GOVERNMENTAL PERSPECTIVE OF THEIR ROLE AND RESPONSIBILITY IN NATURAL HAZARDS IN WELLINGTON, NEW ZEALAND

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“Drop.Cover. Hold on.”

Wellington Region Emergency Management Organisation

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Acknowledgements

This research was the last stage before the researcher could receive her Master diploma. The researcher was quite nervous at the start, because research was not her best feature. At least, that it was she thought. One of the things that she has learned after this process of writing a thesis, is that research is so much more than just literature or writing long pages about one result. It is about connecting with people, improvising during interviews and most of all; dare to throw yourself into the deep and see where you land. Without the support of many organizations and people, this thesis would not have been able to exist. First and foremost, the researcher would like to thank Dr. Jeroen Warner, the supervisor of this thesis. Dr. Warner was an amazing help for structuring the thoughts of the researcher and asking valid questions to take the next step.

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In addition, the researcher would like to thank her friends and family, with special thanks to Lotte Harmanni and Neelam Melwani. The cliché is true and without these people in her life, she would not been able to discuss the obstacles or other challenges. It is so important to have a certain community around you and make use of the social capital, especially when writing a thesis is challenging in confusing times such as the COVID-19 outbreak.

Abstract

This research investigates the local government's perspective on their role and responsibility within disaster management in Wellington, New Zealand. New Zealand deals with many natural hazards yearly and has national disaster resilience strategy as one of the leading documents to provide guidance for coping with hazards and other crises for that matter. There are many impacts of natural hazards such as damage of your houses or isolation of your neighborhood. Since Wellington is geographically located on fault lines and at the seaside, it is a vulnerable position for the capital city.

The research was conducted from 18th of November 2019 until 18st of January 2020 in Wellington, New Zealand. The researcher has conducted eleven semi-structured interviews with experts and policy officers who are working daily with disaster management. Through snowball sampling, the researcher was able to retrieve relatively many contacts in a short amount of time. Through coding of the transcripts, the researcher analyzed the results. Being aware of the possible subjectivity of the researcher with this research, the researcher checked her work by fellow researchers and checked with her counsellor many times for reassurance.

The concepts that are utilized and further explained are community resilience, social capital, vulnerability, exposure, capacity and disaster culture. These concepts are coming back in the results and high highly related to the research questions. Elements of the theoretical framework for this research is Protection Motivation Theory (PMT) developed by Rogers (1975). Rogers' PMT describes how individuals are motivated to react in a self-protective way towards a perceived health threat and in this research, towards a perceived natural hazards threat from the Governments perspective. The

The research results are categorized with the "4Rs" of Disaster Risk Management: Readiness, risk reduction, response and recovery, the New Zealand way of operationalizing the risk management cycle (Vallance & Carlton 2015). With these 4R's, local governmental institutions such as WREMO are aiming for making make people as ready as they can through trainings and workshops. By focusing on people's self-efficacy and their own capacity, they can improve their own disaster management and therefore reduce the possible consequences when a hazard looms. However, there is no size fits all where everyone can be helped and there are knowledge gaps about the state of houses and such. Also, the fact that there is one road to flee the city when needed makes it more challenging to estimate the consequences and cope with them properly.

The perspective of the local government of Wellington is to make Wellington as ready as possible for the expected big hit and impactful hazard yet to come. However, there are many parties involved and need to be on board to see the advantage of such investments. Nonetheless, the Government is also expecting a certain assertive attitude from the Wellingtonians themselves to keep their family arranged for three to seven days. Overall, the perspective of the governance has a combination of self-accountability of the citizens and their own capabilities to arrange the communal facilities such as the infrastructure and telecommunication.

Abbreviations

WREMO = Wellington Region Emergency Management Organization

WCC = Wellington City Council

EQC = Earthquake Commission

JCDR = Joint Centre for Disaster Research

UN = United Nations

NEMA = National Emergency Management Association (NZ)

MCDEM = Ministry of Civil Defence and Emergency Management

PMT = Protection Motivation Theory

1. Introduction

Adaptation to a changing climate raises new significant challenges and uncertainties for decision makers in the policy domain (van Buuren, Lawrence, Potter & Warner, 2018). This thesis investigates the New Zealand Government's perspective of their responsibility in relation to natural hazards management[1].

While writing this thesis, many lives all over the world are affected by COVID-19. Currently, this change in the Netherlands (July 2020) consists of companies and organisations (partly) closed and public transport is limited. People are strongly recommended to stay inside and leave a 1.5m (5 ft) (social) distance from each other. Despite being a different kind of disaster, COVID-19 spreading across the world underlines the relevance of this research. Both the crisis as analyzed in this thesis and COVID-19 requires governments to act.

This research was conducted in the context of the master International Development Studies at the Wageningen University. There are many directions and topics that can be covered under the conflict and disasters specialization. The researcher herself already had some experience conducting research in countries such as Indonesia, Uganda and Jamaica. During these times, the researcher felt sometimes out of place on a personal level and thinks that adapting to a whole new culture in relative short amount of time (6-8 weeks) did not contribute. For that matter, the researcher wanted to conduct research in a country that was closer to the Western culture and an English-spoken country. The researcher did not wanted to be dependent on an interpreter during interviews and so New Zealand became the place for this research. In addition, Wageningen University has a partnership with the university in Wellington, Massey University. Therefore, the collaboration was easy to establish and brought the researcher trust in conducting this research with help of the university.

New Zealand is considered to be a very happy country: New Zealand (Tamkin, 2019). It is ranked on the 8th place on the Happiness Index (World Happiness Report, 2020) and the Prime Minister (Jacinda Ardern) is showing what female leadership entails according to The Guardian (Moore, 2019). Next to the opinion of The Guardian, Jacinda Ardern is also a role model for the researcher herself.

The fieldwork of the research was conducted in New Zealand, where the researcher investigated the responsibilities and plans of the local Government in Wellington related to readiness for and response to natural hazards. The research is based on how these interlinkages are between readiness and response. Through snowball sampling, the researcher was able to retrieve enough respondents that were willing to discuss this topic about the governmental responsibility in relation to hazard management.

While reading many articles about disaster management, how people can prepare but also what kind of hazards New Zealand is dealing with, the researcher was curious how this management was arranged on a local governmental level but even more about the Government's perspective in relation to their responsibility. For the researcher, it seemed that the governmental responsibility was vague and unclear. Referring to the National Disaster Resilience Strategy that has been published in April 2019, it did help in finding clarity for the researcher where the Government was drawing the line between their responsibility and the people's own responsibility but not enough. In addition, the researcher noticed that many research papers were based on how people were coping with the

[1] The reason why "natural hazards" is used in this research instead of "natural disasters" is in response to the #NoNaturalDisasters campaign (2020). According to them, the terminology needs to be changed. Whilst some hazards are natural and unavoidable, the resulting disasters almost always have been made by human actions and decisions.

consequences but not so much about the governmental perspective. This curiosity and her background in policy work, became the right combination to further investigate this in New Zealand for three months. The following questions were the result of this thought – and preliminary research.

How is the perspective of the local Government on their role and responsibility in Wellington, New Zealand about disaster management?

- How does the Government communicate readiness to the people for hazards in Wellington to reduce the perceived vulnerability?
- How does the Government strategize response to hazards in Wellington to increase people's self-efficacy?
- How are the preparedness and response phases interlinked in managing hazards in Wellington, New Zealand from a governmental perspective?

Natural hazards require the Government to reflect on how to raise awareness for natural hazards prior to them occurring and therefore develop a risk communication strategy. Research shows that people in New Zealand find it difficult to understand the urgency to prepare for the possibility that natural hazards might happen in the future (Glavovic, Saunders & Becker, 2010). According to Khan, Vasilescu & Khan (2008), hazard means the following: "*a dangerous condition or event, that threat or have the potential for causing injury to life or damage to property or the environment."* Related concepts such as community resilience, social capital, vulnerability, exposure, capacity and disaster culture are explained in more detail in the conceptual and theoretical framework section.

The present research maps out what their perspectives are and how they can assist of people's readiness but also in covering the response phase. The quotes from this research are providing a concrete insight on what the respondents literally had to say about certain topics and on what the dilemmas are and which choices the professionals need to make for the greater good.

This research is divided into sections that are building up to the results, discussion and the conclusion of this research. The research start with the background of this research. Within this background, the governmental structure and responsibilities are explained, the hazards with regards to New Zealand and the more context about Wellington, the city where the researcher carried out her research. After that, the conceptual and theoretical framework is explained. Then the methodology of the research is elaborated on. Finally, the results, discussion and conclusion follow.

2. Background

This section provides context on disaster management and how this relates to the situation of New Zealand. First, the national disaster resilience strategy is discussed, providing an overview of New Zealand's strategy for natural hazards and insight on how New Zealanders organized themselves in this regard.

Second, the sections on consequences of hazards in New Zealand provide a better idea of the impact that these disasters have in New Zealand. Third, the impacts of such natural hazards are further elaborated. Fourth, the last section zooms into the specific situation of Wellington, seeing as this is where the fieldwork was conducted. Fourth and last section provides a more focused view on the policies of Wellington with regards to natural hazards particularly given the specific vulnerabilities of Wellington, considering the geographical location.

2.1.1 The national disaster resilience strategy

The national disaster resilience strategy was released in April 2019 by the MCDEM (see glossary). It is a 10-year strategy outlining the vision and the long-term goals for CDEM in New Zealand. The strategy states: "We interpret this as an overarching intent for a resilient New Zealand. This is important, because New Zealanders are, and will continue to be at risk from a broad range of hazards." (MCDEM, 2019) This strategy is based on strengthening the resilience of the people of New Zealand. Resilience in this context defined as the ability to anticipate, minimise, absorb and respond to these disruptive events. The overarching stated goal of this strategy is to strengthen the resilience of the nation. The strategy sets out to accomplish increased resilience through these three main priorities: (1) managing risks; (2) effective response to and recovery from emergencies; and (3) enabling, empowering and supporting community resilience.

2.1.2 Natural hazards in New Zealand

According to the Global Facility for Disaster Reduction and Recovery (2017), New Zealand is ranked high-risk for almost every possible hazard, except for extreme heat and water scarcity. Based on this data highlighting its vulnerabilities, New Zealand needs to be more prepared than other countries for natural hazards.

Canterbury, Christchurch endured several earthquakes since September 2010, followed by an extreme earthquake in 2010 which resulted in the loss of 185 lives. Nearly a decade since the events in 2010, Christchurch continues to recover from the damage caused by the earthquakes. Some buildings have yet to be rebuilt, while some of those affected still await insurance pay-outs (Ertl, 2016). Additionally, Canterbury continues to feel aftershocks following the earthquakes in 2010. These aftershocks contribute to chronic stress symptoms and of course a feeling of uncertainty among the population (Thornley, Ball, Signal, Lawson-Te Aho & Rawson (2015). This is just one of many examples of a disaster and the post-disaster situation in New Zealand.

Coastal erosion is yet another hazard, or rather a creeping catastrophe in New Zealand. As sea levels continue to rise, sea water is a growing cause of concern – causing a slow but steady erosion to New Zealand's land. Despite its 'creeping nature,' erosion is a real cause of concern for the residents of New Zealand. While it is slow, after 10 years, sea water could cause roads to no longer be navigable (Blundell, 2018).

2.1.3 Impacts of natural hazards in New Zealand

"Erosion is eating away at New Zealand's coastline, with satellite images showing the dramatic impact of its appetite on small communities the length of the country. It has forced people from their

homes and caused councils to relocate public infrastructure away from the encroaching sea." (Mitchell, 2016).

Change of landscapes and in the weather is a topic that is regularly featured in the news, focused primarily on droughts, floods and coastal erosion (Schwartz, 2018). New Zealand is an example when it comes to staying alert with regards to possible natural hazards due to changes and constant movement of geographical plates. New Zealand is situated along an active geographical plate boundary, which raises the risks for a variety of geological hazards. Examples of these hazards are landslides, coastal storms, drought and earthquakes. These kinds of hazards make New Zealand vulnerable to possible frequent hazards. Therefore, it is crucial to ensure the safety of the people in New Zealand. New Zealand's cities are mostly concentrated in the coastal and volcanic regions, areas that are regularly exposed to risks of landslides, floods and seismic risks. (Glavovic, Saunders & Becker, 2010)

2.1.4 Wellington, the capital city of New Zealand

Wellington is New Zealand's capital. It is where the Government and parliament are based. Wellington has a population of approximately 215,000 in the city centre. In addition, the centre is an important place for the port as it is where ferries connecting the northern and southern islands dock. Furthermore, Wellington is home to the third largest airport in the country, processing approximately six million passengers a year. This section describes the possible hazards for Wellington, and the direct connection between these hazards and the geological situation of the city.

Wellington is a popular city to live in, but it has its risks as well regarding the surroundings and dependent structure (WREMO, 2019). According to WREMO (2019), Wellington city centre is threatened by various natural hazards, such as earthquakes, tsunami's, flooding and landslides. Active fault lines pass through and near Wellington city. Not to mention the fact that it is located on the coast, making it increasingly/especially exposed for tsunamis. A major hazard could disrupt the working of the whole city including the work of (national) Government and parliament. Because the city of Wellington is linked to the rest of the northern island country with two highways, the infrastructure and the access to the city is dependent on these highways. Thus, should the highway be struck by an earthquake, for example, this could result in the city being isolated, making it difficult for traffic to enter and or exit the capital city.

3. Conceptual and theoretical frameworks

Below the key concepts are explained in more detail and used in this context within the research. After that, the theoretical framework is explained.

3.1.1 Community resilience

Based on Thornley et al.'s (2015) definition, community resilience is used in this research as the process of communities to adapt positively to adversity and/or risk. According to Paton & Johnston (2001), the more people involved and linked to the actual community and the sense of being part of the community, the greater the resilience of the community will be. Factors such as community efficacy and cohesion play a major role in this process of the post-disaster adaption. This is where hazard mitigation and post-disaster adaption is more effective and provides a better recovery when the feeling of community increases.

Following a hazard, community resilience is an important part of the post-disaster phase. The strength of a community and therefore its resilience – is crucial in decreasing the time that it takes for the community to fully function again. On this, community resilience is further discussed below.

According to Cutter et al. (2008), *"Resilience is the ability of a social system to respond and recover from disasters and includes those inherent conditions that allow the system to absorb impacts and cope with an event, as well as post-event, adaptive processes that facilitate the ability of the social system to re-organize, change, and learn in response to a threat."* The focus is about preparing and preventing The focus on measures and prevention of possible hazard-related consequences is the highest priority together with the post-event measures. Therefore, there is much more focus on how to minimize the disaster impacts and cope with the related (new) situations (Bruneau et al., 2003; Tierney and Bruneau, 2007).

Within this context of resilience, community resilience is centered about how communities can be resilient, respond and recover from events such as flooding, earthquakes and tsunamis. There are many factors that play a role in how communities can be resilient and recover from such natural hazards. Among these is isolation. Communities that fall victim to natural hazards but are located farther from the city centre, could have the more isolated problems, where community specific roads and trails are damaged so much that the transport and infrastructure is impeded/hindered/obstructed. The relative isolation that people may experience where they were not able to move freely, does not contribute to coping with the stress and vulnerability that comes along with it (Stevenson et al., 2017).

Due to the relationship between natural hazards and their impact on a community, community resilience can also be closely linked to the vulnerability of the community. The strength of the community can be impacted by the environmental and social ability to withstand the shocks, mitigation of the impacts of the natural hazards and the adaption of measures to recover from it. The vulnerability of such communities is therefore affected, and vulnerability needs to be reduced (Cutter et al. 2008; Maguire & Cartwright 2008; Chamlee Wright & Storr 2011; Cote & Nightingale 2011; Millen 2011; Stokols et al. 2013). Even within communities, some people are less vulnerable than others to the consequences of a natural hazard. This could be linked to various reasons, including housing being less damaged or in situations where people were able to be relocated sooner than others. However, in the "aftermath" of a hazard, when people have may have different levels of struggles *and* increased stress to return to their respective 'normal life' differs between people. This could result in

polarization within a community, especially when the levels of vulnerability and resilience differ. This discrepancy can be destructive for a society when rebuilding. When a person sees their neighbor building his/her house way sooner than their own and possibly due to their (social) capital, it could trigger certain distance between people in communities. Therefore, and as described by Gallopín (2006), resilience is clearly related to the capacity of the response of the individuals which all together form the community itself. This links with both the level vulnerability and social capital of each other and as a group that determines the resilience.

3.1.2 Social capital

"It's not what you know, it's who you know." (Woolcock & Narayan, 2000).

Social capital refers to the person's network. It is the idea that a person's family, friends, and social circle are important social assets. Often, in situations of distress, people with strong social capital can call on their social circle during a crisis and enjoy their company, which strengthens their trust in people and their way of perceiving the world (Woolcock & Narayan, 2000). This not only applies to individuals, but also to groups/communities. Bonding (in-group links) and bridging (between-group links) are about the network you have as a person, and the connection with others in your neighborhood among different factors such as race or income. The bonding and bridging these gaps, creates this bond of community. Communities with a high social capital where people help each other, trust each other and socialize with each other – have a stronger position on confronting poverty and vulnerability (Moser 1996; Narayan 1995), they can better resolve disputes (Schafft 1998; Varshney 2000) and take advantage of new opportunities in a positive way (Isham, 1999).

Measures of social interaction such as trust in others and/or frequency of socialising are linked to a wide range of outcomes, from individual happiness to health status and government performance (see, for example, Putnam 1993 and 2000). The links between measures of social capital and economic performance have been previously researched. Putnam (1993) provided evidence of strong links between indicators of social capital and economic performance in Italian regions, while later work has shown this link to hold in international comparisons (Whitely, 1997; Knack and Keefer, 1997; La Porta et al. 1997).

3.1.3 Vulnerability

Vulnerability is an important part of the concept of resilience, since the vulnerability level is a crucial factor of how resilient people can be. Factors that contribute to vulnerability are isolation, and loss of social network and social support (Paton, Johnston, Mamula-Seadon & Kenny, 2014). The definition of vulnerability in this research is *vulnerability to environmental hazards means the potential for loss* (Cutter, Boruff & Shirley, 2003).

With this definition in mind, the level of vulnerability it is a key factor for community resilience, and it is intertwined to social capital. After all, when there is a loss of a social network, a decrease of social capital for those affected also occurs. Thus, vulnerability is a concept that is central to this research.

Figure 1: The interlinkage between social capital, community resilience and vulnerability

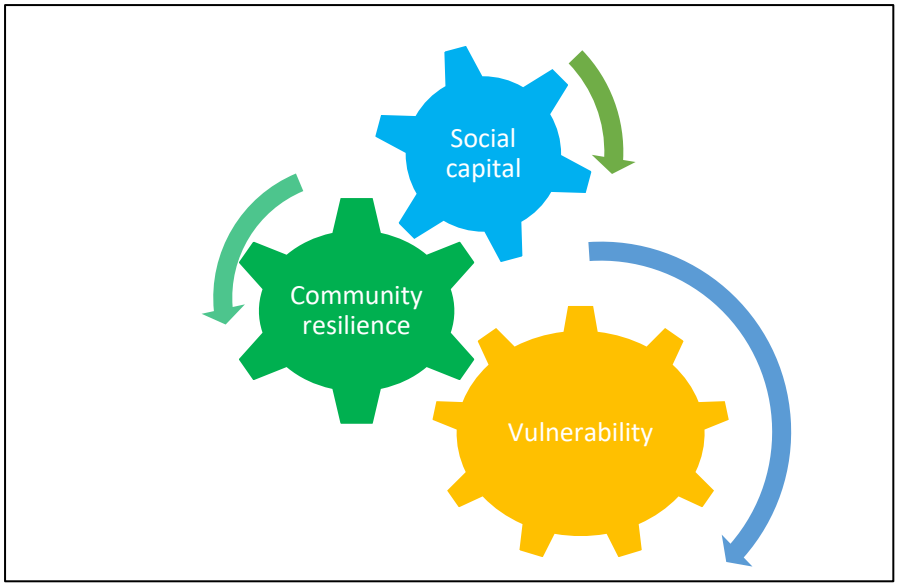


Figure 1 demonstrates the intertwining situation between social capital, community resilience and vulnerability. The figure is created by the researcher to visualize the connection of the concepts together. It is what social capital is in its core; bonding and bridging (Larsen, Harlan, Bolin, Hackett, Hope et al., 2004). The community resilience might increase because the social capital is higher among the community and therefore solidarity supports this process of resilience. When social capital is high in the community, a more collective approach of events *could* happen more easily. When this occurs, and community resilience is strong, the vulnerability might be affected too. This means that the vulnerability could decrease, and people could feel less vulnerable daily when they are aware of each other's support in the community. The application of this figure to this research in concrete situations, can be found in the discussion section.

3.1.4 Exposure

Exposure is described by the United Nations (2016), as follows: "*The situation of people, infrastructure, housing, production capacities and other tangible human assets located in hazard-prone areas.*" Within the context of this research, exposure is about how some people are more exposed to natural hazards than others. An example is citizens of New Zealand who happen to reside in coastal regions / near the coastline (mentioned earlier in section 1.2), where people who live near this coastline might be more exposed to coastal erosion than others. For that matter, it is interesting and might be interesting to investigate where the most exposed populations are based. Mapping these more exposed population could assist in a better plan to assist particularly these people.

3.1.5 Capacity

According to the United Nations Office for Disaster Risk Reduction (2017), capacity is about the combination of all the strengths, attributes and resources available within an organization, community or society to manage and reduce disaster risks and strengthen resilience. This means that when a person/organisation has many capacities, it can easier for the person/organization to be resilient seeing as various aspects of the recovery is in their own hands. However, when a person has a low capacity, it is increasingly difficult to build a life again.

According to Gaillard (2010) capacities are often rooted in resources which are endogenous to the community. They rely on the traditional knowledge, technologies and solidarity networks. Whereas the vulnerability often depends on structural constraints which are exogenous to the community.

Examples such as unequal distribution of wealth and resources within the community could trigger increased levels of the vulnerability among the people that are left behind.

3.1.6 Fatalism, a disaster (sub)culture

Disaster subculture is about the adjustments, actual and potential, social, psychological and physical which are used by residents of such areas in their efforts to cope with disasters which have struck, or which tradition indicates may strike in the future (Granot, 1996). Since people in Wellington are used to earthquakes with approximately a magnitude 3-5, they create a reality in which this could be part of the equation. Next to this reality, there is the attitude of fatalism. According to Abramson, Seligman, & Teasdale (1978), fatalism resembles the state of learned helplessness and this results in having no control over the situation and therefore, a lack of motivation to act. According to McClure (2017), fatalism is a major impediment to action. He states that earthquakes are powerful and uncontrollable events where seismologists cannot predict when these will rupture and therefore, these uncontrollable and unpredictable events lend themselves to fatalism. This concept of fatalism in Wellington is used as an analysis how the respondents assess this degree of subculture.

3.2.1 Theoretical framework

The theory is chosen to as a lens through which to view the research questions and provide the necessary theoretical basis for further developing the questions. Protection Motivation Theory is chosen for this research, because of the unique combination of coping and the treat appraisal. The research is about the responsibilities of the Government of New Zealand in dealing with natural hazards. Elements of this research are applied in the discussion section where the researcher elaborates on the outcomes together with this theory. Through the interviews, the researcher attempted to design questions that were related to this theory. However, the interviews also had their own way of progressing and does not entirely focus on this theory. Therefore, elements of this theory are used for the discussion to put it into place.

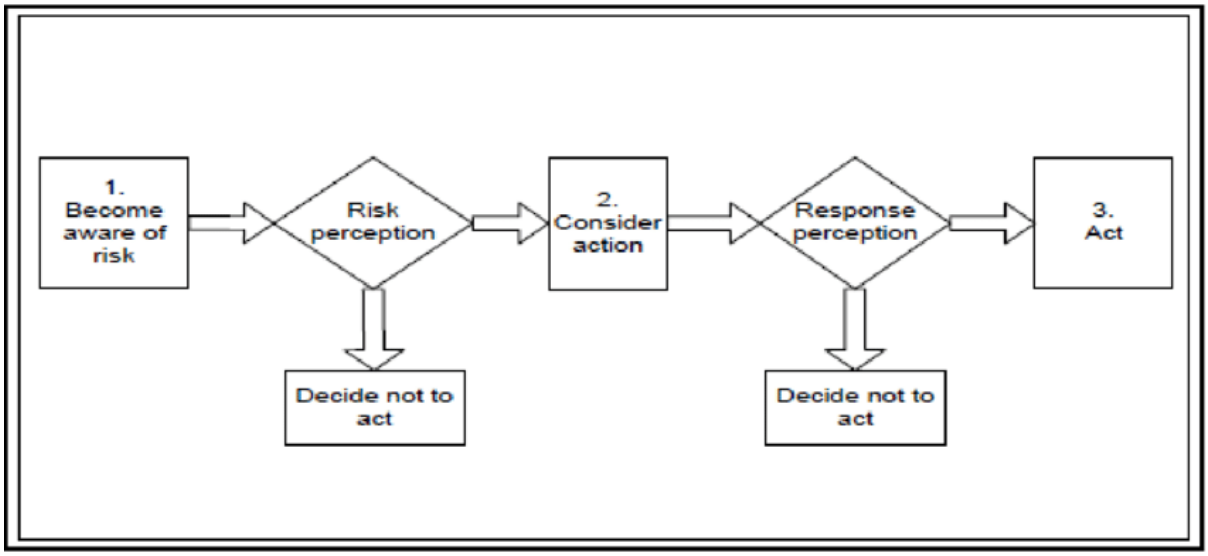
3.2.2 (Adapted) protection motivation theory

As mentioned above, the theoretical framework for this research is an adaptation of Rogers' Protection Motivation theory (Maddux & Rogers, 1983). [The theory allows for alignment with the research questions and will posits a relationship between the variables. For that matter, the Protection Motivation Theory (PMT) will be explained below].

Rogers' PMT describes how individuals are motivated to react in a self-protective way towards a perceived health threat (Westcott, Ronan, Bambrick & Taylor, 2017). According to Westcott, Ronan, Bambrick & Taylor (2017), the theory is based on health behaviors. Westcott, Ronan, Bambrick & Taylor (2017) used this theory to address the dilemma of the awareness-preparedness gap in disaster risk.

The theory consists of two appraisals, the threat appraisal and the coping appraisal. These two appraisals are considered when an individual decides and therefore the determination to engage or not engage in the risk-reducing behaviour. The threat appraisal is focused on the following two elements: the (perceived) severity of the event and the (perceived) vulnerability. To conceptualise these two concepts, in the recent studies, perceived vulnerability is conceptualized as the degree to which people believe they are personally at risk of experiencing the negative effects of climate change firsthand. The perceived severity is conceptualized as the degree to which people perceive climate change effects to have serious negative consequences (Rainear & Christensen, 2017).

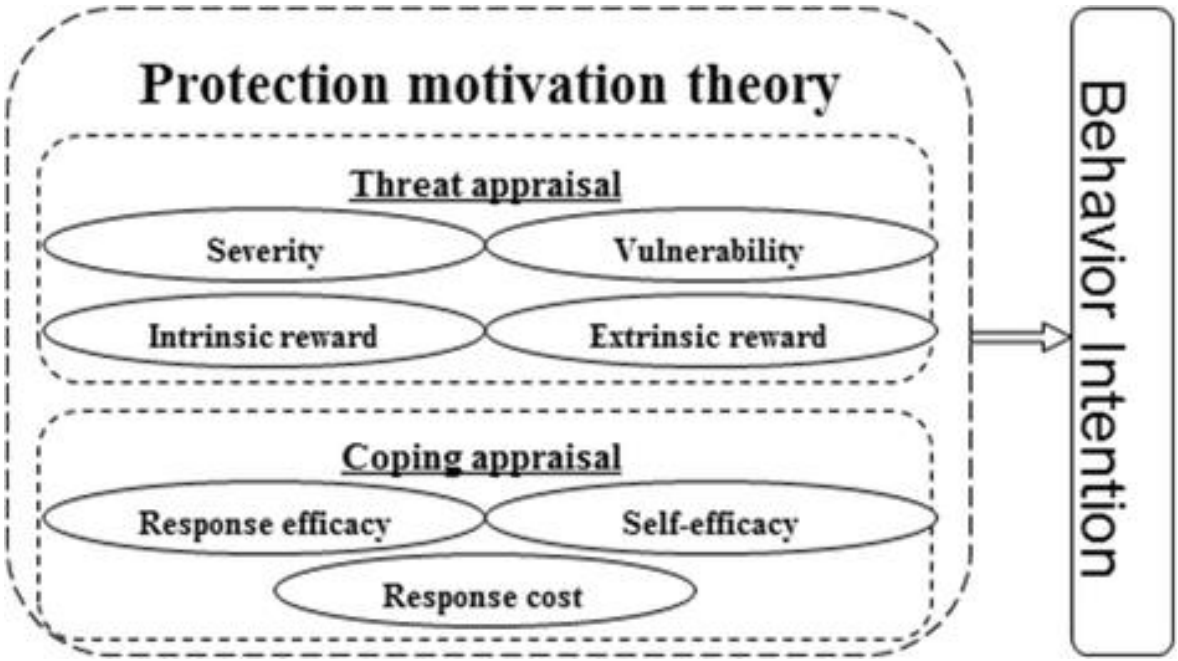
Fig. 1b Risk and response perception



Source: Fisher, 2015

The coping appraisal is about the acting of people and whether this would be effective. With this appraisal, the response efficacy and the self-efficacy are intertwined. The response efficacy relates to the perceived effectiveness of the communicator's behavioural recommendation. Self-efficacy refers to perceptions of one's own ability to successfully perform the recommended behaviour (Rainear & Christensen, 2017). In figure 2 below, it can be seen how the combined factors together constitute the protection motivation effect together.

Figure 2. Rogers' protection motivation theory .



Source : Xiao, Peng, Yan, Gao, Yu, Li et al., 2016

Thus, the coping and the threat appraisal each have their own elements and their angle of the communication part. The threat appraisal focuses on the readiness phase, how people feel possible fear about natural hazards and how this is interacting with their intrinsic motivation to prepare for it,

whereas the coping appraisal is focussed on the response and how people cope with this response after such a hazard (Fig. 1b). Within this theory, the social contract between the Government and the citizens is in an interesting case (Pelling & Dill, 2010). The case in this research is about the New Zealand Government and the New Zealanders within the society. The perceived vulnerability and perceived severity can differ between government and citizens, and therefore could have a different reaction for each party. For that matter, perceived vulnerability could be worse in the assessments of the Government, or citizens could underestimate the severity of the hazards that can occur, especially now with climate change (Maddux & Rogers, 1983).

The application of this theory within this research is based on a couple of elements of the theory. The elements that were used in this research are the perceived vulnerability, the severity and the self-efficacy. This excludes the rewards and response costs. In addition, the researcher attempted to investigate how the Government feels about the people's self-efficacy and vulnerability and how this is related to their responsibility. The feeling of vulnerability would possibly be related to this whereas people are having a more vulnerable position when stricken by a hazard than others. Through the interview questions that were asked, the researcher has tried to seek their view of vulnerability in Wellington, the possible differences within communities and about their responsibilities after the hazard has stricken Wellington. Through these kinds of questions, the researcher was aiming to provide a basis and guidelines about their methods in relation to this theory.

4. Methodology

4.1.1 Literature analysis

The researcher conducted an extensive literature analysis to locate the right information on the topic of social capital, community resilience and disaster management. Some of the keywords utilized to locate resources were: "disaster management Wellington", "resilience", "earthquake risk Wellington." This analysis was conducted prior to, during and following interviews. Before the interviews, the researcher focused on exploring information on the disaster management and Wellington as a city among other topics. As interviewees provided further sources of information and mentioned certain topics, the researcher delved further into material, targeting searches to build knowledge and extend the scope of the research as advised. After the interviews, the researcher delved into material that further supported outcomes of the interviews or compare the outcomes, in order to draw relevant and realistic conclusions.

The literature provided a basis for the knowledge that the researcher gathered in order to continue with the research. The library of Wageningen University was used for many articles, Dr. Jeroen Warner sent articles to the researcher and literature was obtained through the Joint Centre for Disaster Research (JCDR) at Massey University, Wellington.

4.1.2 Semi-structured interviews

"A semi-structured interview is a verbal interchange where one person, the interviewer, attempts to elicit information from another person by asking questions. Although the interviewer prepares a list of predetermined questions, semi-structured interviews unfold in a conversational manner offering participants the chance to explore issues they feel are important" (Longhurst, 2003).

The research project was conducted in Wellington, New Zealand from the 13th of November 2019 until the 18th of January 2020. During that time, the researcher interviewed eleven registered and recorded interviews, one interview through e-mail. One interview was not recorded due to the unforeseen technical issues where recording was not available.

The purpose of qualitative studies in general, and applied in this research, is to describe the phenomenon from the participants' view through interviews and observations (Orb, Eisenhauer & Wynaden, 2001). The original planning for the fieldwork can be found in Appendix 1.

The fieldwork utilizes a qualitative approach. Semi-structured interviews were conducted with different experts in the field of disasters, emergency management and community resilience. The people that were interviewed included experts from the Wellington City Council, WREMO, the Earthquake Commission, Massey University and the national Government. The selection criteria for the interviewees was based on their job title and responsibilities (was the expert regularly involved in Governmental activities in relation to disaster management). Through snowball sampling, interviewees often pointed the researcher in the direction of other valuable persons to be interviewed for her research. This was the most effective way for the researcher to broaden her understanding of the topic, due to limited time and network. Due to privacy reasons, the exact job titles and names of interviewees are not included in this research. In case necessary, an overview of the interviewees can be provided.

The interviews lasted approximately 45 minutes. At the beginning of each interview, a consent form was signed by the interviewee and an information sheet was provided. By signing the consent form, the interviewee gave permission to have the interview recorded and used for this research and protected them from the misuse of data. Through the information sheet, interviewees were also informed about the research. The consent form and information sheet are available in Appendix 2.

During an interview, the interviewee was able to raise additional topics that were worth noting. Through providing the interviewee with room to discuss other issues in the format of a semi-structured interview, a more complete/thorough description and analysis could be provided, allowing for a more exhaustive analysis of the situation. The interviewee was able to elaborate on their answers describing the context to provide the interviewer with a more complete understanding of the situation.

Occasionally, the semi-structured design was a challenge for the researcher. Finding a careful balance between the questions developed and improvising based on answers provided was sometimes difficult. This led to some interviews focusing more on the strength of the buildings for earthquakes, for example, while others zoomed in on social capital side of disaster management. Often, the direction of the interviews was based on the expertise and interest of the interviewee, and gaps in research identified by the researcher. Furthermore, the interviews took place mostly in the offices of the interviewees. This sometimes resulted in more socially desirable answers because interviewees were in their work environment, perhaps impeding their ability to be open about the situation.

4.1.3 Sampling

With thanks to the networks of colleagues at Massey University and the Embassy of the Kingdom of the Netherlands in New Zealand, the researcher was able to commence arranging interviews five days after arrival (18 November 2019). The researcher made use of the snowball sampling method. Snowball sampling is defined as a method through which the researcher accesses information. Contact information is provided by other informants (Noy, 2008). Through snowball sampling, the researcher built a functional network in a limited amount of time, retrieving the relevant information efficiently.

Through the hosting department at Massey University, the Joint Centre for Disaster Research, the researcher was able to retrieve the first contacts. In addition, through attending a conference on 3 December 2019, hosted by the Earthquake Commission, the researcher was able to access a list of relevant contacts for her research. By interviewing the people from different perspectives and

expertise, the researcher aimed to broaden the range of perspectives included in her research. However, it is important to know that the views of the respondents were different but so divergent. This will be further elaborated in section 6.2.

Through this manner of sampling, the researcher was very dependent on the network of the respondents. This was a risk and she took her chances that these people would have a significant network for her research. This worked out quite well, but an active attitude and approach was necessary for the researcher to continue the research effectively.

4.1.4 Analysis of the data

Any relevant new information brought up during the fieldwork was included in subsequent stages of the fieldwork (see section 5). An example of this is the report that came out on the 3 December 2019 from the Wellington Lifeline Utilities (George, 2019). This report emphasizes the importance of proper preparation for buildings, for example. Through highlighting this, the researcher used this report to develop follow up questions for interviewees, to better understand their opinion on these topics. The semi-structured interview method utilized by the researched provided the researcher with an easy and flexible opportunity to make best use of new information.

To familiarize herself with the data, the researcher transcribed each interview with comments in the transcriptions. After that, the researcher printed out each transcript and searched for key words, sentences and overlapping information. Information that was provided by several interviewees was highlighted, in order to discover and determine patterns in the data. Through this data analysis, the researcher was able to identify similarities and conceptualize the connections that were identified throughout the interviews. Through this interpretative analysis of coding where the discourse analysis is central, the researcher noticed the patterns of the 4Rs (see section 5.4) and three main Government responsibilities: infrastructure, telecommunication and water (see section 6). This framework of coding and the recognition of connections is the basis of the results, discussion and conclusion of the research.

The data from the interviews was analyzed with the help of coding. Coding is a method where the researcher reads each transcript of the interviews, makes notes in the form of words, theories or short phrases. These words help in summing up what the conversation was about identifying common themes across interviews. This is known as the method of open coding. The main aim is to offer the researcher a summary for each transcript and therefore a better overview of the data (Burnard, Gill, Stewart, Treasure & Chadwick, 2008).

While coding, the researcher had difficulties with retrieving the overview of the interview outcomes. With so much information, it felt overwhelming for the researcher to detect the “main gist”. Nonetheless, with the explanation above and connecting dots of meanings that were reoccurring in different interviews, the researcher was able to create a system. The concepts of the conceptual framework come back in the discussion where they are linked to certain disaster scenarios that are raised in the discussion. Highlighting these concepts, the researcher is able to find back the linkages between these concepts and the data from this research. This also applies to the elements of the PMT. However, not all the elements come back in the data analysis. This is because the answers of the respondents were simply not related to this theory on a one-on-one basis. Therefore, the data is linked to certain elements of the theory such as perceived vulnerability, severity and self-efficacy. This linkage between the theory and the data are further discussed in section 6, the Discussion.

Regarding section 5 where the results are displayed, the respondents are referred with a number. This number of the respondent is linked to their job title and organizations. This can be found in appendix

3. With that information, the relevancy and better understanding of the context can be achieved. Some data of respondents was used more often than others.

4.1.5 Ethical considerations

Ramos (1989) described three types of problems that may affect qualitative studies: the researcher/participant relationship, the researcher's subjective interpretations of data, and the design itself. In relation to these three, the ethical consideration will be focused on these three-given possible (ethical) problems.

As according to Karnieli-Miller, Strier & Pessach (2009), the relationship between the researcher and the participant can have important implications for the research outcomes. The qualitative research inquiry includes applying a critical view of hierarchical relation of power between the researcher and the interviewee (Råheim, Magnussen, Sekse, Lunde, Jacobsen & Blystad, 2016). The roles in this research are predetermined: the interviewee is the expert and the researcher is the other party. One of the issues that the researcher was aware of was the power relations between the student (the researcher) and the professor/expert. The researcher therefore was determined to minimize the distance between the researcher and the interviewee in order to create an open atmosphere to mitigate this possible issue (Karnieli-Miller, Strier & Pessach, 2009).

When in contact with the interviewees, the researcher tried to make a personal connection with the interviewee, talking openly about their work, their role within their organization, and other basic information before continuing with the other questions that were directly related to the research. Despite these efforts, socially desirable answers are often provided in all types of research and across all social-science literature (Fisher, 1993). Given this fact, the chances of respondents providing socially desirable answers in this research were high. The researcher tried to mitigate this risk by increasing the number of interviews conducted in order to verify the answers with other interviewees. Also, the researcher ensured anonymity of the interviewees within this research by asking permission, signing a consent form and not calling out their names in this research.

When dealing with qualitative research, the subjectivity of the researcher is involved in scientific research (Ratner, 2002). This means that subjectivity cannot be excluded from this research but through literature and extensive discussions with fellow researchers, the researcher was aiming to be as objective as possible. Furthermore, the researcher stayed in touch with other researchers with more experience on this topic and let other experts double check her work to ensure the most objective results with the provided data.

The research design is challenging, because this is a social science research project in which the information provided could be interpreted from various angles. The information provided by interviewees, is essentially subjective, based on their opinions, experiences and expertise. However, by identifying patterns and similarities, the researcher was able to distill information from opinions. On some topics however, for example identifying the most vulnerable groups in the city, interviewees answers varied, possibly based on their expertise and experiences. As a result, the researcher included these discrepancies, when relevant, in the results to provide a balanced perspective (see section 5).

5. Results

The results of this study are based on the outcomes of fieldwork in New Zealand conducted between 18 November 2019 and 18 January 2020. For this period, the researcher interviewed stakeholders working in the field of emergency management in Wellington, New Zealand. Respondents either organize and/or speak at events to discuss emergency management, conduct research on emergency management, develop policies, and/or provide advice.

This section zooms in on the specific situation of Wellington city in relation to hazard management. Then, the current challenges and the Wellington emergency plan are highlighted. After that, the results are divided with the structure of the concept of the 4Rs in mind. During interviews, respondents often referred to the 4Rs in Disaster Risk Management – readiness, risk reductions, response and recovery. This repeated reference of the 4Rs made the researcher decide to structure the results in four sections pertaining to the 4Rs.

5.1.1.Current situation in Wellington city

"Based on our experience after the Christchurch earthquakes, recovery from a big earthquake in Wellington will take at least a decade before we could say the city is back on track physically. Social and psychological issues are deeper and for many people who personally experience the disaster it will take more time to recover. For some they will never recover, which means there will be a need ongoing support. Recovery from psychological issues is definitely more difficult to assess and monitor from a government's perspective as everyone will have a different perspective on how the event personally affected them." (Team leader recovery, Respondent 13)

The level of vulnerability and level of exposure of the city is known by Wellingtonians; that has been acknowledged by many of the respondents. However, they are not thinking about this daily and therefore not prioritizing the necessary tools to have for when a hazard loom. The possibility of the lack of water is a problem because people need a lot of water when the system is not providing this automatically through the sewages due to damage. For that matter, it is crucial for the Government to remind of the possible danger they are facing.

Wellington's situation when it comes to natural hazards remains largely uncertain, but one thing is almost certain: in the future, a big earthquake will strike the city. Despite extensive research, the extent of damage and when this will take place remains unknown. According to conducted interviews, this uncertainty creates challenges when preparing effectively for such events for many professionals and institutions, including businesses and governmental institutions. As one of the respondents mentioned: *"Wellington is a city that is very exposed to hazards, with limited paths to get out, and that will be difficult when 100,000 people, for example, are stuck due to road blocks."* (Emergency management & business continuity advisor, respondent 2). The respondent underlined the consequence of "difficulty to get out," which the respondent associates with the single road that connects Wellington to the rest of the Northern Island of New Zealand as mentioned in section 2.4. Should this road become blocked due to landslides, for example, people are unable to get out of the city and look for shelter elsewhere. This is a huge logistical problem and therefore one of the first priorities if that road if this road is blocked, to reopen it again as soon as possible. Other respondents agreed with this assessment as well. However, there are plans that a new road to access and exit the city is in progress.

The situation differs for various parts of the city of in Wellington. According to one of the respondents, some neighborhoods are more vulnerable to natural hazards than others. The varying degrees of vulnerability in different neighborhood makes it complicated for (local) governments to assess the

damage a hazard could cause and ensure citizens' safety (see section 3.1.3). Additionally, and as can be expected, the various kinds of hazards require different responses; the risk of tsunamis, earthquakes, landslides and flooding are all prevalent but require different preparation. This makes the situation increasingly unpredictable and challenging as it is difficult to know which disaster will strike when.

Given the wide array of possible hazards, companies that provide basic utilities, such as infrastructure, telecommunication, electricity, and water, are often challenged when facing questions regarding preparedness for hazards. Insurance companies are also involved, especially in the recovery phase. Several respondents in Wellington noted that insurance companies increase insurance premiums for houses in Wellington, given its status as a high-risk area. For citizens of Wellington, this can have major consequences. Increased premiums could mean that citizens are no longer able to afford their premiums and are therefore living in uninsured homes. The consequences of this could be disastrous should a natural hazard strike Wellington. The Government created an Earthquake Commission, a public initiative that insures people for damage of up to 150,000 NZ dollars. However, often, the money provided by the public initiative is not nearly enough to cover the damage a natural hazard leaves in its wake, especially if houses were to collapse (Edmunds, 2019)

5.1.2 Challenges in disaster management

"Without panic there is no urgency" (Fonseka, 2019)

Several respondents clarified that awareness raising on the hazards in Wellington remains a challenge. There are people who are very much prepared and people have nothing stored just in case. However, however there are certain things that people cannot either prepare or plan for (consensus among all respondents). This makes it challenging for people to estimate how much they need to be prepared. This creates a situation in which the feeling of fatalism (see section 3.1.6) is likely to develop when their options are limited or nonexistent and they just need to wait when an earthquake is striking the city. After that, people can check how much damage has been done and where the main repairs are needed. With such an attitude or situation at hand, the results could be catastrophic depending on the severity of the hazard. Especially, as in Christchurch, when people were not expecting such hazards. According to respondent 9 (among other respondents such as 3, 6, and 11) the recovery phase of these events can take generations and the traumatized periods of times creates challenging livelihoods for people to continue their lives. This is amplified in situations where people are unprepared.

Furthermore, the economic implications of being adequately prepared for a natural hazard are daunting for most citizens. According to Governmental institutions, people need to have food and water for at least seven days in their homes. To concretize this: in the event of a disaster, each person is required to have 20 liters of water a day. This includes water for drinking, hygienic and cooking purposes. In the case of a family of four, this means storing over 100 liters of water. But as respondent 3 explains, some citizens of Wellington do not have a disposable income that would allow for them to purchase and store such large quantities of bottled water and be able to refresh this if needed every month. Because the risk of natural hazard remains intangible, citizens often see this as an expensive "luxury" because they are preparing for a hazard that is not physically there yet. Naturally, priorities and choices on what to do with money differs per person/household. The differences income and how much money there can be spend on necessities are contributing to these choices. Whether a household has already difficulties with make ends meet, this will influence how many "extra" people can buy such as a Grab&Go bag. Images of this bag and other communication images can be found in Appendix 4. Differences in incomes and social capital influence the way Wellingtonians make these

choices. The most vulnerable communities might have the least financial resources to prepare themselves adequately and therefore might be the most helpless when a hazard strike. In circumstances where some people could be better prepared than others, based on income and social capital, inequality within a society can intensify following a natural disaster. People who are not adequately prepared could perhaps be receiving less help due to financial restraints that prevented them from being adequately prepared. This inequality requires more awareness from the communities in Wellington when it comes to preparing for a hazard. Positive steps are being taken to close the gap in the inequalities. WREMO is currently installing 100-liter water tanks in communities in Wellington. This way, in case of a hazard during which water supplies are contaminated or restricted, communities can use these communal tanks for their water needs as a first aid. Nonetheless, this will be not nearly enough to facilitate everyone's water needs. It is just a short-term solution for the first hours/days depending on how big a community is. While this does not entirely address the issue of inequality in disaster preparedness, steps like these contribute to a possible solution, while making people increasingly aware of the need to store water. With measures like these, the Government is assisting communities in surviving following a hazard in Wellington.

The respondents have different jobs and titles and focus on different aspects within this topic. For example, the researchers among the respondents are more critical on the policy side of things, whereas the policy makers focus at the bigger picture. The researcher noticed this differences during a conference at the beginning of December that she visited which was about the challenges in disaster management. This conference was in the light of improving the relation between researchers and policy makers. The gap between research and policy is too big to find each other soon enough. Researchers and their research needs more years to complete whereas policy is sometimes ad hoc and needs quick fixes. These two goals are not corresponding and result in different working rhythms. Especially when policy can change every couple of years (political cycle) and research is not that changeable. Overall, the respondents had similar ideas and answers during the interviews. Some of them agreed on the three priorities (communication, water and infrastructure) and all of the them agreed that Wellington is a very vulnerable city due to the location.

Nonetheless, the respondents expressed different opinions on which challenges are bigger than others. As one of the respondents explained, neighborhoods around Wellington city center who are localized near the coastline, have bigger challenges regarding tsunami risk for example. Where other respondents explain that the city center has bigger challenges with larger buildings to collapse and the lack of social community feeling. Also, there are differences in the concept of social capital and how that is contributing to the response. As one of the respondents is explaining: *"I do think it's really important, but it's only one component. And, and I used to think it was everything. I know some other people, in some places, think it's everything, but it's really not."* (head of resilience strategy and research, respondent 11)

One of the questions during the interviews was about their wish within 10 years. One respondent is aiming for the following in the next ten years: *"The biggest thing for me is to make sure we understand and further develop a sense of community in Central City and buildings and apartment buildings."* (community services manager, respondent 10). This implies that for this respondent, the social capital is one of the most important things to focus on. Considering the challenges, the respondents had different ideas on which challenges needs to be focussed and tackled. Another difference among the respondents is the focus of their work. As for people from WREMO, they are much more focussed on how to tackle the vulnerability and prepare people for possible natural hazards. They are coordinating trainings, communication centers and so on. While policy makers were much more occupied on the bigger picture for everyone in Wellington or even in whole New Zealand.

5.1.3 Wellington emergency plan

"It is not a matter of 'if', but 'when' a significant event occurs in the region, we must be ready" – Ray Wallace, chair of the Wellington Region Civil Defence Emergency Management Group. (Fonseka, 2019)

The Wellington Region Civil Defence Emergency Management group's 2019- 2024 plan was launched to explain the region's management approach for emergencies. *"The broad purpose of this plan is to enable the effective and efficient management of significant hazards and risks for which a coordinated emergency management approach will be required. It provides a strategic direction and a clear vision and framework to achieve what is required*" (WREMO, 2019).

Wellington must deal with different hazards on weekly basis such as earthquakes with a magnitude of 3-5. Flooding and landslides are also part of the consequences after a heavy rainfall for example. Therefore, Wellingtonians are used to dealing with natural hazards. These hazards are interrupting their lives in a way where they need to take a different route, but they can still (mostly) continue their lives. However, a big natural hazard that will erupt the whole city and surroundings, has not occurred as in Christchurch.

When these natural hazards with a great amount of strength will strike the city, according to one of the respondents at WREMO (regional manager, respondent 3), there is a network of different services when it comes to natural hazard preparedness. This is explained as follows: As soon as a natural hazard occurs in Wellington, local Emergency Operation Centres (EOCs) are opened by the personnel from WREMO, as well as the regional Emergency Coordination Centre (ECC). The role of the EOC is to map out where the aid is needed in different regions in Wellington and which teams needs to be send. The communication will go through this centre as well with the communities. The ECC is coordinating the response's effort of the EOCs. These two centres manage and coordinate the whole situation when it comes to lifeline utilities, emergency services and community support. The coordination of these networks and the resources they need to operate according to standard operation procedures and for that matter, they establish an appropriate response for each emergency. While these measures are set up to respond to natural hazards, they have yet to be utilized. Since the system's establishment, there has not been a need to operationalize EOC's and the EEC on such a scale where the city is in danger.

"Due to the Kaikoura earthquake in 2016, there was damage in Wellington of approximately 2 billion NZ dollars. Next to the material damage, people were literally shaken up. People in Wellington became more aware of the need to be better prepared and committed to being better prepared for possible natural hazards. The event made our work easier...so I guess that sometimes people need to be shaken (i.e. have a close call) to come to that realisation." (regional manager, respondent 3)

As one of the respondents discussed, the 2016 earthquake in Kaikoura affected Wellington leaving almost 2 billion NZ dollars' worth of damage in its wake. The people of Wellington were once again reminded of their living conditions: Wellington is at risk of natural hazards. This resulted in more awareness of these events and therefore more attention and commitment to prepare themselves for these events. As more than one respondent confirmed, sometimes an event like that needs to happen for people to be reminded of the possible damage and consequences. According to a researcher from Massey University (senior lecturer, respondent 9), following a natural hazard, there is a two-year window of opportunity to raise the awareness on the risks of natural hazards. After the two-year

window, people tend to revert to their other priorities and organisations experience increased difficulty in reaching them and reminding them of the risks.

5.4 The 4R's: Readiness, response, recovery and reduction

As explained at the beginning of the results, the 4R's are used here as structure to organiser the following information. The 4R's stand for readiness, risk reduction, response and recovery.

- Readiness = activities carried out to prepare the community or emergency management agencies for response.
- Risk Reduction = activities carried out to reduce the likelihood of a hazard or the consequence of a hazard when it occurs.
- Response = actions taken immediately before, during or directly after an emergency to save lives and protect property, and help communities recover.
- Recovery = the time taken after an emergency to bring about the immediate, medium term and long-term regeneration of a community. Recovery may take months or years.

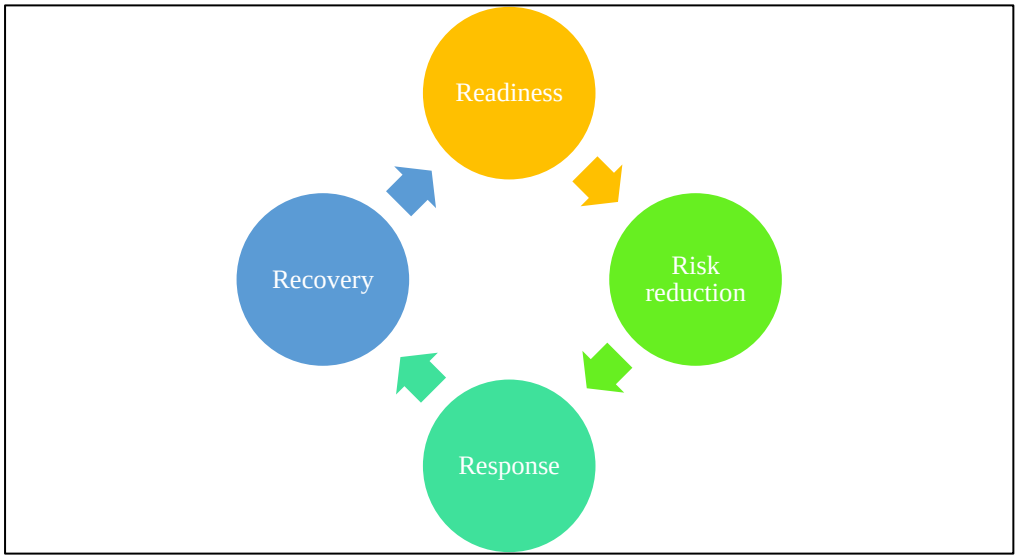
By means of these four terms the Wellington city aligns their disaster policies with the SENDAI framework by the United Nations Disaster Risk Reduction (UNDRR). This Sendai framework is the first major agreement of the post-2015 development agenda. The framework consists of seven targets and four priorities for action. The Sendai framework aims to guide the multi-hazard management of disaster risk in development at all levels as well as within and across all sectors. The overall goal of this framework is the following: "Prevent new and reduce existing disaster risk through the implementation of integrated and inclusive economic, structural, legal, social, health, cultural, educational, environmental, technological, political and institutional measures that prevent and reduce hazard exposure and vulnerability to disaster, increase preparedness for response and recovery, and thus strengthen resilience." (United Nations International Strategy for Disaster Reduction, 2015).

This SENDAI framework has been signed by New Zealand too and is therefore also the agreement that New Zealand is aiming to follow. One of the targets is the following: "*Substantially reduce disaster damage to critical infrastructure and disruption of basic services, among them health and educational facilities, including through developing their resilience by 2030."* (United Nations International Strategy for Disaster Reduction, 2015). This target is especially interesting for this research, because it is about the actual disruption that natural hazards can cause and that needs to be reduced as much as possible. With that aim, a respondent from WREMO also explained that this framework is the core of the strategies that are made. The actual strategies for this implementation are present and correct, but the implementation is difficult when natural hazards are unpredictable. For that matter, there is need to think about that in more detail when that is considered.

There have not been any disasters in Wellington like in Christchurch yet in the last 100 years, so the local government is trying to draw lessons from the Christchurch earthquake in 2011, the Canterbury earthquake in 2016 and tries to manage to be as best prepared as possible. This has been confirmed by several respondents who all expressed their experience with previous earthquakes and compare those with the possible damage for Wellington if the epicentre of the earthquake would be Wellington. However, this is partly estimating and guessing what will works the best. As one of the respondents noted (recovery team leader, respondent 13), *"Complacency is the biggest challenge when getting people to prepare for disasters. For many people a big disaster is too hard for them to comprehend and they always think it will never happen (to them)."*

The 4R's were mentioned by almost every respondent and can be understood for New Zealand as the guiding principles of risk management and estimation of certain risks and situations. Also, the 4Rs are mentioned in the National Disaster Resilience Strategy (see section 2.1) that has been published in April 2019. This concept has been a useful way for the researcher to organise the results. Throughout the fieldwork, the researcher concluded that these 4R's are all connected and are influencing each other, one way or another. To visualise this more, the researcher has created an image to clarify this better. See figure 3 below where the readiness has influence on the risk reduction and the others. The researcher did not check this figure with the respondents. However, all the Rs influence each other: how ready a person is, has an influence on the response and how soon the recovery is, has influence on the readiness for example.

Figure 3. The 4R's connected



5.4.1 Readiness

"Can we be completely prepared for an event like that? Well, ultimately, probably not." (project manager, respondent 8)

As explained above, readiness is mainly about getting people ready as much as possible for a hazard such as an earthquake that will strike the city in a way that shatters the Business as Usual practice in Wellington.

In general, there are many logistics in the region of the city that need to be improved to be less vulnerable and therefore better prepared to possible hazards, such as the water sewage systems, the building quality and the infrastructure. As an example, one of the respondents mentioned that many water sewage systems are not up to date and this means that if an earthquake would strike Wellington, there is a high chance that people will need to share the toilet with their whole neighborhood using portable toilets. That makes the recovery quite inconvenient if someone must wait with 20 others in the morning to go to the toilet as one of the respondents explained. This is just a small example of what the possible consequences are when the basic services are not disaster proof.

The construction quality of buildings/housing is quite unknown, and the uncertainty of the quality makes it challenging to indicate what the actual damage will be if an earthquake will strike Wellington. One of the reasons why the quality of the housing is unknown is because people do not want to know. As respondent 5 (senior policy advisor): "*People are also resistant to hazard information where they*

perceive that it might impact on property values." With the given information, people rather not know than know if it is affecting their property values. Therefore, the information does not come out and does not have a transparent system. Next to that question, what kind of earthquake, are the consequences difficult to estimate when people do not know the actual state of their own housing/offices. This is a big challenge for planning the possible scenario's when an earthquake strikes Wellington. Furthermore, there are still many construction sites that are building upon challenging areas where one of the respondents is also complaining about the unsafety of these buildings and logistics.

As previously mentioned, some areas in Wellington are more at risk than others. One of the high-risk areas regarding a tsunami is Petone. Petone is a neighborhood that is situated right at the seaside, but at the end of a funnel with relatively a lot of wind and at the coast. Therefore, the tsunami risk would be very high there when an earthquake was to strike Wellington. This neighborhood is too close to the sea and not enough options to flee from a possible tsunami. This together with a chance that the tsunami may arrive within minutes and give people limited time to flee to higher land makes it a risky neighborhood to live in.

5.4.2 Risk Reduction

Risk reduction is about identifying and analyzing long-term risks to human life and property from hazards; taking steps to eliminate these risks if practicable, and, if not, reducing the magnitude of their impact and the likelihood of their occurring.

Risk reduction is not just about reducing the risk, but also about reducing the impact when it happens and how people could assist, in order to have the least impact on people's lives. One of the main strategies and topics that the WREMO is focusing on are the communities. It is as one of the managers explained, that the strength and resilience (see section 3.1) of the community plays a huge role in how fast people can get back to business as usual and how they support each other. The very first response will come from the community members with each other and later, the governmental help troops will arrive.

> *"Is any amount of community resilience going to be good enough to stand up to that kind of exposure?"* (Head of resilience strategy & research, respondent 11)

When the resilience of the community is better, the reduction of the risk can be decreased. Especially about mitigating the impact when the hazard loomed. According to one of the respondents from Wellington City Council, people in the CBD (central business district) who are living in apartment flats are less resilient than other neighborhoods outside the city Centre. She explains that because more expats live there and people are moving sooner to another home, social capital (see section 3.2) is less than in neighborhoods where people have been living for 20 years for example. In addition, she explained that in a flat, people are more reliant on each other due to practical reasons as well. When a hazard is hitting Wellington and the electricity or water pipes are broken down, in a flat, that is much more connected than in just one house or neighborhood. The person living one floor up in a flat has the same problem and therefore, the dependence on each other is higher. Even though this is higher, the community resilience within such a micro community is not better than other neighborhoods. She even explains that the so-called poor neighborhoods are better off due to the community resilience where people are helping each other out much easier and sooner.

In addition, WREMO builds upon community resilience quite a lot in order to strengthen this within the direct communities. The rule of thumb there is, after a natural hazard, first look after your family, then your neighbors and then your community. That levelling within the community, provides a basis

for the people to have after the occurrence. Each community will have access to the communication emergency center, that is facilitated by WREMO. Through that system, each community can provide information about the situation in their surroundings. Through that empowerment of the communities themselves, WREMO is aiming for a better self -reliance and therefore a quicker recovery. As WREMO explained during the interviews, sometimes it might be challenging for the troops to even access certain areas. It is important that the communities can take care of themselves for a while, in order to provide the security and safety they need. Especially for the elderly or less abled people who are more dependent on someone's help. According to someone from WREMO, there is many data about the strengths of the community and how important it is that people help each other in such situations. For that matter, WREMO is also organizing BBQ's where they combine the food and drinks with trainings for many people. As he says; *"It is better to train as many people as you can a little bit, than just a small group of people a lot."* (Community Resilience & Recovery manager, respondent 6)

Community resilience, from the conceptual framework in section 3.1.1., is according to one of the respondents is very important, but just one element of the whole package. She explains that the building resilience plays also a big role in the recovery and risk reduction of people and the communities. Whereas the buildings can be checked quite easily with a checklist, there are many buildings which are very old and therefore not known how they will collapse or not during a natural hazard such as an earthquake with a high magnitude. The impact of the possible collapse of these buildings is difficult to estimate, when there is no clear overview of the quality. Therefore, the risk reduction for this part of the plan is a big challenge, because the needed information is lacking or doubtful until further notice.

Through close connections and communication with countries such as Chile and Japan, the exchange of information helps with referring to different kind of communities but also measures that can be taken as risk reduction. The learning curve is therefore bigger when those countries keep a close eye on each other and help when needed. The international focus and close cooperation together have promoted a better understanding and takeaways for more development on the risk reduction side.

5.4.3 Response

"There's probably about 60- 70% [of] people in the living and working in Wellington who have taken some steps to prepare for a major event such as a big earthquake. This isn't ideal given the city's risk and it will make our job harder when it comes time to help them during recovery." (recovery team leader, respondent 13)

According to one of the respondents from the Wellington City Council; In theory, the Government have their plans in place for response after the occurrence of a hazard. Next to the practical and logistical sides of things, the main priority is to get people into safety and investigate the damage and situation as soon as possible. This means that they are responsible about three main areas when a hazard occurred in Wellington. Those three main areas to be fixed as soon as possible are the infrastructure, the telecommunication and the water (sewage) system (resilience officer, respondent 4). These three main areas are the ones that are prioritized first and will below given more explanation.

Infrastructure is an important element, because in Wellington there is the unique situation where there is just one road to get out of the city. When that road is blocked due to flooding, coastal erosion or breaks within the road, people are not able to flee the city and look for safer ground or family members. Furthermore, other roads within the city can be blocked as well and this needs to be fixed in order to move people and get them into safety.

Telecommunication is another priority where the governmental organizations are very much dependent on the telecommunication companies. These companies need to have their plans in place where they have an operational strategy when an earthquake hits and perhaps the power is off for 3-7 days. People need to communicate with each other and let each other know that they are safe for example or even for help troops, the telecommunication is an important tool to investigate the help that is needed.

The water (sewage) system is the third priority which is of a high importance. This system needs to be running as soon as possible, because many people do not have enough water stored to keep themselves back to business as usual for a longer period. Furthermore, water is essential for not only drinking, but also for showering and using the toilet facilities. For that matter, the sewage system is fragile and needs to be repaired as soon as possible. The coordination role is therefore with the Government, but depending on the severity of the hazard, the national government will take over when the capacity is not enough within the local authorities, according to Paul Barker from the national Government of Internal Affairs.

Nonetheless, the governmental perspective is mostly based on the three main logistics that need to be fixed: telecommunication, water systems and infrastructure (resilience officer, respondent 4). These are the three main priorities for the response phase to get people out of the city (infrastructure), providing basic human needs (water systems) and communicating with other communities or help organizations (telecommunication). With these actions, the Government is aiming for a better self-efficacy from their side but does also expect from the people themselves to be prepared. Even though the perceived vulnerability might lack among people where it is difficult to determine when the hazard looms, the Government takes action to make people aware constantly and prioritize the right tools for an increase of the self-efficacy level while coping if the hazard actually threatens the city.

On December 9th, 2019, at 2.10PM the White Island volcano erupted in New Zealand. During that time, no one knew how much damage was done, and many thought it was just another eruption. However, after a while, authorities realized the severity of the event, because there were tour operators on the island when it erupted. This resulted in tourists deceased on the island and there was big international media attention for the event. The national government took over and tried everything to reduce the damage that was done. Nonetheless, there were quite some critical notes because of the poor communication and the take-over from the national government while the local government was overruled. In addition, there are still critiques about the long-term effects and how it is not considered. Since this happened right before Christmas, many shops around the region needed to be closed due to insufficient touristic visits. This had a huge consequential effect on the region and still has.

Source: Moir, 2019

The capacity of Wellington is discussed throughout the interviews as well. There are many opinions about Wellington and its capacity. The big earthquake will appear at some point, but as one of the respondents says: *"Can we be completely prepared for an event like that? Well, ultimately probably not."* (project manager, respondent 8). He mentioned that there is certain preparation people can do but that there not the ideal way of preparing for such a possible devastating event like a massive earthquake with a magnitude above 8.

Capacity is interrelated to the people and organizations involved. The capacity is dependent on how much the private and public sectors are joining for making Wellington as capable as possible. For that matter, players such as the (local and regional) government, the insurance companies, private

organizations/companies but also the people themselves are all-important to be considered. Interdependence is very high, because the organizations from infrastructure need to have proper telecommunication in order to stay connected to the other organizations and helpdesks. The telecommunication companies therefore need to fix the connections, if needed. However, these companies need to get to these connections and if the roads are broken, there is no way to get to the site. Through this vicious circle of interdependence, it makes the parties much more connected as one of the respondents emphasized.

5.4.4 Recovery

The recovery of Wellington after a hazard has different sides and different elements that people need to take care of. One of the respondents has explained recovery in a way where they are focusing on getting the people to stay in the city, instead of fleeing to other regions or cities. Below he explains with the help of an analogy how this recovery works.

"The recovery phase is where we want to begin stabilizing things before long term healing begins. I think a severe injury, like getting hit by a car, is a good analogue. You get hit, the ambulance comes to get you and perform emergency response to keep you alive. That's the response phase. And then, once in the hospital, you are completely beaten up and they are just trying to keep you alive. That is the early recovery right. Stabilized and but trying to keep you alive. At this stage, they are not trying to heal you, but to stabilize you, so you are going to live. I like that analogy, because I think there are short term investments you need to make in the recovery, early recovery that might not be beneficial to the long term recovery but they are stabilizing that environment. So, for us, we are starting to think about the actions that can stabilize our environment, so people don't leave, and are able to remain. Coming back to the analogy, once you are in the hospital and you are stable, then the different set of doctors come in to look at long term rehabilitation and health. And the healing path is; you are going to be in this full body cast and sit here for three months while your bones heal. After the bones heal, you will be out of the cast, but you'll have to learn to walk again. I think that that is really good analogy for how a city recovers as well." (Community Resilience & Recovery manager, respondent 6)

This respondent 6 is more concerned about the city that will be empty after such a disaster and where it does not have any manpower to be built up again. For that matter, he and his colleagues are trying the best they can do in order to make people stay in their homes and not flee to other cities after the disaster. Whereas other respondents were talking about the logistics and the concerns of the buildings, he is more concerned about people staying in Wellington afterwards. Taking into consideration that Wellington is the capital city of New Zealand, the reputation is also at stake when people leave the city for a while. As mentioned by respondents; you want to avoid the ghost town vibe where not many people are preferring this city above other cities and many businesses are moving to other places.

"In reduction, we work on basis that generally, if you look at international trends, for every 1 dollar you invest in reduction, you are saving 6 dollars in response." (regional manager, respondent 3) This regional manager is explaining in terms about the close link between recovery and how people/businesses/organizations are organized. When people have stored their water, put their food in place for at least seven days, have a reliable insurance policy on their buildings; this makes recovery easier than when those elements are missing out when the natural hazard is striking the city. Thus, the recovery and the level of readiness are closely linked.

Furthermore, the recovery of Wellington is also dependent on the insurance companies and which way people are insured. Even though there are systems in place and processes that can help people

to get their money back, it is mostly a slow process where people are waiting for a long time to get their insurance money back in the right places. As another respondent explained with a case about a woman that was after the first six months very energetic and optimistic about the recovery. However, three years later, this same woman was beaten down and tired of the process. She was still living a shed in her back garden and was not able to get her insurance covered yet (senior lecturer, respondent 9). This illustrates the long process of the recovery, which is not just a money issue, but it is mentally challenging too.

Overall, the recovery has many dimensions and different stages for a city to get back up their feet again and people moving on with their lives. Even in Christchurch with the earthquake of 2011, people are still struggling with issues related to that earthquake. The big aim for getting back to Business As Usual is a long process and needs patience from every party involved. As a suggestion for further research, it might be very interesting to research how this recovery phase evolves with the cooperation of different organizations and therefore interests. After all, according to Seppala (2012), a more positive and social response with an event such as a crisis leads to greater, prosocial and increase of solidarity within societies.

6. Discussion

The discussion section will further elaborate on the results in the form of the research questions asked of this research. This means that the structure is based on each research question and the main question will be answered. The conceptual framework and theory are linked to the data analysed in section 5. By applying elements of the theory and the concepts with the data, the research questions are answered.

6.1 How does the Government communicate readiness to the people for natural hazards in Wellington to reduce the perceived vulnerability?

"There is no way we can help everybody" (Team leader recovery, respondent 13)

For this thesis report, Protection Motivation Theory (see section 3.2.1) was selected as the conceptual framework consisting of threat appraisal and coping appraisal. Threat appraisal is combined with the severity and perceived vulnerability. When severity is high for a natural hazard in this case, people might be more willing to better prepare themselves. When people are feeling more vulnerable in a severe situation, intrinsic motivation could increase. This could create willingness from the people to listen to the instructions of the Government and follow up on their guidelines in relation to preparedness. Even though this is highly speculative and there is not enough evidence to prove this point for every hazard related situation, it is what respondent 3 mentioned in the interview: "*Sometimes a small earthquake is needed to wake people up and raise the importance of readiness for such hazards".* Nonetheless, this is all related to the particular situation and a big "if" for the people and Government. In terms of Protection Motivation Theory: when the people do not have this certain perceived vulnerability level and do not acknowledge the severity of a possible tsunami, intrinsic motivation will decrease. Thus, when the Government tries to decrease this vulnerability by better communicating how to prepare properly for a natural hazard such as a tsunami, how this is received by the people could depend on their perceived vulnerability and their own view of how severe such natural hazards are for their livelihood and how this will impact their lives.

Furthermore, the perceived vulnerability in the Protection Motivation Theory that people may experience, might be decreased by such actions from WREMO like the trainings and workshops. For that matter, the threat appraisal could change together with the severity level. However, the severity level is difficult to estimate in Wellington when no major natural hazards have loomed over the city

yet, just minor natural hazards that shake up the city. The Government is trying their best from their perspective training people to be ready as much as possible, but they are constantly battling against the daily priorities and more likely events to happen. It is a challenge everyday again, until a huge earthquake will strike Wellington and people come to realize what the danger was all along.

As mentioned before in section 5.4.1, the readiness of people in Wellington depends mostly on themselves, but the governmental institutions can give them a hand to remind the people about the importance of being ready. The coordinating role of the Government is therefore crucial to improve the situation of people in Wellington after such a disaster and just before. Several respondents implied that it is desirable to get back to business as usual sooner rather than later for people's sake but also for businesses and continuity for the central government. As one of the respondents said: *"You cannot run a country from a broken city" (*Team leader recovery, respondent 13). However, this would be an interesting topic to debate again in the light of COVID-19.

To illustrate the situation in Wellington, based on numbers, a report from the Wellington Lifeline Utilities came out on the 3rd of December 2019. According to the Wellington Lifeline Utilities Group (George, 2019), a 7.5 magnitude earthquake on the Wellington fault line would cost New Zealand more than 16 billion of NZ dollars in loss of economic activity if the Government does not do anything about it. Unless the region is improving their region's infrastructure, then there might be something to save and people will save money in the end. According to the Wellington Lifelines Group, these costs are only calculated for the economic activity alone. They do not encounter the social/recovery costs or the damage to buildings when it comes that far. The social and recovery costs are even harder to estimate, when there is uncertainty what kind of damage there will be done and how people are reacting and if they have a social safety net or not. Those things only are known and work out when it happens. As one of the respondents indicated; there is unclear information about the state of buildings in the city centre. Many buildings are in the unknown how strong they are and how much they can hold when an earthquake strike. Thus, to estimate how much damage there will be done when a hazard looms Wellington is challenging when the state of buildings is not known.

WREMO offers all kind of workshops and trainings for businesses to write these plans and therefore they are trying to ensure the quality of these plans (WREMO, 2020). With such workshops and trainings, WREMO is aiming for a better level of readiness and with such workshops and trainings, people are not in the dark anymore about this topic. They gain knowledge and practice with such days, people can create a stronger feeling of being capable of preparing and battling this hazard when it arrives. With this plan, businesses can identify how their organization can keep their essential functions up and running during a time of disruption, such when an earthquake strikes the city. This is an important part of readiness, because this will influence how the response will be and how long the recovery will take for businesses to get their organization sorted. When their organization is 'sorted' sooner rather than later, the people can work sooner again and get back to business as usual. This is only a small example of how all kind of levels of preparedness can benefit for the best recovery where possible with quick and efficient solutions. With such actions, WREMO is not only aiming for households but businesses are included, too, to ensure a holistic approach.

For the households, WREMO advises Wellingtonians to have the proper equipment in their houses, so when a disaster will strike and people cannot get out their houses easily enough, they can survive. The advised amount of drinking water is mentioned in section 6.2. This means that a huge amount of water will need to be stored, if it is stored at all, for the household to keep themselves going for 3-7 days. Furthermore, this also means that people need to have their food stored so when the grocery shops are not open, or the roads are too much damaged to even get there. As came out of the results, the readiness is based on the cohesion within households and community, therefore WREMO is also

assuming that the communities together are taking responsibility for each other during at the disaster phase. In Appendix 4, images are displayed WREMO is using to help people be ready when a hazard looms Wellington. With such arrangements suggested by governmental institutions such as WREMO, they are trying to increase people's capacity to cope with the hazards when they emerge. It is about self-efficacy, a key element in Protection Motivation Theory that could be increased when people are better prepared and therefore cope better with the consequences.

Next to focusing on readiness for the disaster, for WREMO it is just as crucial to prepare people and raise awareness of the hazard risks. When they are better informed and prepared for what might come, they can prepare better and are more willing to stay after the natural hazard. It is one of most important focus points when the disaster has happened, because that is when the actual damage will be assessed. According to the respondents from WREMO and what they have analyzed and seen by other earthquake events, people will leave the city and look for other places to live. When businesses are not ready to be open again, people are not able to generate a steady income and get back to their daily lives quickly enough. When people leave an empty city behind, Wellington will risk their status as a capital city and lose inhabitants in general. That given consequence is something that they are focusing on and try to avoid. For that reason, WREMO's response and communication will be focused upon improving the environment as soon the disaster has hit the city and see where people can resume their lives as soon as possible. This is conducted by improving the basic services such as water systems, infrastructure and telecommunication, but also informing people where to go for mental health issues, insurance companies to cover the damage to their houses, for example.

When a hazard looms Wellington, it is difficult to estimate what the damage will be, because many buildings are for example not up to date but not anyone knows exactly how badly they are built in relation to earthquake resistance. This is similar for citizens, because there are tools where the Government is trying to measure how people are prepared and therefore the level of (perceived) vulnerability when a hazard is looming. Nonetheless, this is difficult because it can differ every week if people have water stored for example or have a proper insurance for their housing. This means that the level of exposure can differ per household and depends on the timing of the hazard.

Especially the city Centre of Wellington has many expats who come and go quickly. For that matter, measuring how people are prepared is challenging, especially when there are expats from other countries who are not used to the risks of the hazard and possible consequences that come with it. This has the researcher experienced herself too when she was there for three months. These expats could feel much more vulnerable and exposed to such hazards than people born in New Zealand. As respondent 13 mentioned; "*there is no way we can help everybody".* The perceived vulnerability in the Protection Motivation theory comes back in this, too. Respondent 13 also explained during the interview that it is impossible to reach everyone and therefore reduce the vulnerability position that people are facing and perceiving.

Another stakeholder of disaster management are the insurance companies which are also mentioned in section 5. These companies are responsible for arranging people's insurance and when they are insured and have damaged houses, it is crucial to get their insurance back in order to have the basis to live on. However, this is different per household or per person, but this can take ages. This means that it can take years for people to recover their insurance and even must live in their own shed back in the garden, because their house does not have the livable standards. The researcher did not go into depth into this topic more, because that was out of the scope of this research. However, it would be interesting to go deeper into this topic and pinpoint the process within these insurance companies.

On the other hand, there are also places within Wellington where the insurance companies refuse to provide the service of insurance or the prices are going through the roof. This is due to the high risk of damage in the short or long run and therefore the insurers not being able to redeem the damage to the people in time. What has been mentioned in the results as well, people who are waiting for more than three years to arrange their insurance and their money, does not make it necessarily better for the people and their feeling of vulnerability. Nonetheless, this is not directly the responsibility of the Government, but these insurance companies are privatized (Edmunds, 2019).

This has not been within the scope of this research, however the researcher finds it important to mention, because it is important to not leave such a big minority group behind. According to World Population Review (2020), there are about 55,500 Maori living in Wellington. Also, there are 8.4% Asians living in Wellington and more than 26% of Wellingtonians were born outside New Zealand. With that information, the "community" in Wellington is difficult to determine with so many different ethnic groups. Even though there are neighborhoods that are classified as communities, the different ethnic groups might not consider themselves altogether a community. The researcher suggests, considering these data, that it will be instructive to study to what extent policy be linked to these ethnic groups when they are classified within their neighborhoods in terms of exposure risk rather than in terms of ethnical groups? This would be an interesting thought to build upon in another research and detect the possible nuances.

6.2 How does the Government strategize response to hazards in Wellington to increase people's self-efficacy?

Self-efficacy, as an element in the Protection Motivation Theory, and how people cope with such hazards has many links with the level of preparedness. Therefore, when the Government can increase the level of self-efficacy of people in Wellington, there is a higher chance that people can cope better with the possible consequences when a natural hazards looms and vanishes their house e.g. The costs of response are also mentioned by respondent 3 where he reveals that every dollar in the prepare phase will save 6 dollars in the response phase. Assuming these numbers are true, the Government benefits from it (on the long term) to invest in people's level of self-efficacy.

The governmental response after the occurrence of a hazard have their plans in place. Next to the practical and logistical sides of things, the main priority is to get people into safety and investigate the damage and situation as soon as possible. They are assessing their own capacity during such a situation and check which things needs to be sorted first. This means that the Government has their priorities about three main areas when a hazard has occurred in Wellington. Those three main areas to be fixed as soon as possible are the infrastructure, the telecommunication and the water (sewage) system. These three main areas are the ones that are prioritized first.

Infrastructure is an important element, because in Wellington there is the unique situation where there is just one road to get out of the city. When that road is blocked due to flooding, coastal erosion or breaks within the road, people are not able to flee the city and look for safer ground or family members. Furthermore, other roads within the city can be blocked as well and these will need to be fixed in order to move people and get them into safety.

Telecommunication is another important priority where the governmental organizations are very much dependent on the telecommunication companies. These companies need to have their plans in place where they have an operational strategy when an earthquake hits and perhaps the power is off for a while. People need to communicate with each other and let each other know that they are safe for example or even for help troops, the telecommunication is an important tool to investigate the help that is needed.

The water (sewage) system is the other priority which has a high importance. This system needs to be running as soon as possible, because many people do not have enough water stored to keep themselves back to business as usual for a longer period. Furthermore, water is essential for not only drinking, but also for showering and using the toilet facilities. For that matter, the sewage system is fragile and needs to be repaired as soon as possible. The coordination role is therefore with the Government, but depending on the severity of the hazard, the national government will take over when the capacity is not enough within the local authorities.

Next to the logistics, there is a system in place where WREMO will contact the communities where possible through the Emergency Community Hub Centre. Through this central point of communication, there can be a quick estimation of the situation and investigate what is needed exactly. This can make it easier to communicate quickly and investigate what kind of equipment and help is required (section 5.4.3.) While contacting the communities as a whole, they are simultaneously making use of the social capital in that community. By providing trainings for the whole community and a set-up where people within the community are dependent on each other, they stimulate this feeling of togetherness and grow the social capital, as mentioned in the conceptual framework(section 3.1.2).

The self-efficacy in the Protection Motivation theory has different gradations in Wellington and therefore different measures from the Government. However, there is an overall attitude of fatalism (part of the disaster subculture) occurring where the people are not able to really estimate the danger they would be in if a hazard is looming over Wellington. A certain attitude where people admit that they will just see how it goes and act on the situation then. This is where *social capital* comes into place together with community resilience from the conceptual framework in section 3.1.1. According to many respondents is the community bond crucial in order to go back to business as soon as possible. When people can help each other and build together on the restoration of their lives, it will go quicker and in a more sustainable manner. People in apartments in the central business district have mostly less the community feeling than other neighborhoods. Thus, those people are predicted to need more assistance than other communities who have close connections together and can help each other out where needed.

"Our city is anticipating a spurt in economic and population growth. As we grow, we have many opportunities to accrue resilience co-benefits. We can always be more resilient, and we need to be. Our City is the capital and is the riskiest city in the second most risky nation on earth according to insurers. So we need to have resilience in our DNA." (Resilience officer, respondent 4)

In addition, the response of the Government is depending also on the preparedness of the people in Wellington and how resilient they are. There are different kind of people who need different assistance methods and therefore, the mapping of who needs what is an important key in the response phase. There are differences in the perceived vulnerability (as in the Protection Motivation theory) due to family household, location of livelihood and so on, it is challenging to find a response that fits for everyone. This also applies to the level of exposure of people. People who are living near the coastline have a different exposure than people living up to the mountains. The same goes for the capacity, which differs per household. People with a higher income might have bigger capacity than people with a lower or no income.

Described above is one of the big challenges from the governmental perspective, because there is no "one size fits all"- approach in that perspective. Anyhow, the Government will look for the approach that suits most people. Also, the city would want to get back to Business As Usual as soon as possible, so this means to get the people back to their normal lives and work as soon as possible. Businesses

are supposed to have their business continuity plans in place, so they are required to have plans which are describing how they continue their business if the building has been collapsed due to an earthquake for example. The businesses are supposed to think about this and consider about their employees to support the workload and keep the businesses going from home possibly (team leader recovery, respondent 13) WREMO is assisting these businesses to help them design these plans, so they can get the assistance they need. With having your plans in place when such hazards looming over the city and the businesses are interrupted, the resilience to return to their daily business will be quicker and more efficient. When you can follow a plan, you will be able to continue and be more resilient.

Nonetheless, the response phase might also require different measures that are better for the short term but not necessarily for the long term. Since everyone will do everything to keep as many people as possible alive and decrease the damage, the longer-term period will need to learn how much actual damage is done which is maybe not immediately visible. However, one of the main concerns after the initial response is for the Government to keep the people in Wellington and make it possible to return to business as usual as soon as possible. It would be even more damaging for Wellington as city when people would flee to other regions. Which could result in an empty Wellington where the businesses have no employees to employ and cannot keep themselves going.

Wellington has many plans and strategies in place, and they understand the importance to prepare and improve on these plans. With small earthquakes, Wellington is able to check on a small scale how people cope with the consequences what their level of self-efficacy is. Nonetheless, these consequences will not have the same scale of damage when a big earthquake will hit the city. Therefore, there are many question marks about the level of preparedness for the household and how this will stand when a bigger natural hazard is looming and therefore impacts the city greatly. Perhaps only time will learn how this will unravel and where the actual damage and challenges will arise.

6.3 How are the readiness and response phases interlinked in managing hazards in Wellington, New Zealand from a governmental perspective?

In relation to this matter, the researcher would argue that the threat appraisal in the Protection Motivation theory might be better linked to the readiness phase and the coping appraisal with the response phase. Whereas the two appraisals are closely linked and that is similar with the readiness and response. With the level of perceived vulnerability and severity in the threat appraisal, it is dependent on how people will cope with the natural hazard when it threatens Wellington. How vulnerable they (the people) feel determines how well they will cope and respond to such a natural hazard. Perhaps even more importantly, it can also determine how they cope on the long term and if these people are coming back to this vicious circle where their own role of coping is related back on how vulnerable they perceive themselves which can result in a different behaviour intention than before. However, this is a long-term view and impossible to predict precisely.

As explained in section 5.4, the 4R's impact on each other and especially what has been explained in section 5.4.1, where the readiness is difficult to plan and motivate people for it. Still, when the people are motivated enough and have their crucial tools to be prepared, the response and therefore recovery will differ. On the other hand, the quality of the water sewage systems and the roads for example, which are the responsibility of the Government are dependent on the governmental proactive attitude. When these roads are stronger or the pipes of the water sewage systems are renovated, the damage when an earthquake will strike will most likely decrease than when these maintenance jobs are not completed in time.

While focussing on the governmental side of this approach, the political cycle leads to challenges on the long-term planning. The political cycle in New Zealand is three years, so as one of the respondents explained; there are six months to get to know your station, then getting some action for 1.5 years and in the last year, there is already much attention spent on campaigning and the elections. For that matter, there is limited time as a politician to make your footprint in the politics, especially when you want to work on a plan that is long term and possibly will not benefit necessarily you if the hazard is looming five years after your time as a politician. This is relevant as background information to realise, especially because the policy is based and depending on the politicians elected in the process.

In addition, it might be challenging in a liberal disaster culture to convince the politicians to invest in buildings, road and other logistics for a possible hazard. There is no concrete evidence that the hazard will happen in their term, so the way to "show off" with the actions they did during the term, is not visible. As one of the respondents said: "*It is not a shiny topic to talk about, as a politician. Politicians want shiny topics to show off and show the people what they can do*." This quote has not been checked with a politician. (This might be an interesting suggestion to have another research on and highlight the political side of it.) For that matter, the insecurity of these investments and uncertainty whether they will pay off when a hazard will affect Wellington, the priorities are elsewhere.

7. Conclusion

Emergencies can happen anytime, anywhere. It's up to you to take steps to make sure you are prepared. (National Emergency Management Agency, 2020)

With the results that included the four phases (readiness, risk reduction, response and recovery) and the discussion that focussed more heavily on the readiness and the response, the conclusion from this research is a grey area. This means that throughout the interviews and the literature, there are some straightforward examples and activities that the Government is conducting through the readiness and response process. Referring to the interviews, the line between the response and the other phases such as recovery is not decided by the Government nor the people themselves.

The fickleness of hazards makes it very unpredictable and interesting at the same time, because what has been repeated throughout this research, the problem of making people ready for something that no one when it will come makes this challenging for every party involved, including the Government but also the people themselves and insurance companies. On the response side of things, there are the three main areas that Government is focussing on (infrastructure, water management and telecommunication) but there are many more areas that need to be covered. The true doubt and therefore question are whether the strategies written down on paper, will eventually work in practice in the real world when Wellington is loomed by a massive hazard event such as an earthquake.

Thus, while the national disaster resilience strategy has been designed, the levels of preparedness are generally present. Furthermore, the education of the public regarding hazards is challenging when referring to what has been said before by other authors, many people have the attitude that it will not happen to them. For that reason, it is challenging to get people along and prepared in a way that does not interfere too much in their daily lives. This is related to the priorities of politicians when the topic of hazard management seems to be challenging to be prioritized by the politics. Nonetheless, the angle from the politicians might be a very interesting angle to further researcher on.

The communication between the Government and the citizens should be focused on these hazards and raise awareness, but not create panic or anxiety for daily activities because a natural hazard might present itself when you are grocery shopping for the week and such (Paton, Smith & Johnston, 2005; Paton, Kelly, Bürgelt & Doherty, 2006). This is related to the balance between/of creating this awareness while not creating panic where the Government can strengthen the community resilience, capacity and social capital. On the other hand, the Government can weaken the vulnerability level, feeling of fatalism and the exposure in figure 1. This is a task that is complicated enough already as it is and comes with many challenges for everyone involved.

By facilitating trainings and workshops by WREMO within communities, people might get to know each other better. Through putting, partly, the responsibility at the communities themselves, people might take responsibility in their own hands and get to know their neighbours better. It will be in their own benefit in time when a hazard looms and neighbours know each other to bring first aid where needed. By facilitating these events such as trainings but also putting a social component to it, such as a BBQ, people can bond and build bridges together and so the social capital could continue to grow. By building a bigger social capital, it can create an improved feeling of community and therefore increase of community resilience level where people know each other better. When that feeling of community is improved, the vulnerability and even the perceived vulnerability might decrease, too. The communication of the Government is therefore crucial for providing this process and weaken the feeling of fatalism that results and not doing anything anymore. This delicate balance of creating awareness by providing trainings together in communities and target communities as whole could therefore contribute to this perceived feeling of better resilience.

The relevancy of flattening the curve during the COVID-19 outbreak is also applicable to the situation of hazards and readiness/response level in Wellington. The level of readiness can flatten the curve of chaos and panic after such a hazard which can also contribute to a smoother response phase and learning moments from that process. According to Birkland (2009), disasters[2] and change are perfect learning opportunities. They are providing an opportunity for close analysis of the situation before the disaster, during the acute phase and in the recovery phase. With this analysation of the phases, policy can be written and be improved where needed. However, in the case of Wellington, the policy is written based on other hazards happened in other cities or from very early in the 1800/1900's. There has not been any big hazard-stricken Wellington in the last 50 years, so there is no fundamental basis to enlighten the people about the needed measurements to be taken.

Taking all of this into consideration, the actual responsibility of the (Wellington) Government throughout the readiness and response phase is a vague and grey area. As the quote at the beginning of this section implies, they place the responsibility of readiness partly in people's own hands. The liberal approach places a certain responsibility on the people to help themselves and be responsible for your own readiness. The response phase and how this translates into the recovery phase is vague and challenging to predict beforehand. The actual response where the Government does not have the power anymore to shut down roads and move vehicles can go on for seven days but if needed, can take longer. But looking further than that, how much responsibility can the Government take when the approach of one size fits all does not apply here? Additionally, the laconic attitude of the Wellingtonians does not help the Government to provide the best plans and cooperation. The stopping rule is challenging to determine and could only be tested in practice when an actual hazard will threaten Wellington with disastrous consequences for many people in New Zealand, possibly for generations.

[2] Birkland discusses disasters but, in this case, this is similar to the hazards the researcher is applying in this research.

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Appendix 1. Original planning for the fieldwork

For this research, the researcher has made rough planning for the weeks that she is in New Zealand. It is important to realize that the sampling for the interviews is still in progress. Many contacts will be made when the researcher is in New Zealand and through contacts and networks from other people, she hopes to talk to other people. See below the scheme for the weeks in New Zealand.

Week number & date	**What**	**Who**	**Remarks**
Week 1 (18/11- 24/11)	- Introduction at Joint Centre for disaster research - Designing and prepping for first interviews	- Jikke (researcher) - Researchers at the Centre	- Jetlagged - Introduction and working space get to know each other - Invest in social relations - Mapping the interviewees and have first contacts for the interviews
Week 2 (25/11 – 1/12)	- Conducting interviews	- Researcher - Interviewees - Researchers at the Joint Centre for Disaster Research - Policy-officers	
Week 3 (2/12- 8/12)	- Conducting interviews through people mentioned above and through snowballing sample even more		
Week 4 (9/12- 15/12)	- Conducting interviews through people mentioned above and through snowballing sample even more		
Week 5 (16/12 – 22/12)	- Conducting interviews through people mentioned above and through snowballing sample even more		
Week 6 & 7 (23/12 – 5/01)	- Christmas holidays – see what can be done and who can be reached - Travels researcher - Start to write/type out the first findings after the first weeks		

Week 8 (5/1 – 11/1)	- Conducting interviews in Palmerston North		
Week 9 (12/1- 18/1)	- Conducting interviews with local governmental organizations - Type out the findings, map out the coding from the interviews - Connect the outcomes of the different stakeholders/interviewees		
Week 10 (19/1 – 25/1)	- Conducting interviews/travel the country		Researcher has accommodation until 18th of January.
Week 11 (26/1 – 31/1)	- Conducting interviews/travel the country		
Week 12 1/2 – 8/2	- Back in the Netherlands - Start writing out all the data, coding and draw conclusions from it		

Appendix 2. The consent form & information sheet

MASSEY UNIVERSITY
TE KUNENGA KI PŪREHUROA
UNIVERSITY OF NEW ZEALAND

JOINT CENTRE FOR DISASTER RESEARCH

The government's role in rebuilding daily lives in Wellington, New Zealand

PARTICIPANT CONSENT FORM - INDIVIDUAL

I have read, or have had read to me in my first language, and I understand the Information Sheet attached as Appendix I. I have had the details of the study explained to me, any questions I had have been answered to my satisfaction, and I understand that I may ask further questions at any time. I have been given sufficient time to consider whether to participate in this study. I understand participation is voluntary and that I may withdraw from the study at any time.

1. I agree/do not agree to the interview being sound recorded.
2. I wish/do not wish to have my recordings returned to me.
3. I wish/do not wish to have data placed in an official archive.
4. I agree to participate in this study under the conditions set out in the Information Sheet.

Declaration by Participant:

I, _____ _____, hereby consent to take part in this study.

Signature: _____ Date: _____

Te Kunenga ki Pūrehuroa

Joint Centre for Disaster Research
Massey University, PO Box 756, Wellington 6140, New Zealand T +64 4 8015799 F +64 4 801 4822 E jcdr.enquiry@massey.ac.nz
Website: http://Disasters.massey.ac.nz

Appendix 1. Information sheet about the research

Title of the research
The government's role in post-natural hazards at rebuilding daily lives in Wellington, New Zealand.

An invitation
My name is Jikke Voerman. I am a Dutch student from Wageningen University in the Netherlands, I am currently studying for my Masters of International Development Studies with a specialization in conflict and disasters. A partnership between Massey University and Wageningen University made it possible for me to conduct this research at the Joint Centre for Disaster Research (JCDR) in Wellington. For this research, it would be greatly appreciated if you could participate in this research as one of my respondents.

What is the purpose of this research?
The purpose of this research is to unravel the role of government in a post-natural hazards situation, with perceived vulnerability and self-efficacy as the main components of this research. From a Dutch perspective, I am interested in gaining more understanding of emergency management in New Zealand, where it plays a big role. In the Netherlands, emergency management is not as present among citizens as it is here. Furthermore, due my background in policy work, I am interested in how this is orchestrated on a governmental level. The findings of this research will be used for possible future advice to the Dutch government on how to improve their emergency management response, should this ever be required. Furthermore, the findings will be shared with the JCDR and Wageningen University.

How were you chosen for this research?
For this research, I am required to talk to several stakeholders such as researchers, policy officers and experts. For that matter, it is important to talk to you because you are one of these important stakeholders that could provide an insight into this research.

If you participate, what are your rights?
You are under no obligation to accept this invitation. If you decide to participate, you have the right to withdraw from the study at any point; ask any questions about the study at any time during participation; decline to answer any particular question (or reflect on any particular issue); provide information on the understanding that your name will not be used unless you give permission to the researcher. When the project is concluded, you will receive an Executive Summary of the final research, and you will be given access to the full report upon request.

If you participate, how will your data be managed and stored?
Raw data will be stored securely in password protected electronic files.

Who else is involved in this research?
As mentioned before, JCDR from Massey University and Wageningen University are involved in this research. I am the only one conducting this research and writing down the results and constructing the data into certain conclusions and advice.

If you participate, what do you do if you have concerns, or would like to receive further information about this research?
If you have any concerns please contact me through email (j.voerman@massey.ac.nz) or phone: +64223618576 for Jikke Voerman.

Yours sincerely,

Jikke Voerman

Approved:

Prof David Johnston
Director, Joint Centre for Disaster Research

Appendix 3. List of the respondents for this research

Respondent	Job title	Organisation	Date interview
1	Assistent Professor	JCDR/Massey University	26-11-2019 (not recorded)
2	Emergency Management & Business Continuity Advisor	Wellington City Council	27-11-2019
3	Regional Manager	WREMO	28-11-2019
4	Chief Resilience officer	Wellington City Council	12-4-2019
5	Senior Policy Advisor (Hazards and Coasts)	Wellington Greater Region Council	12-9-2019
6	Community Resilience & Recovery manager	WREMO	12-9-2019
7	Chair in the Economics of Disasters & Professor of Economics	Victoria University	Through email
8	Project manager	Wellington Lifeline Group	12-10-2019
9	Senior lecturer	JCDR/Massey University	16-12-2019
10	Community Services Manager | Emergency Welfare Manager	Wellington City Council	17-12-2019
11	Head of Resilience Strategy and Research	Earthquake Commission	7-1-2020
12	Partnerships Director	Department of Internal Affairs	8-1-2020
13	Team Leader Recovery	NEMA	13-1-2019

Appendix 4. Communication images