partners, the extent to which system perspectives was implemented was **high**.

Table 7- System perspectives criteria from the HPW implementation framework

System perspectives How much the team show they understand that there are multiple ways of viewing issues and solutions.			
High	Medium	Low	Negative
Intervention includes all three of the following: 1) multiple causes, 2) broad focus/multiple solutions; and 3) multiple perspectives, world views, and values of multiple actors.	Intervention includes only 2 of the 3 factors in the high category.	Intervention includes only 1 or none of the 3 factors in the high category.	Intervention has a negative impact due to a lack of consideration of multiple perspectives necessary to support implementation.

Reason for rating

The reason for this rating is, each of the three partners (Hub, Academic, and Funding) provided a systems perspective in the design of the Te Whatu trial, which was then applied in the trial. Both the Academic and Funding partner gave great consideration to the multiple causes and solutions to the problem, *"lack of accurate and timely contact tracing"*, and proposed a solution with high equity considerations for the following groups, Māori, vulnerable communities and the elderly. Led by the Hub partner, these considerations were applied throughout the trial and evidenced by the multiple perspectives, world views and values of the three partners. The inclusion was evident despite the absence of contribution from the Hub partner or Ngongotahā residents at the initial stages of the research design for the Te Whatu trial. Commitment of the Hub and Ngongotahā to ensure the success of CTC positively contributed to this area.

Recommendation System Perspectives

Involve multiple perspectives in the programme design of the intervention to ensure multiple world views and values underpin the entire project from the outset and not just the implementation stage.

System relationships

System relationships explored whether an understanding of the complex relationships between the following variables, feedback loops, time delays and multi-level effects were considered for an intervention (Oetzel et al, 2016). Within this evaluation, the assessment component will centre on the engagement between the Hub, Academic, and Funding partner and explore activities where feedback loops, time delays and multi-level effects were thought about throughout the Te Whatu trial.

Leadership structure of the Te Whatu working group

The Te Whatu working group was responsible for the delivery of the Te Whatu trial, and in turn the system relationships. Each partner and individual within the Te Whatu working group had lines of accountability and deliverable outcomes for the Te Whatu trial. However, the leadership of daily operations of the Te Whatu working group was unclear and changeable.

In the first codesign hui (21st September 2020) it was agreed that it would be a "Te Arawa Covid-19 Recovery Hub led trial" and noted on the Te Arawa Covid-19 Recovery Hub (2020) website as being a "by Te Arawa, for Te Arawa" kaupapa (para 10). However, confusion arose when lines of reporting where directed to the Funding partner. One Hub partner recalls their account of how the structure of the team was explained to them.

> *From day one when I first got in there… I asked the question, what's the structure here? [Funding partner] response, there is no structure you guys are all one team and if you can't decide I will make the decisions- Hub partner Male A*
>
> (codesign evaluation wānanga Hub partner #1, 8th December 2020).

The Hub partner continued and expressed how the lack of understanding of the leadership structure was apparent during daily stand up meetings when the Te Whatu working group, would all report directly to the Programme manager, and if the Programme manager was not available different members would alternate making an executive decision for others to follow (codesign evaluation wānanga #1, 8th December 2020).

Another attempt to clarify the leadership structure of the Te Whatu group involved the creation of an excel spreadsheet by one of the Hub partners to identify the numerous roles and responsibilities of the team. Though requests were made for each individual to complete their corresponding section, the document remains incomplete (observational notes #006, 16th October 2020).

The lack of clarity around the leadership and fast pace of the Te Whatu trial meant that people recruited to work on the Te Whatu trial were unclear on what the different roles and responsibilities of each person were. As explained by one Hub partner, on boarded later in the Te Whatu trial;

> *I didn't even know who was doing what to some extent without having to ask… and even some of the people in the hub I didn't know what they were doing… things kept on changing and people having their own interpretation and what should be happening- Hub partner female B.*

The lack of leadership also meant that one of the recommendations from the first codesign hui (21st September 2020) was not actioned. The continuation of an "assumptions and risk register needed for trial. Register has been started, for community trial (this is a living document that needs to be added to) and access needs to be given to Te Arawa Covid reference group members" (first codesign hui, 21st September 2020). The risk register would take into account the issues, opportunities, concerns and risks of the trial. The register would account for issues related to the system relationship such as feedback loops, time delays and multi-level effects. It is noted that though there was not a clear "assumptions and risk register", the project manager for the implementation team reported daily on the issues, risks, successes, and progress of the "on the ground" operations. The result of not having a risk register across the entirely of the Te Whatu trial impacted the system relationship thinking of the Te Whatu trial. Examples of activities that align to system relationships are noted below.

Example One- Communication and the Contact Tracing Interviews

A lack of clear and accurate communication regarding details of the contact tracing interviews, a data collection method for the Te Whatu trial, resulted in misunderstandings between the partners, causing multi-level impacts with the kaiāwhina, and the Ngongotahā Te Whatu trial participants.

Contact tracing interviews in the Te Whatu trial design

During the two hour second codesign hui on 25th September 2020, attendees reviewed the drafted research protocol for the Te Whatu trial. One of the items discussed was the contact tracing interviews. The Lead Researcher provided a brief as to what the interviews consisted of, the anticipated number of interviews, and who would be carrying them out. At the conclusion of the hui the Te Whatu Research Protocol was made accessible to the Te Whatu working group via a google drive folder.

During the codesign evaluation wānanga with the Hub partner (8th December 2020), it was noted that although the contact interviews were discussed at the codesign hui on the 25th September 2020 and access to the Te Whatu Research Protocol was granted to the Te Whatu working group, many of the

Hub partners did not absorb the information that had been presented and were surprised to discover external health professionals such as PHU case investigators from outside of the Lakes DHB area, were conducting some of the contact tracing interviews.

During the Te Whatu trial, the knowledge that external health professionals will be conducting some of the contact tracing interviews was not filtered accurately down to the kaiāwhina. The kaiāwhina played a central role in the recruitment process, acting as the intermediary between the Te Whatu working group and the Te Whatu trial participants. As discussed in the 'structural transformation and resources' findings section, it was highlighted that kaiāwhina did not receive adequate training and detail on the Te Whatu trial in its entirety. A consequence of this was, that kaiāwhina were of the understanding that local health professionals and/or community would be undertaking the phone contact tracing interviews. This information was then communicated to the Te Whatu trial participants.

In the codesign evaluation wānanga (8th December 2020) the Hub partners noted that some participants of the Te Whatu trial were angered when they had case investigators from Palmerston North phoning to conduct the contact tracing interviews, contradicting what had been explained to participants during the trial. The Hub partner went further to explain that the relationship kaiāwhina had with Ngongotahā residents was one of high trust which is evidenced when the Te Whatu trial participants contacted the kaiāwhina to explain their frustrations and feelings of betrayal, from not being adequately informed about who would be conducting the contact tracing interviews. The kaiāwhina contacted the Te Whatu working group immediately.

The Te Whatu working group organised for two Te Arawa Covid-19 Reference group members to visit the participants, kanohi ki te kanohi to explain the detail of the Te Whatu trial. Participants were reassured of the high privacy and security regarding their personal information and an apology offered. The participants were pleased with this outcome and the issue was resolved (codesign evaluation wānanga Hub partner #1, 8th December 2020). This example demonstrates a complex relationship between the feedback loop of communication, and how inaccurate communication impacted the multi-levels of the partners, kaiāwhina and Te Whatu trial participants.

Reflections from the contact tracing interview communications

During the codesign evaluation wānanga with the Hub partner (8th December 2020), it was highlighted that a two hour hui to digest information, did not translate into an understanding of that information. Whilst the information regarding the contact tracing interviews was accessible to the Te Whatu working group, it was not conveyed in a manner that all partners could comprehend.

The contact tracing interview example noted above, highlights the multi-level effects that occurred during the Te Whatu trial. What this example also highlights is the multi-level layers used to resolve the issue, and that without the existing trust Te Whatu trial participants had with kaiāwhina, the issue may have become more severe. The incorporation of the Te Arawa Reference group members and immediate response to the Te Whatu trial participants' concerns, demonstrated how important resolving this issue was.

Example Two- Data Management Process

As discussed in the 'reflexivity findings section' of the report, the data management process was designed and implemented in the Te Whatu trial. The data management process ensured the Hub partner retained data sovereignty over the Te Whatu trial participants' personal identification information, and all partners were receptive of the process.

Part of the data management process was a protocol for the Academic partner to request and obtain Te Whatu trial participant information. The process was different to standard academic processes with researchers often having *"quite clear communication channels with participants"* (codesign evaluation wānanga Academic partner, 17th December 2020). To a degree, the Academic partner expressed a level of disconnect from the Te Whatu trial participants, which may have impacted the number of CTC's not returned after the trial.

The example given in the previous reflexivity section regarding e-text is also an example of system relationships. As time delays in approving e-text requests meant a delay in information to trial participants. Information was either late, or in some cases, no longer relevant, which resulted in outdated information, or no information disseminated to the Te Whatu trial participants (codesign evaluation wānanga Academic partner, 17th December 2020).

The Academic partner acknowledged the data management process was a different process compared to standard academic processes and upon reflection, believed identification at the design of the intervention of the different permissions required at all junctions of the data management process would have been useful to ensure all involved in the project are well informed (codesign evaluation wānanga Academic partner, 17th December 2020).

Example Three- Change of Card Solution from CovidCard to Bluetooth-enabled Contact Tracing Card

The change of card supplier for the Te Whatu trial has been explained in detail in the 'community engagement' findings section of this report. However this example demonstrated a lack of understanding of the system relationship, and the impact on the variables of feedback loop, time delay and multi-level effects.

The impact of delay in card procurement for the Te Whatu trial caused delays in engagement with Ngongotahā residents. The Hub partner wanted reassurance that the trial would continue, therefore communications were delayed until card procurement was confirmed. The procurement process also resulted in a postponement of the trial start date. However, once the supplier was confirmed, the 'go-live trial start date' was set for 9th November 2020.

On the basis of the data gathered from each of the partners, the extent to which system relationships was implemented was **medium.**

Table 8- System relationships criteria from the HPW implementation framework

System relationships			
The degree that relationships between variables/factors are prioritised.			
High	Medium	Low	Negative
Demonstrates a strong understanding of the complex relationships between variables including feedback loops, time delays and multi-level effects.	Demonstrates moderate understanding of the complex relationships between variables including feedback loops, time delays and multi-level effects.	Limited or weak understanding of the complex relationships between variables including feedback loops, time delays and multi-level effects.	Intervention has a negative impact due to lack of consideration of system relationships important for implementation.

Reason for rating

During the first codesign hui (21st September 2020), it was identified that the "assumption and risk register" that was developed for the Te Whatu trial be constantly updated as it was noted as a living document. However, this was not actioned by the Te Whatu working group. The project manager for the implementation team reported daily on the issues, risks, successes, and progress of the "on the ground" operations, however these reports only accounted for the implementation and not the Te Whatu trial as a whole. The evidence provided demonstrated a moderate understanding of the system relationships. For instance, time constraints resulted in a lack of clear and accurate communication amongst the partners. Details about the Te Whatu trial to kaiāwhina (recruiters) was incomplete, and consequently Te Whatu trial participants were misinformed.

The critical decision to change the card supplier from CovidCard to Bluetooth-enabled Contact Tracing Card (CTC) resulted in, delays communicating with Ngongotahā residents, and extended the Te Whatu trial start date.

Recommendation system relationship

Incorporate the use of an assumptions and risk register and ensure variables such as feedback loops, time delays and multi-level effects are identified, and clearly documented, during the design and development of the intervention.

System levels

System levels consideration related to the ways in which the intervention targeted change across the macro, meso and micro levels (Oetzel, 2016). Within this evaluation, the assessment component will examine the systems thinking of how the Te Whatu intervention can target change at the macro level (Iwi and national), meso (Hapū and wider community) and micro level (whānau/family and individual).

Macro level (Iwi and national)

Visible throughout the Te Whatu trial, was the recognition by all three partners that the outcomes of the trial could have positive implications for the whole of Aotearoa. The Te Arawa Covid-19 Recovery Hub articulate clearly the impact this trial could have for all Māori across Aotearoa; "This trial will contribute to the ongoing health and wellbeing of our people, creating more equitable health outcomes for Te Arawa and all Māori across Aotearoa" (Te Arawa Covid-19 Recovery Hub, 2020, para 5). During the codesign evaluation wānanga with the Funding partner (2nd December 2020) one member notes one key outcome of the trial was the acknowledgment that there is an equity gap and *"it needs to be filled for the whole of Aotearoa"*. The Academic partner also recognised the far reaching potential the CTC could have for Aotearoa as noted by the extensive review of literature in the Te Whatu Research Protocol (Chambers, 2020).

Meso level (Hapū and wider community)

All three partners recognised the need to protect vulnerable communities; this is evidenced throughout the findings section of this report. The community selection criteria and justification for the community trial involved the following; "relatively geographically isolated and compact, people live and work in the area, small enough that high uptake is achievable, the community has amenities, has a high Māori population, and diverse socio-demographic distribution" (Chamber, 2020, p. 19). These considerations meant the Te Whatu trial targeted an area that had a high vulnerable population.

During the Te Whatu trial, the Funding partner supported developments on the ground. An example of this was their attendance at all the community events organised by the Hub partner, as the Funding partner was aware that buy in of the Te Whatu trial at a meso level would have greater efficacy at a macro level. As well as the possibility to do more once the trial concludes, "If we can get this right, what else can we do" (The Waiteti Marae information evening, 4th November 2020).

Micro level (whānau/family and individual)

Throughout the Te Whatu trial the Hub partner clearly articulated one of the main drivers for participating is because the CTC has the potential to *"save our people's lives" –Hub partner Female D* (codesign evaluation wānanga Hub partner #2, 30th December 2020). Evidenced throughout the

findings section of this report, is the underlying belief that the CTC card can enhance contact tracing, in turn protecting whānau from the spread of the infectious COVID-19. The Te Whatu trial is responsive to the needs of individual that are digitally excluded (no or low access to technology such as smart phones or internet), and specific community members such as the elderly or disabled who cannot use the NZ COVID-19 tracer app as the QR scan codes on buildings are located in hard to reach areas.

On the basis of the data gathered from each of the partners, the extent to which system levels was implemented was **high.**

Table 9- System levels criteria from the HPW implementation framework

System levels The degree to which different levels of analysis are taken into account.			
High	Medium	Low	Negative
The intervention targets change at the macro, meso and micro levels, and provides sufficient rationale and context for each level.	The intervention targets change at 2 levels with some rationale and context for each level.	The intervention targets change at 2 levels or less without providing rationale and context.	Intervention has a negative impact due to lack of consideration of systems levels necessary to support implementation.

Reason for rating

The reason for this rating is, throughout the entirety of the Te Whatu trial, including the design, development and implementation phases, the intervention targeted change at the macro level (Iwi and national), meso level (hapū and wider community) and micro level (whānau/family and individual).

Recommendation System Levels

Ensure future interventions continue to consider the complexities of the different macro, meso and micro levels and demonstrate how these factors will impact the implementation.

Summary of codesign evaluation wānanga findings

Each partner had different understandings regarding the term “shared”. The nuance was presented in the results. The theme of “shared partnership”, “shared resource” and “shared power” highlighted a disconnection of understanding amongst the partners, as one Hub partner (Female D) highlighted, *“shared power is not the same as equal power”* (codesign evaluation wānanga Hub partner #2, 30th December 2020). A question can be posed as to the legitimacy of “shared resource” if the budget is controlled by the one partner. Those in positions to make critical decisions and maintain control over budget and resources will continue to have authority over the intervention. Until these key points are managed and lead by the other partners, such as Iwi, these practices perpetuate the power dynamic inequality.

The strengths of the Te Whatu trial demonstrated that a community partnership is central to a codesign process and needs to be incorporated at all levels of an intervention. Elements of community partnership were present during the Te Whatu trial but not apparent in all aspects of the Te Whatu trial. A key recommendation identified by the Hub partner is for the community voice to be involved during the inception of an intervention.

> *If it is truly codesigned, come to us at the inception and conception when the research concept, and the actual development of the proposal. When you are involved from the start you have a much better idea of the research design, whereas we you see it at the end and it is feed to you in an hour… you try to make it work without full understanding of the whole thing. It is hard when you are not involved at that stage*
>
> (Hub partner- female A).

Overall Recommendations

On the basis of the findings provided in this report, the Te Whatu trial codesign process was not an accurate representation of codesign. However, the learnings from the Te Whatu trial codesign process can be implemented into future health pandemic interventions for authentic codesign to be achieved.

In relation to the Contact Tracing Technologies Prototype and Research Programme of work, this report has identified specific actions that can be applied to ensure a genuine partnership is achieved across the remaining programme of work, and future initiatives. The following four high level recommendations were developed after considering the findings and action-oriented recommendations against each of the principles of the HPW assessment framework.

1. Immersion of Iwi, and by extension community, as equal partners, demonstrated by providing Iwi with equitable resourcing -budget, infrastructure, personnel/expertise- and sovereignty to design and implement the continuation of the Contact Tracing Technologies Prototype and Research Programme. During the current climate of a global pandemic consideration of local lived experiences and the nuances are central to identifying problems, and developing responsive solutions.

    - ***Recommendation Community Voice***
      Include community voice from the outset. During the current climate of a global pandemic consideration of the local lived experiences are central to identifying problems, and developing responsive solutions.
    - ***Recommendation Structural Transformation and Resources***
      Structural transformation is more appropriate for consideration at the wider Contact Tracing Technologies Prototype and Research Programme level. With regards to the evaluation, the Ministry of Health would be better suited to consider structural transformation at the broader programme level.
      To demonstrate shared partnership, Iwi partners must be provided with equitable resourcing -budget, infrastructure, personnel/expertise- to design and implement future programmes or interventions.
    - ***Recommendation- Community Engagement***
      Ensure the community are involved in the inception of interventions as an equal partner. These actions go toward mitigating potential issues of mistrust and suspicion that could arise during community engagement.
    - ***Recommendation System Relationship***
      Incorporate the use of an assumptions and risk register and ensure variables such as feedback loops, time delays and multi-level effects are identified, and clearly documented, during the design and development of the intervention.

2. Immersion of Iwi- and by extension community- in the design of future health pandemic interventions; reinforcing the inclusion of multiple world views and values to underpin the entire project, and not just implementation stage.

- ***Recommendation Reflexivity***
  Incorporate implementation team during the design of the research intervention, providing a more accurate representation that adjustments made to the intervention were as a result of reflexivity.
- ***Recommendation Integrated Knowledge Translation***
  Involvement of knowledge users, such as the local community, in the design of the intervention. Information can then be tailored at the conception of the research as opposed to during the implementation of the intervention.
- ***Recommendation System Perspective***
  Involve multiple perspectives in the programme design of the intervention to ensure multiple world views and values underpin the entire project from the outset and not just the implementation stage.
- ***Recommendation System Relationship***
  Incorporate the use of an assumptions and risk register and ensure variables such as feedback loops, time delays and multi-level effects are identified, and clearly documented, during the design and development of the intervention.

3. Ensure appropriate time is awarded to communicate with key stakeholders in the lead up to the intervention; allowing appropriate engagement processes to occur, i.e. kanohi ki te kanohi with Iwi and Hapū leaders and wider whānau.

    - ***Recommendation- Community Engagement***
      Ensure appropriate time is awarded to prioritise communication with community stakeholders; allowing appropriate engagement processes to occur, i.e. kanohi ki te kanohi with Iwi and Hapū leaders and wider whānau.

4. Ensure future interventions continue to consider the complexities of the different macro, meso and micro levels and demonstrate how these factors will impact the implementation.

    - ***Recommendation System Levels***
      Ensure future interventions continue to consider the complexities of the different macro, meso and micro levels and demonstrate how these factors will impact the implementation.

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Appendices

Appendix 1: Contract Tracing Technologies Prototype and Research Programme Charter

Appendix 2: He Pikinga Waiora Implementation Framework

Appendix 3: University of Waikato Human Research Ethics Application approval letter

Appendix 4: Participant Information Sheet

Appendix 5: Electronic consent form

Appendix 6: Paper-based consent form

Appendix 7: Electronic survey questionnaire

Appendix 8: Tier of stakeholders part of the Te Arawa Covid-19 Recovery Hub communications strategy

CONTACT TRACING TECHNOLOGIES PROTOTYPE & RESEARCH PROGRAMME

FINAL

CHARTER

MINISTRY OF HEALTH
MANATŪ HAUORA

SUMMARY

As a result of a Cabinet directive this Programme has been put in place to ensure that key questions have been answered and appropriate advice given, regarding Contact Tracing Technologies. The collective ambition of the Programme is to prove the value of bluetooth digital technologies and their effectiveness in enhancing COVID19 contact tracing for the benefit of all New Zealanders.

GOAL

To provide coherent advice to Cabinet on the potential impact of different bluetooth digital contact tracing aids being considered for Aotearoa including such devices as the covidcard, the NZ COVID Tracer app and associated bluetooth technologies. This will be delivered through evidence-based answers to these questions for bluetooth digital contact tracing aids being trialled and drawing on international case studies, peer-reviewed literature, empirical research (trials), modelling studies, and privacy and regulatory impact assessments.

GUIDING PRINCIPLE

COMMITMENT TO UPHOLDING THE TIRITI O WAITANGI - Our efforts reflect commitment to partnering with Māori as tangata whenua

CABINET PRINCIPLES

1.0 PUBLIC HEALTH EFFICACY - Our efforts need to make our Public Health response more effective

2.0 RESPECT FOR PRIVACY - Our efforts need to build trust with our communities, not erode it

3.0 FREEDOM OF MOVEMENT - Our goal of a recovering economy relies on maintaining this

4.0 TECHNICAL FEASIBILITY & DATA ACCESS - We need solutions that can scale quickly and work together

OPERATING PRINCIPLES

How the Programme will function to deliver successful outcomes	1.0 CO-LOCATION - bring multi-disciplinary team together to enable delivery at pace
	2.0 COLLABORATION - working together on a common objective and support each other
	3.0 COMMUNICATION - ensure open, regular and transparent communication
	4.0 COMMITMENT - deliver on expectations to ensure the successful achievement

BUSINESS DRIVERS

Key drivers that define the need for investment in Contact Tracing technologies	Whilst primary (manual) Contact Tracing is highly effective and will always remain the first line of defence against the spread of the COVID19 virus after people have been tested positive, trialling bluetooth digital technologies will prove that their use will reduce the risk of the virus continuing to have a 'head start' in terms of the rate of spread compared to the speed that we can contain an outbreak.
	The number and combined complexity of context, constraints and responses within the contact tracing process, means that rapid engagement with casual contacts is such that being able to quickly 'catch up' with the continued spread is difficult. With the recursive tracing capability delivered through bluetooth digital technologies, the risk associated with the speed of the spread of the virus could be greatly reduced.
KEY PROGRAMME OBJECTIVES	
The future state we need to get to in order to deliver to the business drivers	Identify and confirm the efficacy of technology that can provide functionality and data to speed up and streamline processes that support rapid contract tracing and isolation of close contacts, and assist with the public health and community response.
	Identify and confirm the efficacy the technology to support targeted responses to COVID19 outbreaks and assist in managing constraints e.g. recursive contact tracing and testing capacity.
	Ensure equitable health outcomes for all New Zealanders, in particular enhancing contact tracing for priority communities (Māori, Pasifika, aged).

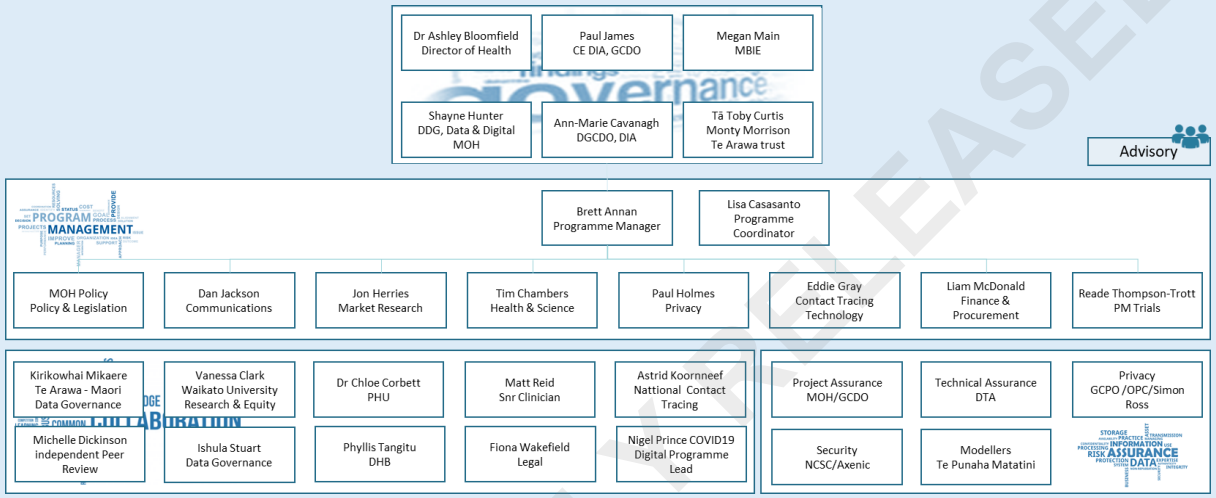
KEY TECHNICAL OBJECTIVES	
Key outcomes that will assure the success of the Programme and resulting technologies	Technologies uphold Te Tiriti o Waitangi and Māori data sovereignty principles
	Outcomes align with contact tracing strategy and policy
	Technologies are proven to add to the efficacy of the end to end contact tracing process
	Technologies are usable and will maintain effectiveness for the market they are targeted at
	Technologies assist in addressing health equity considerations
	There is evidence that the level of support and uptake can meet defined requirements
	There is a level of community and personal trust in managing resulting data
	Privacy implications are addressed and proven to meet the specified levels
	Technologies are open to interoperability with other contact tracing aids
	Technologies will support policy options changing clinical definitions for COVID19 responses
	Technologies contribute to reducing the economic risks from further outbreaks
	Effective technical and business trials have been completed

	Research has been proven and independently verified
	Implementation requirements for timing, logistics and support are defined, forecast and actionable

KEY RISKS

Key risk the Programme aims to mitigate	1.0 Public Perception – Govt response to Coivd-19 and Public Trust
	2.0 Relationships & Interests – Stakeholders, Iwi, Communities, Cross Agencies, Suppliers
	3.0 Ability to Deliver – Capacity and capability
	4.0 Timeframes – Meeting expectations

PEOPLE



KEY EVALUATION QUESTIONS

Key evaluation questions that the programme deliverables need to answer	What are peoples sentiments with regard to contact tracing technologies?
	What are peoples actions i.e. did they use it, with regard to contact tracing technologies?
	How do we best make use of the data that these technologies generate?
	Did the use of bluetooth technologies enhance contact tracing across all communities?

EVALUATION FRAMEWORK

The evaluation framework for assessing digital contact tracing aids aims to provide a consistent context for considering different systems and evaluating their potential value. It seeks to promote collaboration and reduce duplicated effort.

Accuracy and Flexibility

How reliably does the system detect clinically-relevant contacts (sensitivity)?

What is the level of interoperability with contact tracing infrastructure

How can the system adapt over time with changing clinical definitions?

Uptake and Adherence

Accessibility: Who can/will access the system?

Compliant usage: Who can/will use it in a manner that maintains its effectiveness?

What mechanisms exist to monitor the system and its effectiveness? i.e. how will we know if it is working?

Ability to Have Impact

How will it support faster, more extensive and more accurate tracing of casual and close contacts?

How does it support ongoing case investigation?

Can the data improve other COVID-19 response measures? i.e. targeted testing

Equity, Policy, Privacy, and Legal

How does the system address health equity considerations?

How does the system uphold Te Tiriti o Waitangi and Māori data residency?

What are the privacy implications of the system?

What policy is required to support its implementation?

Cost and Lead Time

What will it cost to develop/deploy the system?

What will it cost to support, maintain and promote it?

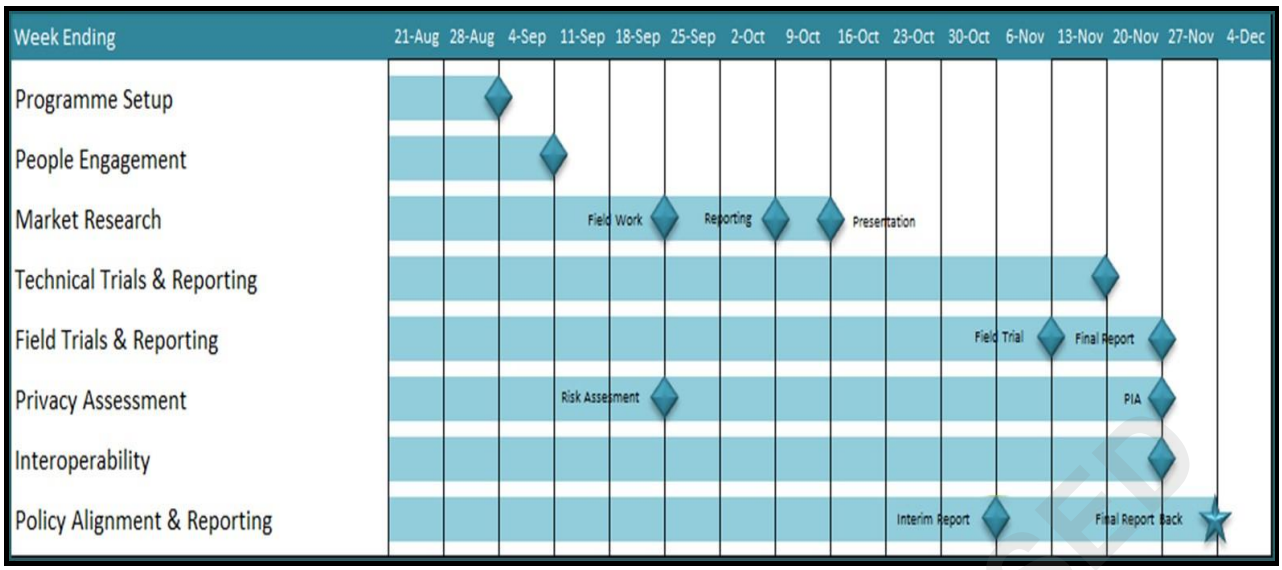
How long will it take to get the system in the hands of Kiwis?

Are the costs value-for-money in the context of the pandemic response?

Activities

Measures

PROGRAMME DELIVERABLES	
1.0 TECHNICAL TRIALS (Card Specific)	
Specific trials on the Covidcard to prove its technology will work effectively	1.1 Design and Study Protocol
	1.2 Trial
	1.3 Trial Reporting
2.0 FIELD TRIALS (Te Whatu - Community Technology Use)	
Field trials in a chosen community to prove capability of technology	2.1 Design & Study Protocol
	2.2 Ethics Approval
	2.3 Recruitment
	2.4 Trial
	2.5 Trial Reporting
3.0 MIQ TRIALS (Assisting MBIE)	
Assisting MBIE with their own facility trials where practicable	3.1 Engagement
	3.2 Support
4.0 PRIVACY & SECURITY	
Ensuring technologies meet privacy and security requirements	4.1 Review & Risk Assessment
	4.2 Report (PIA)
5.0 INTEROPERABILITY (Use of Bluetooth Data for Contact Tracing)	
Ensuring technologies are able to interoperate in a way that will ensure contact tracing remains effective	5.1 Digital Contact Tracing Data
	5.2 Trials Reviews
	5.3 Reporting
6.0 MARKET RESEARCH (Covidcard, Bluetooth App and Wearables)	
Completion of market research to prove such things as uptake and compliance with the use of digital technologies	6.1 Design
	6.2 Research
	6.3 Reporting
7.0 POLICY & LEGISLATION	
Ensuring that all supporting advice, policy and legislation is in place to enable the effective use of proven technology	7.1 Legislative alignment
	7.2 Health & Technology Policy Review
	7.3 Maori Data Governance and Sovereignty
	7.4 Reporting
PROGRAMME MILESTONES	



Appendix 2: He Pikinga Waiora Implementation Framework

HE PIKINGA WAIORA IMPLEMENTATION FRAMEWORK

CULTURAL - CENTEREDNESS

Ko tōku reo, tōku ohooho,
Ko tōku reo, tōku Māpihi Maurea

Community voice

Community is involved in defining the problem and developing the solution.

Reflexivity

Implementation team is reflexive and identifies adjustments to the intervention as a result.

Structural transformation and resources

The intervention results in significant structural transformation and resources which are sustainable over time.

COMMUNITY ENGAGEMENT

He urunga tangata he urunga pāhekeheke,
he urunga oneone mau tonu

Partnering between researchers and community members/ organizations in all phases of the project. Guided by principles of action, social justice, and power sharing.

Decision-making and communication is shared and a strong partnership is identified throughout the intervention process. Relationships build capacity of communities and researchers.

KAUPAPA MĀORI

He oranga ngakau, he pikinga waiora

The Framework has indigenous self-determination at its core. All four elements have conceptual fit with Kaupapa Māori aspirations and all have demonstrated evidence of positive implementation outcomes.

A coding scheme derived from the Framework was applied to 13 studies of diabetes prevention in indigenous communities in Australia, Canada, New Zealand, and the United States. Cross-tabulations demonstrated that cultural centeredness (p=.008) and community engagement (p=.009) explained differences in diabetes outcomes and community engagement (p=.098) explained difference in blood pressure outcomes.

The Framework is intended as a planning tool to guide the successful development and implementation of interventions. Funders can use the Framework to assess the likely effectiveness of proposed interventions. Community organizations can use the Framework to work with researchers or policy makers to strengthen each of the four elements.

Please let us know how you are using the Framework and any feedback you may have:
hpwadmin@waikato.ac.nz

HEALTHIER LIVES | He Oranga Hauora | National SCIENCE Challenges

SYSTEMS THINKING

He tina ki runga, he tāmore ki raro

Systems perspectives

Intervention considers multiple perspectives, world views, and values. It considers multiple causes, has a broad focus and offers multiple solutions.

System relationships

Demonstrates strong understanding of the complex relationships between variables including feedback loops, time delays and multi-level effects.

Systems levels

Intervention targets change at the macro, meso and micro levels.

INTEGRATED KNOWLEDGE TRANSLATION

Toi te kupu, toi te mana, toi te whenua

Integration of knowledge translation activities within the context of the community in which the knowledge is to be applied.

There is a process of bi-directional learning established so that information is tailored to knowledge users needs.

Oetzel J; Scott N; Hudson M; Masters B; Rarere M; Foote J; Beaton A; Ehau T

Kōrero Tahi October 2016

HE PIKINGA WAIORA IMPLEMENTATION FRAMEWORK

	Variable	High	Medium	Low	Negative
Cultural Centeredness	**Community voice** How groups, that the intervention is focused on are involved in defining the problem and solutions.	Community involved in defining the problem and developing the solution.	Community involved in either defining the problem or developing the solution.	Community only informed but has no direct involvement in the definition of problem or solution development.	Intervention implemented in the face of significant community opposition.
	Reflexivity How the power and privilege of the researcher, relative to the community, is recognised and dealt with.	The implementation team explicitly states their reflexivity and identifies adjustments to the intervention as a result.	The implementation team identifies efforts to engage in reflexivity or states they were aware of it; adjustments to the intervention are unclear.	No evidence that the team was reflexive about its processes or no changes made in response to team learnings.	Victim blaming, unintended bias or overt racism in intervention design, implementation or evaluation.
	Structural transformation and resources How much the system is improved to better fit community needs.	Significant structural transformation and resources which are sustainable over time.	Intervention receives significant resources but has a limited focus on structural transformation.	Intervention receives minimal resources and is only sustainable over a short term.	Less resources available or lower quality resources as a result of the intervention compared with no intervention.
Community Engagement	**Community engagement** The level of involvement, impact, trust and communication with community members.	Strong community or bi-directional leadership. Decision-making and communication is shared and strong partnership is identified throughout the intervention process.	Communication is two-way and there is co-operation to implement the intervention with a partnership becoming apparent.	Communication primarily flows from intervention team to community and the intervention team has ultimate control over the intervention and relevant communication.	Intervention is placed in the community with no consultation with community organizations or stakeholders responsible for implementation.
IKT	**Integrated knowledge translation** How involved the people delivering the intervention (knowledge users) are in designing the intervention.	There is a process of mutual or bi-directional learning established so that information is tailored to knowledge users needs.	Medium level support for knowledge user by intervention team for implementing the intervention. Intervention is not tailored to the knowledge user.	Minimal or no support for implementing intervention or outsiders implement the intervention for the knowledge users.	Knowledge users have major concerns which they are not able to discuss with the intervention team.
Systems Thinking	**System perspectives** How much the team show they understand that there are multiple ways of viewing issues and solutions.	Intervention includes all three of the following: 1) multiple causes, 2) broad focus/multiple solutions; and 3) multiple perspectives, world views, and values of multiple actors.	Intervention includes only 2 of the 3 factors in the high category.	Intervention includes only 1 or none of the 3 factors in the high category.	Intervention has a negative impact due to a lack of consideration of multiple perspectives necessary to support implementation.
	System relationships The degree that relationships between variables/factors are prioritised.	Demonstrates a strong understanding of the complex relationships between variables including feedback loops, time delays and multi-level effects.	Demonstrates moderate understanding of the complex relationships between variables including feedback loops, time delays and multi-level effects.	Limited or weak understanding of the complex relationships between variables including feedback loops, time delays and multi-level effects.	Intervention has a negative impact due to lack of consideration of system relationships important for implementation.
	System levels The degree to which different levels of analysis are taken into account.	The intervention targets change at the macro, meso and micro levels, and provides sufficient rationale and context for each level.	The intervention targets change at 2 levels with some rationale and context for each level.	The intervention targets change at 2 levels or less without providing rationale and context.	Intervention has a negative impact due to lack of consideration of systems levels necessary to support implementation.

The University of Waikato
Private Bag 3105
Gate 1, Knighton Road
Hamilton, New Zealand

Human Research Ethics Committee
Roger Moltzen
Telephone: s 9(2)(a)
Email:humanethics@waikato.ac.nz

6 October 2020

Nikki Barrett
Te Huataki Waiora - School of Health
DHECS
By email: nmh15@students.waikato.ac.nz

Dear Nikki

HREC(Health)2020#73 : Evaluation of co-design process and impact of CovidCard Bluetooth contact tracing technology community trial

Thank you for your responses to our feedback. We are now pleased to provide formal approval and we wish you and your team well for this important project.

Please contact the committee by email (humanethics@waikato.ac.nz) if you wish to make changes to your project as it unfolds, quoting your application number with your future correspondence. Any minor changes or additions to the approved research activities can be handled outside the monthly application cycle.

Regards,

Emeritus Professor Roger Moltzen MNZM
Chairperson
University of Waikato Human Research Ethics Committee

Appendix 4: Participant Information Sheet

My contact details:

Nikki M. Barrett (Haereroa)
Phone: s 9(2)(a)
Email: s 9(2) @students.waiakto.ac.nz

If you have any questions or concerns about this research you can contact Nikki Barrett or Vanessa Clark on s 9(2)(a)

Title of research project: Evaluation of co-design process and impact of CovidCard Bluetooth contact tracing technology community trial.

What is the purpose of the evaluation study?

The purpose of this study is to evaluate the co-design process based on the experiences of the key stakeholders, in relation to the Te Arawa Covid Card community trial. With numerous stakeholders involved in the community trial, with differing perceptions and understandings of what co-design is, it is imperative to evaluate the process from all perspectives to gauge how, or if, co-design was carried out effectively.

What is involved as a research participant?

You will be invited to take part in a survey for the purpose of capturing your feelings regarding the level of satisfaction/engagement in the Covid Card trial. This will be distributed prior to the commencement of the field trial intervention and will take approximately 15 to 20minutes to complete.

At the conclusion of the trial you will be invited to participate in a wānanga (focus group interview) either face to face or via zoom. This will provide an opportunity to discuss the differing expectations and perceptions of the design and delivery prior to the community trial, to determine the effectiveness of the partnership.

Why should I be involved?

As an individual, the evaluation will give voice and context to the community trial process, validating Māturanga Māori Indigenous knowledge. As a collective, involvement in this research can inform future community trials and studies, by highlighting concerns, opportunities and recommendations. The co-design evaluation has the potential to set a precedent for how non-Māori services can engage authentically with Iwi Māori and community during a pandemic.

Where will my data be stored?

All data generated from the co-design evaluation will be stored in electronic forms (including scanned copies of notes etc.) on a password protected platform that the lead evaluator controls. In accordance

with University of Waikato and ethical regulations, the project's data (including the typed interview and field notes) will remain stored on the University of Waikato server for at least 5 years. During its storage on the server, the data will remain completely confidential.

What will happen with my data?

The data you provided will be used in the evaluation study to produce three direct outputs. 1) A research report will be produced for the Ministry of Health to complement the community trial. The report will then contribute to a cabinet paper for parliament. 2) A specific resource for Te Arawa to utilise and 3) a journal article will also be produced for publication.

Who owns the data collected?

You own the data provided. We will use the data for the specified purposes, with the consent of participants.

If I agree to participate, can I withdraw later?

Yes you can withdraw from the study at any time including during the wānanga (focus group interview). After this, the information you provided will have been summarised and combined with the information of other participants, so it will not be possible to remove your data.

How can I withdraw?

Contact Nikki Barrett on the details above, or Vanessa Clark.

How will I be represented in the project?

Your identity will be kept confidential in the project write up. One of three classification codes will be used to represent your views, either a 'community partner, academic partner, or funder'. You will have the opportunity to select which role best describes you in relation to the community trial.

Can I see the results of the research project?

Absolutely. Each participant will get a copy of all publications emailed to them, or a link to access the publication.

Appendix 5: Electronic Consent Form

A completed digital copy of this form will be retained by both the researcher and emailed to the participant.

Title: Evaluation of co-design process and impact of CovidCard Bluetooth contact tracing technology community trial.
Lead Evaluator: Nikki Barrett

Please complete the following checklist. Tick (✓) the appropriate box for each point.	**YES**	**NO**
I have read the Participant Information Sheet (or it has been read to me) and I understand it.		
I have been given sufficient time to consider whether or not to participate in this study		
I am satisfied with the answers I have been given regarding the study and I have a copy of this consent form and information sheet		
I understand that taking part in this study is voluntary (my choice) and that I may withdraw from the study at any time without penalty		
I have the right to decline to participate in any part of the research activity		
I know who to contact if I have any questions about the study in general		
I understand that the information supplied by me could be used in future academic publications		
I understand that some identifying information will be collected (eg. Ethnicity, iwi and role on the project)		
I understand that my participation in this study is confidential and that no material, which could identify me personally, will be used in any reports on this study		
I wish to view the summary of my interview		
I wish to receive a copy of the findings, and the journal article		
I understand that my information will be stored confidentially for 5 years by The University of Waikato		

Declaration by participant:
I agree to participate in this research project and I understand that I may withdraw at any time. If I have any concerns about this project, I may contact the Human Research and Ethics Committee

By typing your name below you consent to the participation in this research project.

Participant's full name (Typed): Date:

This research project has been approved on 6th October 2020 by the Human Research Ethics Committee (Health) of the University of Waikato under HREC(Health)2020#73. Any questions about the ethical conduct of this research may be addressed to the Secretary of the Committee, email humanethics@waikato.ac.nz, postal address, University of Waikato, Te Whare Wananga o Waikato, Private Bag 3105, Hamilton 3240.

Appendix 6: Paper-Based Consent Form

A completed copy of this form should be retained by both the researcher and the participant.
Title: Evaluation of co-design process and impact of CovidCard Bluetooth contact tracing technology community trial.
Lead Evaluator: Nikki Barrett

Please complete the following checklist. Tick (✓) the appropriate box for each point.	**YES**	**NO**
I have read the Participant Information Sheet (or it has been read to me) and I understand it.		
I have been given sufficient time to consider whether or not to participate in this study		
I am satisfied with the answers I have been given regarding the study and I have a copy of this consent form and information sheet		
I understand that taking part in this study is voluntary (my choice) and that I may withdraw from the study at any time without penalty		
I have the right to decline to participate in any part of the research activity		
I know who to contact if I have any questions about the study in general		
I understand that the information supplied by me could be used in future academic publications		
I understand that some identifying information will be collected (eg. Ethnicity, iwi and role on the project)		
I understand that my participation in this study is confidential and that no material, which could identify me personally, will be used in any reports on this study		
I wish to view the summary of my interview		
I wish to receive a copy of the findings, and the journal article		
I understand that my information will be stored confidentially for 5 years by The University of Waikato		

Declaration by participant:
I agree to participate in this research project and I understand that I may withdraw at any time. If I have any concerns about this project, I may contact the Human Research and Ethics Committee

Participant's name (Please print):

Signature: Date:

Declaration by member of research team:
I have given a verbal explanation of the research project to the participant, and have answered the participant's questions about it. I believe that the participant understands the study and has given informed consent to participate.

Researcher's name (Please print):

Signature: Date:

This research project has been approved on 6th October 2020 by the Human Research Ethics Committee (Health) of the University of Waikato under HREC(Health)2020#73. Any questions about the ethical conduct of this research may be addressed to the Secretary of the Committee, email humanethics@waikato.ac.nz, postal address, University of Waikato, Te Whare Wananga o Waikato, Private Bag 3105, Hamilton 3240.

Appendix 7: Electronic survey questionnaire

This survey will be used after the first 2x co-design hui have taken place and University of Otago ethics Te Whatu application has been approved.

Section 1

1. Please select the role that best describes your participation in the community trial

Community partner (i.e. Te Arawa COVID-19 response hub member, community member, Iwi member)
Academic partner
Funder

Which ethnic group do you belong to? Please tick all that apply:

New Zealand European
Māori
Samoan
Cook Island
Tongan
Niuean
Chinese
Indian
Other (such as DUTCH, JAPANESE, TOKELAUAN).

Section 2

1. Thinking about your expectations prior to the two hui/workshops held on Monday 20th September was this hui/workshop useful for you? Please select appropriate box.

All useful	Very useful	Neutral	Somewhat useful	Not at all useful	Did not attend

1a. What are 3 ways it was useful?
2. What is the thing you liked best about this workshop?
3. What is the thing you liked least?

1. Thinking about your expectations prior to the two hui/workshops held on Friday 25th September, was this hui/workshop useful for you? Please select appropriate box.

All useful	Very useful	Neutral	Somewhat useful	Not at all useful	Did not attend

1a. What are 3 ways it was useful?
2. What is the thing you liked best about this workshop?
3. What is the thing you liked least?

Section 3

Workshops can achieve a number of different purposes (although no one hui/workshop can achieve all purposes). Please help us to understand what purposes were achieved in the two hui/workshops held on **Monday 20th September and/or Friday 25th September**, by answering the following questions organised around 3 different categories.

To what extent do you agree or disagree with the following statements? Please select the appropriate box.

Understanding about the System and Big Picture							
Statement	Not at all	Small extent	Moderate extent	Great extent	Very great extent	Complete extent	Unknown
1. Participation in this/these hui has helped me to recognise the importance of enhancing contact tracing.							
2. Participation in this/these hui has helped me to gain an understanding about how the outcome of this community trial will inform policy and research for contact tracing going forward.							
3. Participation in this/these hui has helped me to think more clearly about opportunities for Te Arawa participating in this trial.							
4. Participation in this/these hui has helped me to see the complexity of the issues.							
5. The intervention we are developing targets changes at multiple levels.							
Any other comments about understanding the big picture?							

Engagement & Participation							
Statement	Not at all	Small extent	Moderate extent	Great extent	Very great extent	Complete extent	Unknown
1. The discussion in this/these hui built on resources and strengths in the community.							
2. This/these hui emphasizes what is important to the community (culture, environmental and social factors) that affect wellbeing.							
3. Suggestions I made within this/these hui were seriously considered.							

4. This/these hui allowed us to communicate in a respectful manner.							
5. To what extent has the hui involved the end users of the intervention?							
6. To what extent have the barriers and facilitators for adoption been considered for this intervention?							
7. To what extent have relevant stakeholders been included in the development of the intervention?							
Any other comments about engagement and participation?							

Outcomes							
Statement	Not at all	Small extent	Moderate extent	Great extent	Very great extent	Complete extent	Unknown
1. This/these hui helped us develop an intervention that is largely supported by those who participated.							
2. This partnership has the ability to bring people together for meetings and activities to further develop the ideas we have created in this/these hui.							
3. The partnership has connections to relevant stakeholders to effectively implement the ideas we have created in this hui.							
4. I am satisfied with the intervention we are developing in this/these hui.							
Any other comments about outcomes?							

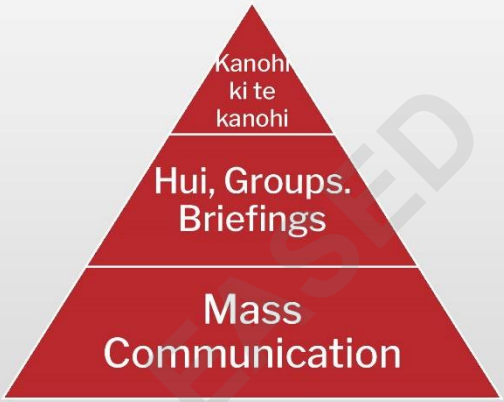
Thank you for your participation. Nikki will be in contact at the end of the community trial to invite you to participate in an interview for a deeper discussion of your experiences regarding the co-design process.

Appendix 8: Tier of stakeholders

Communications Strategy

Key Strategy elements:

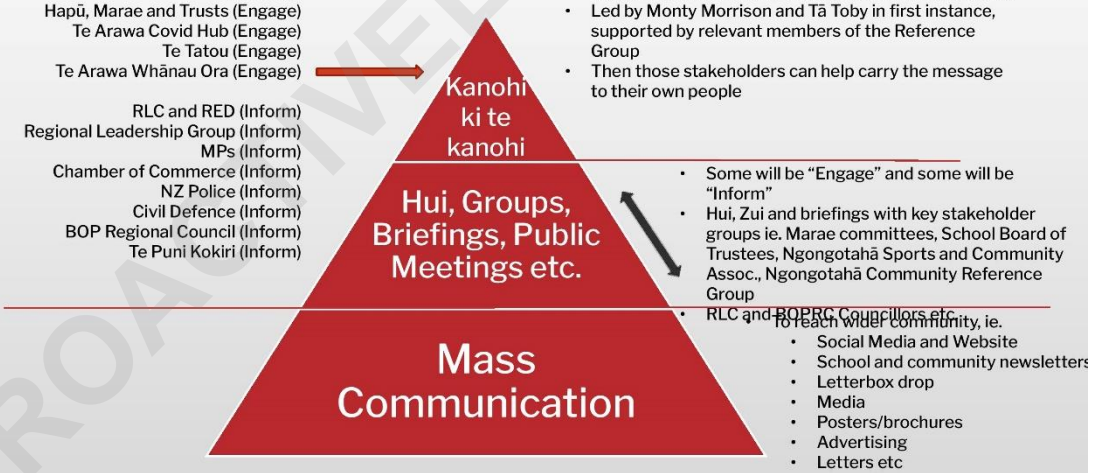
- Inform the right people, in the right order, at the right time
- Inform whānau first - in this case, that includes the entire Ngongotahā community whānau
- We will utilise stakeholders and key influencers to help lead communications
- We will build a communications community to live and breathe the Kaupapa and get people on board
- We will ensure the community see themselves reflected in the communications
- We will utilise existing Te Arawa COVID Hub platforms



Strategy Implementation

Heads of:
Hapū, Marae and Trusts (Engage)
Te Arawa Covid Hub (Engage)
Te Tatou (Engage)
Te Arawa Whānau Ora (Engage)

RLC and RED (Inform)
Regional Leadership Group (Inform)
MPs (Inform)
Chamber of Commerce (Inform)
NZ Police (Inform)
Civil Defence (Inform)
BOP Regional Council (Inform)
Te Puni Kokiri (Inform)



- Face to face hui with key stakeholders and influencers
- Led by Monty Morrison and Tā Toby in first instance, supported by relevant members of the Reference Group
- Then those stakeholders can help carry the message to their own people

- Some will be "Engage" and some will be "Inform"
- Hui, Zui and briefings with key stakeholder groups ie. Marae committees, School Board of Trustees, Ngongotahā Sports and Community Assoc., Ngongotahā Community Reference Group
- RLC and BOPRC Councillors etc

To reach wider community, ie.

- Social Media and Website
- School and community newsletters
- Letterbox drop
- Media
- Posters/brochures
- Advertising
- Letters etc