

# **Best Practice in Disaster Preparedness in Auckland and San Francisco: A Cross-city Comparative Analysis**

*By Jake McPhee*

---

Department of Civil and Environmental Engineering

The University of Auckland

Auckland 2018

# **Best Practice in Disaster Preparedness in Auckland and San Francisco: A Cross-city Comparative Analysis**

**Author:**

Jake McPhee

**Supervisor:**

Alice Chang-Richards

Auckland 2018

## ABSTRACT

Increasing the levels of disaster preparedness among residents in developed metropolitan settings is becoming an issue of the utmost importance. This is emphasised by the fourth priority of the Sendai Framework which encourages governments, both local and central, to engage in efforts to “*Enhance disaster preparedness for effective response, and to build back better in recovery, rehabilitation and reconstruction*” (UNISDR, 2015, p. 21). This study aims to investigate the frameworks which govern approaches to increasing the levels of disaster preparedness in both Auckland and San Francisco. In doing so, this study aims to shed light on what constitutes best practice in how institutions concerned with levels of disaster preparedness structure themselves to achieve a common goal. This research also aims to understand which, of the myriad approaches to developing levels of disaster preparedness, is the most appropriate. To achieve this, a comprehensive interview survey was undertaken with a sample of thirteen professionals working in the field of disaster preparedness and, more broadly, in emergency management in both cities. This was undertaken to achieve a deeper understanding of what works well in regard to disaster preparedness, what does not, and what these cities could learn from each other in terms of increasing the levels of disaster preparedness among its residents. A key finding of this research is that the structure of the disaster preparedness framework in a metropolitan setting has direct effects on the implementation of the approach adopted by said framework. This study develops the idea of best practice in disaster preparedness in a densely populated metropolitan setting by concluding that the community-based or ‘bottom up’ approach, which leverages already existing community networks to develop levels of disaster preparedness is the most appropriate, broad-spectrum approach. The study goes on to conclude that a messaging strategy which empowers residents to prepare for a disaster and is also tailored to its audience is best practice, and finally, that all preparedness actions should have their foundations solidly grounded in theoretical evidence.

## ACKNOWLEDGEMENTS

First of all, I would like to extend my sincerest gratitude to everyone who took the time out of their busy schedules and agreed to be interviewed for this project. Each interview provided its own unique take on the topics at hand. On a more personal note, each conversation with you was captivating in its own way, and the amount of knowledge and experience that you were willing to share with me was deeply humbling and for this, I cannot thank you enough.

A big thank you goes to my partner, Claire, who bore with me throughout this process and to all of my friends outside the university setting with whom I have done a horrible job of staying in touch. I am still alive, and I'll be seeing a lot more of you soon.

Another big thank you goes to my supervisor, Alice Chang-Richards, for her wealth of intellectual support and insights throughout this process. Most of all, thank you for facilitating my travel to San Francisco to undertake this research in person. This was a highly illuminating experience and I feel truly privileged to have had the opportunity to experience first-hand the idiosyncrasies present in contexts other than those I am familiar with. This trip added to my post graduate experience in a unique manner and for this, I thank you.

Finally, a big 'thank you' goes to my immediate and extended family. It goes without saying that without your support and guidance over the past 27 years, none of this would have been remotely possible.

# TABLE OF CONTENTS

ABSTRACT.....	i
ACKNOWLEDGEMENTS.....	ii
LIST OF TABLES.....	v
LIST OF FIGURES.....	v
LIST OF ABBREVIATIONS .....	vi
1.0 INTRODUCTION.....	1
1.1 Research Context.....	1
1.2 Study Rationale.....	2
1.3 Research Purpose and Interview Questions.....	3
1.4 Methodology Overview .....	4
1.4.1 Analytical Method.....	4
1.4.2 Sampling Method.....	4
1.4.3 Thesis Structure .....	5
2.0 LITERATURE REVIEW .....	7
2.1 Defining Disaster Preparedness.....	8
2.2 The Theory behind the Concept .....	10
2.3 Pragmatic Approaches to Developing Disaster Preparedness.....	13
2.4 Quantifying Preparedness: .....	16
2.5 Barriers to Preparedness and Cross-Cultural Comparisons.....	17
3.0 METHODOLOGY .....	19
3.1 Literature Review.....	19
3.1.1 Identification of Initial Search Terms.....	20
3.1.2 Article Inclusion Criteria.....	21
3.2 Sampling.....	22
3.2.1 Case Study Selection .....	22
3.2.2 Participant Selection .....	24
3.3 Interview Study.....	26
3.3.1 San Francisco Interview Process.....	26
3.3.2 Auckland Interview Process .....	28
3.3 Data Analysis.....	29
4.0 RESULTS.....	31
4.1 San Francisco Thematic Results .....	31
4.2 Auckland Thematic Results .....	34
5.0 DISCUSSION.....	37

5.1 Limitations of the Study .....	37
5.2 Auckland Contextual Analysis .....	38
5.3 San Francisco Contextual Analysis .....	41
5.4 San Francisco Analysis.....	44
5.4.1 Disaster Preparedness Framework Structure .....	44
5.4.2 Approach to Disaster Preparedness Messaging .....	44
5.4.3 Approach to the Development of Disaster Preparedness .....	45
5.4.4 Notable Barriers to Disaster Preparedness.....	46
5.4.5 Theory in Disaster Preparedness .....	48
5.5 Auckland Analysis.....	49
5.5.1 Framework Structure .....	49
5.5.2 Approach to Disaster Preparedness Messaging .....	50
5.5.3 Approach to the Development of Disaster Preparedness .....	51
5.5.4 Notable Barriers to Disaster Preparedness.....	51
5.5.5 Theory in Disaster Preparedness .....	53
5.6 A Comparative Analysis.....	54
5.6.1 Implications of Differing Disaster Preparedness Structures .....	55
5.6.2 Pragmatic Approaches to Increase Levels of Disaster Preparedness .....	56
5.6.3 Shortcomings in Theoretical Justification .....	58
5.6.4 Best Practice in Disaster Preparedness in the Metropolitan Setting.....	59
6.0 CONCLUSION.....	62
REFERENCE LIST .....	63
APPENDIX A.....	71
Semi Structured Interview Guide:.....	71
APPENDIX B .....	72
Participant Information Sheet .....	72
APPENDIX C.....	73
Participant Consent Form .....	73

## LIST OF TABLES

TABLE 3.1: SAN FRANCISCO PARTICIPANTS .....	27
TABLE 3.2: AUCKLAND PARTICIPANTS .....	28
TABLE 4.1: RECURRENT THEMES IN SAN FRANCISCO PARTICIPANTS’ ANSWERS.....	31
TABLE 4.2: COMMUNITY ENGAGEMENT APPROACH SUBTHEME RESULTS SF .....	32
TABLE 4.3: PREPAREDNESS MESSAGING SUBTHEME RESULTS SF.....	32
TABLE 4.4: BARRIERS TO PREPAREDNESS SUBTHEME RESULTS SF .....	33
TABLE 4.5: PREPAREDNESS GOVERNANCE STRUCTURE SUBTHEME RESULTS SF .....	33
TABLE 4.6: RECURRENT THEMES IN AUCKLAND PARTICIPANTS’ ANSWERS .....	34
TABLE 4.7: COMMUNITY ENGAGEMENT APPROACH TO PREPAREDNESS SUBTHEME RESULTS AKL .....	34
TABLE 4.8: PREPAREDNESS MESSAGING SUBTHEME RESULTS AKL .....	35
TABLE 4.9: BARRIERS TO PREPAREDNESS SUBTHEME RESULTS AKL .....	35
TABLE 4.10: APPLICATION OF THEORY IN APPROACH TO DISASTER PREPAREDNESS AKL .....	36
TABLE 4.11: PREPAREDNESS GOVERNANCE STRUCTURE SUBTHEME RESULTS AKL .....	36

## LIST OF FIGURES

FIGURE 3.1: RESEARCH METHODOLOGY BREAKDOWN STRUCTURE.....	20
FIGURE 3.2: RESEARCH DESIGN BREAKDOWN .....	26
FIGURE 3.3: CONTENT ANALYSIS PROCESS.....	30
FIGURE 5.1: AUCKLAND REGIONAL BOUNDARY .....	39
FIGURE 5.2: CITY AND COUNTY OF SAN FRANCISCO BOUNDARY.....	43
FIGURE 5.3: GADSDEN FLAG.....	61

## LIST OF ABBREVIATIONS

ACDEM:	Auckland Civil Defence and Emergency Management
AKL:	Auckland
BAUASI:	Bay Area Urban Areas Security Initiative
CBO:	Community Based Organisation
CDEM:	Civil Defence and Emergency Management
CERA:	Canterbury Earthquake Recovery Authority
FEMA:	Federal Emergency Management Agency
FENZ:	Fire and Emergency New Zealand
MCDEM:	Ministry of Civil Defence and Emergency Management
NEN:	Neighbourhood Empowerment Network
NERT:	Neighbourhood Emergency Response Team
NGO:	Non-Government Organisation
NZ:	New Zealand
QCA:	Qualitative Comparative Analysis
SFDEM:	San Francisco Department of Emergency Management
SF:	San Francisco
SFFD:	San Francisco Fire Department
TAG:	Technical Advisory Group
UAHPEC:	University of Auckland Human Participants Ethics Committee
UNISDR:	United Nations International Strategy for Disaster Reduction
USA:	United States of America



# 1.0 INTRODUCTION

## 1.1 Research Context

Over the course of recorded human history, natural and man-made disasters have been the catalyst for significant loss of life, collective suffering and developmental setbacks. In 2017 the World Economic Forum cited extreme weather events, natural disasters and our inability to adapt to a changing climate as the second, third and fourth most significant risks that we face as a species (as cited in Elsevier Science, 2017). This fact has been long appreciated and in 2015, the international community met in Sendai, Japan to comprehensively update the Hyogo Framework for action. The outcome of this summit was the Sendai Framework for Disaster Risk Reduction which aims to provide a roadmap for nations to comprehensively develop their resilience to the negative effects of disasters (UNISDR, 2015).

The Sendai Framework outlines four priorities for action in disaster risk reduction. Priority number four encourages nations to *“Enhance disaster preparedness for effective response, and to build back better in recovery, rehabilitation and reconstruction”* (UNISDR, 2015, p. 21). However, it is not the aim of high level directives to outline specific pathways which take into account the intricacies of local context, and this raises the question, *“What is disaster preparedness, and how do local authorities effectively implement policies to achieve a state of disaster preparedness in their locality of concern?”* The concept of disaster preparedness is a new one, and its definition and subsequent interpretations are many and varied. However, in the broadest possible sense, disaster preparedness can be defined as *“The knowledge and capacities developed by governments, professional response and recovery communities, organisations, communities and individuals to effectively anticipate, respond to, and recover from the impacts of likely, imminent or current hazard events or conditions”* (UNISDR, 2009, p. 21).

This definition shows how broad this concept is. Unlike the response or recovery phase of the disaster management cycle, preparedness is a concept which is not situated at a specific point on the disaster timeline. The concept of disaster preparedness serves as a temporal link between the pre-incident and post-incident phases of a significant disaster event (Sutton & Tierney, 2006). This conceptual ambiguity poses a unique challenge for emergency managers concerned with developing preparedness in their own communities. Namely, what is best practice in preparedness planning and implementation? This is a question that remains unanswered and is what the following research is in part, aiming to address. The challenge however, is to identify best practice in a given social context. This question is that which this research will attempt to address by means of a comparative analysis of the disaster preparedness frameworks in both Auckland and San Francisco.

## 1.2 Study Rationale

Upon reviewing the literature pertaining to disaster preparedness, it was clear that significant gaps exist in some key areas. The literature is rich in excellent research which approaches specific challenges in regard to preparedness issues in certain areas, however, the majority of this research is very narrow in scope. Research efforts in this field are concerned with the successes and failures of specific initiatives and their outcomes. While this is highly useful, it is clear that further inquiry is required in the investigation into the design and implementation of the broader structures of these initiatives. Furthermore, a greater level of inquiry is required to understand which broader governmental structures are successful or unsuccessful in fostering the approach to the development of preparedness and what the characteristics of the effective structures are.

An often-cited benefit of the comparative analysis methodology is its ability to illuminate both positive aspects and shortcomings associated with an institutional structure. To quote Caiden (1989)

***“Critical questions in both theory and practice can only be answered through comparative analysis whose value increases with the growing internationalisation of public administration”.***

This is highly pertinent internationally in the area of disaster preparedness and emergency management as in most cases, disaster preparedness development is a responsibility taken on by the state. Whilst the profile of government structures varies significantly internationally, the location of disaster preparedness in the state infrastructure provides a starting point for an attempt at the standardisation of a set of possible best practice guidelines. Currently there have been only two international comparative analyses which include New Zealand in the peer-reviewed literature, both of which examine preparedness in relation to a separate context. Neither of them examines New Zealand’s most populous city, Auckland. The comparative analysis which is being undertaken here will address this gap in the following ways;

- It will provide the literature with a detailed comparative analysis of the disaster preparedness frameworks of two cities with highly similar risk profiles, namely Auckland and San Francisco. This has yet to be undertaken, and in this respect, will address a small gap in the disaster preparedness body of knowledge.
- This study will paint a detailed picture of not just the structures which govern the approach to preparedness in Auckland and San Francisco, but the perceptions of the individuals who are directly involved in steering these institutions in regard to disaster preparedness.
- Upon the completion of this report, novel conclusions will be drawn regarding the strengths and shortcomings of the disaster preparedness frameworks in each context and ideas will be

presented as to what constitutes best practice in disaster preparedness governance in a densely populated metropolitan setting.

### 1.3 Research Purpose and Interview Questions

The overarching aim of this research project is to **identify and understand the unique aspects of the disaster preparedness frameworks and how they are designed and implemented in San Francisco and Auckland in order to gain a clearer understanding of what constitutes best practice in disaster preparedness**. As outlined previously, disaster preparedness is a broad concept. This investigation into the preparedness frameworks of each city will be guided by the following research aims;

- 1) To identify the key institutions tasked with the responsibility of designing and implementing disaster preparedness measures in Auckland and San Francisco and how effective their institutional structure is at increasing levels of preparedness.
- 2) To identify and understand the obstacles which are faced by each city in increasing levels of preparedness.
- 3) To understand the theoretical foundations which have shaped each city's approach to the development of preparedness.
- 4) To understand how each city perceives the concept of disaster preparedness by understanding their adopted approach to increasing levels of preparedness.

The aforementioned research aims will be investigated by posing the following sub-questions to research participants;

- Q1) Which metrics are used to measure levels of disaster preparedness in Auckland/San Francisco?
- Q2) Which organisations are primarily involved in the development and implementation of disaster preparedness initiatives in Auckland/San Francisco? Which of these organisations takes lead agency in the approach to preparedness development, and under what mandate?
- Q3) From your perspective, what are the most notable barriers and/or enablers to residents undertaking disaster preparedness actions?
- Q4) In terms of the disaster preparedness initiatives which have previously been undertaken in your context, which were effective, which were not and what are the reasons for their success and/or failure?
- Q5) What are the theoretical foundations or assumptions which underpin the approaches to developing preparedness which have produced positive results.

## 1.4 Methodology Overview

### 1.4.1 Analytical Method

The qualitative comparative analysis (QCA) method has its origins in the classical methods of John Stuart Mill in the late 1800's. QCA's are the most efficient and effective means to conduct a comprehensive analysis of the inherent complexities that characterise two specific cases which are subject to investigation (Kan, Adegbite, Omari & Abdellatif, 2016). This research project aims to investigate the intricacies of the complex disaster preparedness frameworks of Auckland and San Francisco with the purpose of gaining a novel perspective as to what best a practice disaster preparedness approach might look like. It is for this reason that the QCA methodology is the most appropriate means to conduct analysis of the qualitative data collected in the two contexts.

Over the course of the analysis process, NVivo version 11 coding software was used to identify key themes raised by participants during the interview process. Emerging themes were included or excluded from the analysis based on the frequency of their occurrence and their relevance to the aims posed.

### 1.4.2 Sampling Method

Semi-structured research interviews were conducted with emergency management professionals in both Auckland and San Francisco. This allowed for the gathering of comprehensive information regarding disaster preparedness in each context. The rationale behind the selection of this particular method of data collection was due to the fact that the overarching research aim looks to gain an insight into best practice preparedness, and this is a broad topic which no set of five questions could hope to address comprehensively. Semi-structured interviews give the researcher the opportunity to ask a standardised set of questions to all participants whilst allowing the participants to digress to a reasonable degree into areas of discussion which may be specific to the participant's expertise (Dearnley, 2005). This data collection method allows the interviewer to pursue a field of inquiry that may not be relevant to every participant in the study. In the context of this study, the aim is to gain an insight into the structures which govern the delivery of preparedness in each context. This required interviews with participants from the public, private and non-government sectors. When interviewing a participant from the Federal Emergency Management Agency (FEMA), the answers were, of course, different than that of a private sector disaster management consultant. In short, the broad nature of the topic under investigation and the diversity of the participants in this study justify the adoption of semi-structured interviews as my sole data collection method.

In the New Zealand context, an often-used mantra goes as follows; '*Civil Defence is everybody's responsibility*'. For the purpose of this study, clearly a more systematic approach was required to

identify the relevant players in disaster preparedness. This involved consulting the grey literature published by the bodies concerned with emergency management in both contexts to identify the specific institutional settings in which the participants would be placed. This was an important facet of the sampling process as it was important to ensure that the sample of interviewees in each context were comparable, as far as was practicable.

The next step was to identify which specific institutions fit into these categories, in each city and contact each organisation with hopes of securing interviews. This was a challenging process and not every participant deemed important to the study was available. A mixture of purposive sampling and respondent driven, or 'snowball', sampling method was adopted to select participants in each context. Due to the relative ambiguity of the concept of preparedness and the difficulties faced in securing participants, the recommendations of already secured participants were important in ensuring that the participant set was representative of all facets of emergency preparedness. This is standard practice when undertaking research of this nature (Kendall et al., 2008). Finally, to ensure sample integrity, the roles of the participants across contexts were matched in the most uniform manner possible. For example, for every participant interviewed at the FEMA, a participant from the Ministry of Civil Defence and Emergency Management (MCDEM) was interviewed, as they are equivalent organisations in these contexts. This ensures that the data procured is able to be compared in a meaningful way (Kendall et al., 2008).

### 1.4.3 Thesis Structure

The thesis is structured in the following manner. Following the introduction, a detailed context to the research with a comprehensive review of the literature on disaster preparedness is provided. This will be divided into five sections and will act as a systematic explanation of the research sub-questions posed in the previous section.

Chapter 3 will encompass a detailed analysis and rationalisation of the research design and methodology adopted in this undertaking.

In Chapter 4, the findings of this research will be systematically presented. This chapter will lay the groundwork for the discussion section that will follow by identifying and coherently categorising the key recurrent themes identified as significant throughout the participant interviews in Auckland and San Francisco.

In Chapter 5, the findings of the research will be critically discussed and analysed, comparing and contrasting how the key themes were raised across contexts. This chapter will begin with an outline of the limitations encountered in the sampling, interviewing and analysis processes. This will be

followed by an examination of important aspects of preparedness as a concept in both San Francisco and Auckland. The context of each city formed from an examination of the grey literature published by key institutions will provide an idea as to how the disaster preparedness frameworks are structured in each city.

The purpose of this comparative discussion is to identify aspects of the disaster preparedness frameworks in each city that contribute to higher levels of preparedness and those that inherently fail in their aim. Upon the parsing out of themes which arose through the interviews across contexts, I will aim to draw conclusions as to which aspects of each governance framework are effective in their pursuit of improving levels of preparedness. The discussion and analysis of the findings will have two primary goals. The first is to identify successful characteristics of the preparedness frameworks analysed and comment as to how these characteristics constitute a best practice in disaster preparedness governance structure and policy development. The second goal of this discussion will be to take successful aspects and lessons learned from each context and use those to create informed recommendations as to how San Francisco and Auckland could learn from each other. Recommendations made will take into consideration the cultural particularities of each context and be mindful of strategies that would be inherently invariable in either Auckland or San Francisco.

Chapter 6 will conclude the thesis by offering a brief summary of the findings outlined over the course of this research. This section will also provide a succinct roadmap as to possible future avenues of research which could be undertaken given the questions that this thesis will inevitably leave unanswered.

## 2.0 LITERATURE REVIEW

As stated in the introduction, the concept of disaster preparedness is broad. Aspects of preparedness planning, implementation and development have justifiable placement across all four R's (Reduction, Readiness, Response and Recovery) which makes the idea of a standardised set of best practice guidelines difficult to envision (UNISDR, 2015). Whilst this poses a challenge, it also presents an opportunity in regard to avenues of research in this rapidly developing field. This summary of the literature on disaster preparedness serves the purpose of constructing the framework in which this research will be positioned. Approaching the literature review, the broadest array of literature on disaster preparedness as it pertained to the specific research aims and objectives of this study was consulted. To achieve this most systematically, three key search terms which encompassed the three key fields relevant to the research context were employed. The search terms are as follows;

- Disaster Preparedness
- Auckland Disaster Preparedness
- San Francisco Disaster Preparedness

These search terms were selected in order to construct a set of research sub-questions which would open up an area which has yet to be examined (Webster & Watson, 2002). This process was slightly more intricate than outlined above and is elaborated on in Chapter 3.

The concept of disaster preparedness was first analysed in general terms. The second key area was to examine literature focussed on disaster preparedness as it specifically pertains to both Auckland and San Francisco. This literature review will examine these three key areas in detail. Upon identifying the relevant literature in each area, the linkages and cross-overs which exist between the three key fields will be critically discussed.

The literature review will conclude with identification of the gaps in this area which lead to the selection and formation of the research sub-questions. This literature review will focus predominantly on peer-reviewed literature which features in reputable journals. However, peer-reviewed literature pertaining specifically to Auckland and San Francisco is relatively rare. In the Auckland/New Zealand context, a base of literature is beginning to develop thanks to prominent publishers in this field such as Douglas Paton, David Johnston and Alice-Chang Richards. However, in the San Francisco context, literature on preparedness is severely dated and centres on significant events that have affected the San Francisco Bay Area; the 1989 Loma Preita earthquake being a notable example of this. Where peer reviewed literature was insufficient to meaningfully illuminate the knowledge base in this area of

interest, grey literature published by relevant authorities was drawn upon to gain meaningful insight into the disaster preparedness frameworks present in each city.

## 2.1 Defining Disaster Preparedness

Before pursuing a coherent outline of best practice in disaster preparedness, a clear understanding of what disaster preparedness means as a concept is required. In 2009, the United Nations International Strategy for Disaster Reduction (UNISDR) published a document providing definitions of key terminology in disaster risk reduction. They posit that preparedness is the ***“The knowledge and capacities developed by governments, professional response and recovery organisations, communities and individuals to effectively anticipate, respond to and recover from, the impacts of likely, imminent or current hazard events or conditions”*** (UNISDR, 2015, p. 21). This definition is important for two reasons. The first being that it represents the view of the global governing body of disaster risk reduction and management and, as such, is a definition that is well recognised over a wide range of contexts. More importantly, it illustrates the immense complexity and range which the concept of disaster preparedness encompasses. Sutton and Tierney (2006), in their comprehensive overview of the literature in the field of preparedness, conclude that preparedness can be understood to be an action plan which consists of a slew of initiatives which allow all sectors of a population to efficiently and effectively respond and recover from the negative outcomes of a disaster event. Daly, Becker, Parks, Johnston and Paton (2009) adopt a similar approach to preparedness in that they define the need for its development within a society as a means of increasing the effectiveness and efficiency of a response effort after the occurrence of an event. Whilst both of these definitions emphasise the inherent complexities present in the concept of disaster preparedness, they approach the concept from a broad perspective. They make the case that the only means by which we can understand a community’s level of preparedness is by evaluating the success of an ensuing response. This is a sentiment echoed by Alexander (2015) in his analysis of the emergency management cycle as a whole. He makes the case that the key justification for the development of preparedness is to increase the efficacy of a response effort. Whilst this macro approach is useful, it is important to dissect the more granular aspects of the concept of disaster preparedness to examine the roles of the broad set of players involved in developing preparedness.

A more contemporary review of the literature undertaken by Levac, Toal-Sullivan and O’Sullivan (2012) focuses more specifically on household-level emergency preparedness. To define preparedness, they draw on the UNISDR (2009) definition outlined above; however they provide some further useful insights. They emphasise the fact that preparedness is a dynamic concept whose definition requires constant revision as it is applied across social contexts. This is to be expected from



a paper concerned primarily with household preparedness, however they effectively make the case that high levels of household preparedness within a given societal context is the most efficient means of mitigating the effects of a disaster event.

Najafi, Ardalan, Akbarisari, Noorbala and Elmi (2017) make a compelling case that the answers to why levels of preparedness are low internationally can be found in the theory of planned behaviour. They define disaster preparedness as *“the actions that ensure resources necessary to carry out an effective response are available before a disaster”*. At a household level, they posit that preparedness is a *“health protective behaviour”*. This approach to the concept of preparedness sets the scene for behavioural analysis of the reasons why people often fail to prepare for a disaster, even though they are fully aware of the risks their given environment poses.

Another definition of disaster preparedness delivered through the lens of public health posits that disaster preparedness development is the set of actions required to develop resilience within a population. The authors are concerned with resilience in regard to pandemic disease outbreaks and, whilst this is not a highly-cited risk for either Auckland or San Francisco, it is an ever-present one which should not be ignored (Paton, Parks, Daly & Smith, 2008). Gowan, Sloan and Kirk (2015) make an interesting contribution to this discussion. They fall short of specifically defining what they believe disaster preparedness to be, however, they perceive disaster preparedness as a public health issue. Furthermore, when the correct preparedness behaviours are adopted, the individual in question will have taken actions to improve their prospective health outcomes into the future.

Other definitions of preparedness are more pragmatic. Kapucu (2008) defines disaster preparedness as a state in which five key steps have been undertaken to account for the wellbeing of individuals, households and the community at large. Namely; the development of emergency plans, the presence of disaster preparedness kits in households, training of individuals in basic first response, a healthy volunteer community, and high rates of blood donation (American Red Cross, 2006).

One final, notable definition of disaster preparedness is articulated by Bolton, Dirks and Neuwelt (2014) in their analysis of perceptions of preparedness in the Auckland context. They view preparedness as actions which reduce the risks which hazards pose with the intention of developing a community’s capacity to cope with and recover from the effects of a hazardous event.

Definitions of preparedness are many and varied which is appropriate given the dependence of its nature on societal context (Sutton & Tierney, 2006). What is interesting however is that this range exists only in the approach to achieving preparedness. The common characteristic of the many definitions of disaster preparedness is that whatever actions are outlined, they are striving for the

same outcome, namely, a reduction in the negative effects of a disaster after its occurrence on the affected population and the assets which it possesses. The other key element in the majority of disaster preparedness definitions is the taking of actions to ensure that an effective, efficient response can take place in the affected area. What these definitions do not generally offer, being definitions rather than solutions, is a roadmap to actually achieving a state of disaster preparedness.

Reviewing these definitions has highlighted that the literature base has a deep conceptual understanding of what the desired outcomes of preparedness are; however, there is very little indication of how to achieve it in a standardised manner. This is not to say that specific contexts have not made progress on their own terms, but it is clear that more work needs to be done to identify what might constitute best practice in a considered approach to developing levels of disaster preparedness. To identify preparedness actions taken by authorities concerned with preparedness in each context, specific initiatives that have produced positive results in both Auckland and San Francisco in improving levels of preparedness against the effects of disasters will be sought. This gap is the justification for the following research question;

- In terms of the disaster preparedness initiatives which have previously been undertaken in your context, which were effective, which were not and what are the reasons for their success and/or failure?

## **2.2 The Theory behind the Concept**

Any meaningful action taken by an authority should have its rationalisation grounded in evidence. This section of the literature review will explore the theories and/or assumptions that guide approaches in the development of disaster preparedness among populations. The importance of the utilisation of theory in emergency management as a whole is emphasised in the 2009 article “Integrating Theory into Practical Emergency Management” (Integrating Theory into Practical Emergency Management, 2009). The unnamed author makes reference to a number of theories in the psychological and human behavioural sciences as areas which the field of emergency management needs to be exploring. The author criticises the emergency management field as a whole by outlining a perceived dismissal of theory founded in academia as abstract and irrelevant.

Zamboni (2017) takes a slightly different view of preparedness than other authors, however, she does so in order to emphasise the importance of preparedness measures and initiatives being guided by established theory. She claims that preparedness is a set of actions which must be undertaken to allow a society to achieve a state of resilience. In her review of the literature on the public health sector approach to emergency preparedness, she identifies a lack of consultation with the literature to inform the sector’s actions to improve preparedness. She sees this issue as a serious barrier to the

achievement of community resilience. To understand how disaster preparedness functions in both Auckland and San Francisco, it is imperative to understand in which theoretical base their actions are founded. The following will identify the key theories which exist in the literature to give guidance in disaster preparedness efforts.

Najafi et al (2017) apply the theory of planned behaviour to disaster preparedness. They identify that disaster preparedness at the individual level is a behavioural concept. They posit that the intention to perform a certain behaviour is determined by three motivational factors. The first being whether an individual perceives the behaviour as favourable or not. The second being the amount of social pressure present in that given context to partake or not in that behaviour, and the third is the degree of control the individual perceives they have over the adoption of that behaviour. Their study shows that by a significant margin, if someone perceives they have a high level of control over the actions required to prepare for a disaster, they are far more likely to act. Najafi et al.'s 2016 examination of the salient beliefs which surround engagement in disaster preparedness behaviours, reached a similar conclusion through the lens of the theory of planned behaviour. They found that the negative salient beliefs surrounding disaster preparedness behaviour were caused by a perceived lack of control over the effects of a disaster. Recent publications examining effective means for developing disaster preparedness are citing the effectiveness of theories which have their roots in psychology. Becker, Paton, Johnston & Ronan (2013) explore this avenue in their research, 'Salient Beliefs about Earthquake Hazards and Household Preparedness'. They explore what the salient beliefs are that surround the adoption of disaster preparedness behaviour. Furthermore, they analyse how emergency managers and policy makers in this field could mould preparedness initiatives around certain perceptions of disaster preparedness. They conclude that improving levels of disaster preparedness is essentially a matter of shaping behaviours, and to ignore the salient beliefs which surround disaster preparedness is to ignore a fundamental aspect of the human condition. Another interesting take on the behavioural aspect of disaster preparedness is provided by Paton, Kelly, Burglet and Doherty (2006) in the context of bushfire risk. They examine the decision-making process which leads to preparedness behaviour and emphasise the importance of recognising that both preparing and not preparing are discrete processes. That this study is focussed around bushfires gives the study particular relevance in the examination of disaster preparedness in San Francisco, as fires pose one of the single greatest risks to San Francisco and the wider Bay Area's functionality.

Paton, Johnston and Smith (2005) approach the issue of preparedness development through the lens of psychology. In this study they focus more specifically on earthquake preparedness which makes the risks that they are addressing highly appropriate to the analysis of Auckland and San Francisco. They make the case that conceptualising the development of earthquake preparedness among a population

as a socio-cognitive process will lead to a comprehensive understanding of the decision-making process that individuals take on the path toward taking preparedness actions. They conclude that anxiety around risks faced reduces the likelihood that a given individual will undertake preparedness actions. This work is a development on Paton (2003) who briefly outlines what it means to be prepared for a disaster. On a theoretical level, he proposes a socio-cognitive model of disaster preparedness and its development which focusses on the process by which individuals decide whether or not to undertake preparedness behaviours. Paton emphasises the need for planners to develop a more sophisticated understanding of this process before implementing costly initiatives.

Whilst the previous references make clear that the road to improving disaster preparedness may lie in the area of behavioural change, there is a strong body of literature addressing the next step of the process, namely, how do we do it? Public messaging is just one aspect of how this is done. Paton and Johnston (2001) acknowledge (at the time of writing) that messaging efforts had been unsuccessful in improving levels of preparedness. They offer two useful insights. The first being that successful messaging campaigns for disaster preparedness need to be delivered within a wider framework of community development, as disaster preparedness on its own is not a topic that is well received. Secondly, they allude to the importance of the recognition that psychological factors play a huge role in the messaging approach required to educate populations in disaster preparedness. Paton, Smith and Johnston (2000) address this issue once again in the context of the risks posed by volcanic hazards in Auckland. Their findings in this study refute the claim that preparedness behaviours are driven by perceived risk. They conclude that public messaging on disaster preparedness needs to focus on the benefits of preparedness behaviours as opposed to the dangers of not preparing. Put briefly, an empowering approach to disaster preparedness messaging is all important. Russell, Goltz and Bourque (1995) made the astute observation that the timing of disaster preparedness messaging is of the utmost importance. Their findings identify that preparedness messaging is significantly more effective in the months following a significant disaster event. Unfortunately, they do not specify exactly what this timeframe is, and this field of research has room for development. Dooley, Catalano, Mishara and Serxner (1992) identified the timing of messaging initiatives as of the utmost importance in their analysis of the effectiveness of disaster preparedness interventions in the wake of the 1989 Loma Prieta earthquake in San Francisco. This study is of particular relevance to this research as it pertains directly to an event in San Francisco and the subsequent reactions to it.

Protection motivation theory is cited by Mulilis and Lippa (1990) as a useful conceptual framework in which an effective approach to preparedness development could be situated. Their findings however, run contrary to the majority of the literature base. Their findings showed the use of negative threat appeals to prepare for a disaster did increase net earthquake preparedness in their sample, however,

the results were not overly convincing. They conclude that developing preparedness within a population is an exceedingly difficult endeavour and that for positive results to be achieved, messaging efforts need to be tailored to the specific contexts in which they are being implemented. Larsson and Enander (1997) come to essentially the same conclusion in their analysis of what extents people are willing to go to prepare for a disaster and what those concerned with developing levels of preparedness can do about it.

The relative youth of the disaster preparedness field is demonstrated in this review of the theory underpinning most approaches to disaster preparedness. The literature on this topic was relatively sparse and showed that only a small number of identifiable theories have been applied to disaster preparedness development efforts. The importance of evidence to guide the actions of any public initiative, along with the relative ambiguity found in the literature, has prompted inclusion of the following in the research sub-questions;

- *What are the theoretical foundations or assumptions which underpin the approaches to developing preparedness which have produced positive results.*

### **2.3 Pragmatic Approaches to Developing Disaster Preparedness**

Frandsen, Paton and Sakariassen (2011) contribute to the debate around disaster preparedness messaging. Their findings advocate for a messaging approach which empowers individuals and communities to take actions which will protect them against the risks that they face. They conclude that messaging intended to frighten people into action is essentially ineffective and constitutes a waste of effort and resources. The most significant idea put forward through the findings of this study is the effectiveness of community engagement and a bottom up approach to preparedness development. This approach pertains to the emergency management community consulting deeply with local communities to understand the following;

- What are the specific risks that that community faces.
- How the community perceives those risks.
- What approach should be employed to empower the community to engage in disaster preparedness behaviours.

Wise (2007) addresses this concept in his evaluation of a disaster preparedness exercise in Kentucky undertaken by a local university. Wise documents how a small community was brought together in a way it had never been before by mass involvement in this exercise. This in turn raised levels of disaster preparedness significantly. His conclusion was that the coming together of the community allowed for the development of preparedness in that context.

Simpson (2002) undertakes a similar analysis of a community-based disaster exercise/training program undertaken in the San Francisco Bay Area in which willing residents were given training in disaster scenario first response and then received the opportunity to display their skills in simulation scenarios. Simpson's case for this type of exercise is based on the fact that large-scale participation in these exercises brings communities together to prepare for an event whilst also forcing those in higher-level institutional roles to take notice in a way that emergency planners situated in local government cannot.

Finnis (2004) undertakes a comprehensive examination of preparedness development strategies in New Zealand in the early 2000's. She eloquently states that, if a preparedness initiative is to be successful, it must come from a collective understanding by the community in question that the risks faced are significant enough that action must be taken to prepare on a community-wide scale. She posits that if buy-in comes from individuals only, levels of preparedness will only improve at a granular pace. Finnis also states that the only way to achieve this community buy-in is to develop a sense of community which will act as a platform for successful preparedness initiatives.

Daly et al., (2009) examine preparedness as a means of achieving a state of resilience. They advocate that the most effective means of affecting community members' behaviour to engage in preparedness is for the emergency management community to undertake long-term community engagement strategies in which they gain the trust of the communities concerned.

An article whose findings are relevant to the San Francisco context by Eisenman, Glik, Gonzales, Maranon, Zhou, Tseng and Asch (2009) outlines the importance of utilising existing social networks within a community to enhance levels of preparedness. They undertake their research in the context of Latino communities which gives this work particular relevance to this research given the extensive Latino population in San Francisco. Auckland Council (2015a) acknowledges community engagement's role in developing social cohesiveness as a priority means of raising preparedness in their 2015 publication 'Get Ready Auckland: Know, Prepare, Connect', however, what this means practically is not outlined in this resource.

A theme, which aligns closely with the idea of community development that arises sporadically in the literature on preparedness, is that of the development of a culture of preparedness in which preparedness is a cultural norm in the societal context in question. Richards (2014) approaches the idea of preparedness as a way forward for Auckland to be a stronger, more resilient city in the hazard scape in which it is situated. Richards makes the case that greater resilience is achieved by a more connected community in which support structures are strong. In doing so, a sense of community ownership becomes prevalent, resulting in individuals taking a direct interest in the wellbeing of their

communities. From this foundation, emergency planners can then foster a culture of preparedness; however, in the absence of a strong community structure, this task borders on the impossible. Kapucu (2008) makes an argument in a similar vein, however the author places more emphasis on the community engagement on the part of the individual required in the development of a culture of preparedness.

The literature examined up to this point focusses on the preparedness of the individual and/or the community. However, the preparedness and subsequent resilience of the organisations and structures involved in the development of preparedness in said communities is also a critical factor. Chang-Richards, Vargo and Seville (2013) conclude that for organisational resilience to be achieved, a comprehensive understanding of resilience as it pertains to their specific operations is paramount. The other key finding is that the preparedness of a community and of organisations directly concerned with preparedness are not mutually exclusive. For organisational resilience to be achieved, a strong, connected community must exist for these organisations to serve and subsequently thrive within. Lentini (2014), in her interview with FEMA's national preparedness director, contributes to this discussion by making it clear that preparedness requires a whole-of-society approach to be successful. She posits that all levels of government, not for profits, NGO's and the community at large all have something to gain from existing in a prepared society and, as such, all stakeholders must engage proportionately to achieve a state of preparedness. The findings in both of these pieces are particularly relevant to this research as they directly pertain to both of the contexts being explored here. An interesting insight into how this plays out in the American context is given by Adams, Karlin, Eisenman, Blakely and Glik (2017) in their overview of the 'Prepareathon', an American national preparedness campaign developed and run by FEMA.

Given the apparent consensus that connected communities are prepared communities, it is little wonder that the application of social media as a means to develop levels of disaster preparedness is a developing feature of the contemporary literature. Chan (n.d) proposes a framework in which social media can best be utilised over the course of the disaster cycle. In the preparedness phase, Chan proposes that social media should be focussed on informing the public of possible preparedness actions. Whilst this could be successful, he does not comment on the power of social media to connect communities in the manner described above.

Kulemeka (2015) examines the efficacy of disaster preparedness education smartphone apps. He does so by analysing a disaster preparedness education app implemented in Auckland. He concludes that the app was successful in its mission, but failed to inform residents of the means by which lower income groups could overcome the resource barriers face on the road to preparedness.

In terms of a road map to preparedness from a pragmatic perspective, this brief review of the literature offers some insights. It is clear that for some time, academics have centred on the fact that approaches to preparedness are not one size fits all and that community development and engagement are fundamental to the success of any given preparedness initiative. What is missing in this field is a meaningful interrogation of the institutional structures which are directly responsible for the development of preparedness in any given context. This research aims to better understand what best practice in disaster preparedness looks like; and so the following question will be posed to the research participants;

- *Which organisations are primarily involved in the development and implementation of disaster preparedness initiatives in Auckland/San Francisco? Which of these organisations takes lead agency in the approach to preparedness development, and under what mandate?*

Within the framework of a semi-structured interview this question will be followed by asking whether or not the participant perceives the cited organisational structure to be effective and, if not, how they would alter it.

## **2.4 Quantifying Preparedness:**

The quantity of literature on disaster preparedness and its development over recent years in itself illustrates the importance of the topic at hand, however, it remains to be seen how administrators are to know how prepared their communities are, or whether or not their efforts are having any impact. In this analysis of preparedness best practice, with the intention of contributing to the development of a preparedness standard, it is imperative to examine the various means by which preparedness is quantified.

Daly, Becker, Parks, Johnston and Paton (2009) fall short of offering a metric to be utilised by authorities to measure preparedness, however, they do suggest that a prepared society will display three characteristics, namely; sufficient and appropriate resources to manage in the wake of a disaster, a private and public sector capable of managing these resources post event, and a series of mechanisms capable of ensuring the continued availability of said resources and their equitable distribution.

Rañeses, Chang-Richards, Richards and Bubb (2018) outline the importance of understanding exactly how prepared various sectors of a community are before expending time and resources on strategies to develop preparedness. They make the case that this is of the utmost importance in the Auckland context due to its diverse population and wide geographical spread. As the literature has outlined, efforts must be tailored to the intricacies inherent in certain sections of a population. The authors



develop this idea by stating the importance of refining our understanding of our diverse populations through measurement.

Zamboni (2017) in her literature review of metrics used to measure community resilience concluded that in some contexts, effective metrics have been developed. She also states that the inconsistency in the effectiveness and accuracy of the metrics which she analysed arises from the inherent disagreement across contexts of what it means to be prepared. In looking for a standard metric, Zamboni's review offers much insight. What the literature makes clear is that societal understanding of preparedness can be illuminated by the way that they quantify it. To gain a deeper insight into how Auckland and San Francisco perceive preparedness and to address the relatively small literature base on this topic, the participants will be asked the following question;

- *Which metrics are used to measure levels of disaster preparedness in Auckland/San Francisco?*

## **2.5 Barriers to Preparedness and Cross-Cultural Comparisons**

The comparative aspect of this research is being undertaken to analyse whether or not preparedness can be standardised meaningfully given the presence of contextual difference. This section of the literature review will analyse how the literature has addressed barriers to preparedness as well as giving a brief review of the literature which pertains directly to the contexts of Auckland and San Francisco. Literature in this field is scant due to the difficulty of generalising or categorising barriers to preparedness. Burke, Bethell and Britt (2012) identified a lack of financial resources and of current superfluous goods to use to develop their own emergency kit as the greatest barrier among seasonal farmworkers in eastern North Carolina, USA. Barriers to preparedness are a topic alluded to in the disaster preparedness literature; however, they are seldom the primary focus of investigation in the context of either Auckland or San Francisco.

A cross-cultural comparative analysis of preparedness between Fukui, Japan and the San Francisco Bay Area was undertaken by Tanaka (2005). The author concludes that San Francisco is more prepared in a material sense, in that most households possess the resources to be prepared. In comparison, in Fukui, levels of social connectedness were far greater, and therefore there was greater preparedness in that particular sense. An interesting observation made by Tanaka was his admission that cultural differences across contexts require distinct approaches to preparedness development. However, he maintains that efforts to develop social connections are required across cultures and that administrators must tailor their efforts to develop preparedness accordingly to achieve the same outcome.

Paton, Bajek, Okada and McIvor (2010) undertook a similar study examining the nature of earthquake preparedness in Japan and New Zealand. They identify three areas in which preparedness efforts need to be focussed; the individual level, the community level and the institutional level. The authors suggested that New Zealand needs to focus more heavily on the community aspect as the organisational structure in place has the capacity to develop preparedness, but social cohesion and connectedness was severely lacking. This comparative study will contribute to the literature by adding the comparison between Auckland and San Francisco. Analysed together, these three comparisons could shed light on what constitutes best practice in preparedness development in densely populated metropolitan settings.

These comparisons and the apparent gap in the literature regarding specific barriers to preparedness in the contexts which are being investigated here, reveal that a community driven/bottom up approach is the most effective means of increasing levels of disaster preparedness. Furthermore, all contexts will have their own unique challenges and characteristics which efforts to improve levels of preparedness must be tailored around. To illuminate how challenges existent in Auckland and San Francisco shape their approach to preparedness, the participants will be asked the following question;

- *From your perspective, what are the most notable barriers and/or enablers to residents undertaking preparedness actions in Auckland/San Francisco?*

## 3.0 METHODOLOGY

The philosophical rationale for the use of qualitative research methods has been the subject of researchers throughout academia's long history. Denzin and Lincoln (2005, p. 3) define qualitative research as *"a situated activity that locates the observer in the world"*. They go on to illustrate that the process itself can transform a seemingly complex subject into a comprehensible format from which researchers can draw intelligent conclusions that were not possible prior to the analysis. Qualitative research is required when a complex understanding of an issue is desired, which is unable to be achieved through an analysis of the literature alone. When this is the case, qualitative researchers attain this level of detail by immersing themselves in the situation and speaking candidly with those possessing the knowledge and perspectives which are required to gain a deeper understanding (Creswell, 2007). Given the unquantifiable nature of the perceptions and governance structures which constitute the preparedness frameworks in Auckland and San Francisco, the qualitative research methodology is the most applicable means to meet this research's objectives.

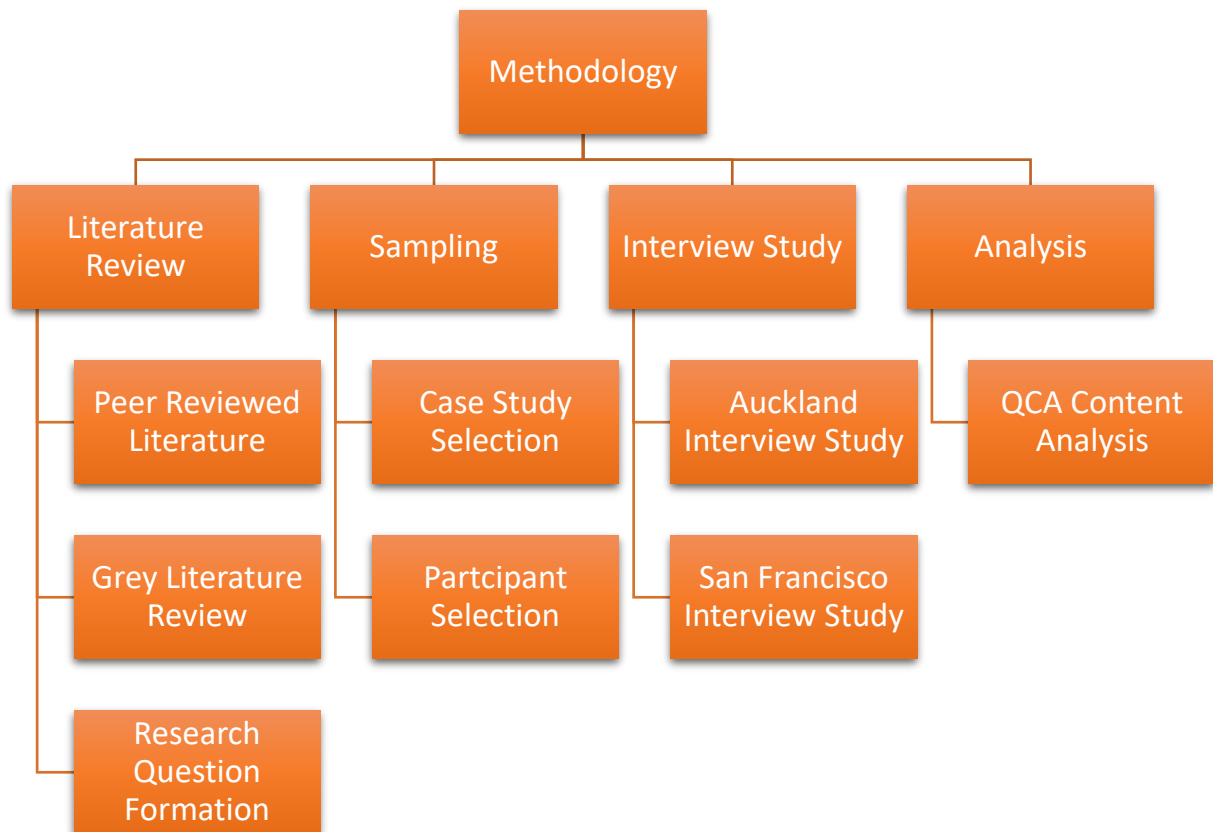
The primary aim of this research project is to identify and understand the unique aspects of the disaster preparedness frameworks and how they are designed and implemented in Auckland and San Francisco. The purpose of this is to gain a deeper understanding of what constitutes best practice in disaster preparedness governance and approaches. To ensure that the information collected was of the highest possible quality, a systematic process which consisted of three primary stages was employed;

- 1) Literature Review
- 2) Sampling
- 3) Interview Study
- 4) Analysis

This chapter will explore and explain the means by which this qualitative research into the disaster preparedness frameworks in Auckland and San Francisco was conducted. Figure 3.1 outlines in graphical form, the breakdown of the methodology of this research.

### 3.1 Literature Review

The literature review was undertaken as a means of gaining the most comprehensive possible insight into the research aims. It was undertaken and structured to allow for the formation of a set of five research questions which both address certain gaps in the contemporary literature and satisfy the aims of this research outlined in Chapter 1.



**Figure 3.1: Research Methodology Breakdown Structure**

Parahoo (2006) suggests that for a literature review to have validity, the reviewer must outline the criteria applied to the following aspects;

- Identification of initial search terms.
- Identification of inclusion criteria for specific articles.
- Assessment of quality/relevance.

Engaging in this process is important as it ensures that any reviewer bias is excluded from the selection of articles in the review. Researcher bias is identified in Chapter 5 as a notable limitation of this research and as such, the following paragraphs will outline the means by which the above processes were carried out.

### 3.1.1 Identification of Initial Search Terms

To ensure a systematic approach to the primary selection of articles, a set of search terms directly aimed at identifying literature which pertained to the research aims was created. The gaps which were

identified in undertaking the literature review were then used to formulate the interview questions (Kitchenham & Charters, 2007). Given the broad nature of the concept of disaster preparedness, the initial stage of the review required me to gain an understanding of how the literature perceived disaster preparedness in a general sense. To achieve this, the following search term was adopted.

- *Disaster preparedness*

This search resulted in a wide range of articles across the field of disaster preparedness. To narrow down the articles to those relevant, a single word was added to the original search term to narrow the search down in accordance with the research aims. The search terms were as follows;

- *Disaster preparedness definition*
- *Disaster preparedness theory*
- *Disaster preparedness governance*

The utilisation of these, augmented search terms allowed for the retrieval of articles which pertained directly to the research aims and narrow the focus of the articles in a more precise manner.

An important aspect of the literature review was to secure a solid contextual understanding of the state of disaster preparedness in both Auckland and San Francisco. To ensure that the literature review encompassed literature pertaining directly to the contexts under investigation, the following search terms were also included;

- *Disaster preparedness Auckland*
- *Disaster preparedness San Francisco*

To locate articles to be covered in the literature review I entered the search terms into the following academic databases;

- *Google Scholar*
- *Scopus*
- *JSTOR*

As would be expected, the search engines recovered the same articles, however the utilisation of these three key search engines was an effort to ensure that no key elements of the literature on disaster preparedness were left untouched.

### 3.1.2 Article Inclusion Criteria

The rationale behind adopting specific selection criteria for articles which the search terms produced, is to ensure that only studies which consist of direct evidence for the research aims are analysed

(Kitchenham & Charters, 2007). The selection criteria adopted were formed to group and categorise articles into the following five sections;

- *Articles which offered a definition of disaster preparedness.*
- *Articles which proposed theoretical foundations applicable to the concept of disaster preparedness.*
- *Articles which analysed pragmatic means of developing disaster preparedness.*
- *Articles concerned with quantifying disaster preparedness.*
- *Articles specifically concerned with disaster preparedness in Auckland and/or San Francisco.*

Articles produced through the aforementioned search terms which met the above criteria were then catalogued. Included articles were also limited to those published in English. Temporal restrictions were not placed on articles for two reasons. The first being that this field is relatively new and as such, relevant literature is relatively sparse. The second being that historical events such as the 1989 Loma Prieta earthquake and the 1906 San Francisco earthquake have shaped publications in this space and whilst they may be dated, they provide useful insights into that context. To assess the quality and relevance to the research of each catalogued piece, the abstract, discussion and conclusion of each was read (Cronin, Ryan & Coughlin, 2008). If the article was deemed relevant following this process, it was covered in the brief, systematic review of the literature which shaped the formation of the questions which ultimately constituted the interview questionnaire.

## **3.2 Sampling**

### **3.2.1 Case Study Selection**

Conducting a comparative analysis of differing case studies is generally done as a means to elucidate factors which present themselves in the wider population of comparable contexts (Seawright & Gerring, 2008). In this analysis of the disaster preparedness frameworks in Auckland and San Francisco, an attempt is made to gain a further understanding of what constitutes best practice in disaster preparedness. More specifically, it looks to focus this understanding towards densely populated, metropolitan settings which are situated in areas with a high level of risk posed by natural and man-made disasters. The selection technique adopted to select the two contexts was the purposive selection methodology. Purposive selection is appropriate in this case as it systematically removes bias from the selection process. It also encourages the researcher to systematically examine the comparability of potential cases in a considered manner, reducing the risk of incompatibility between potential cases (Seawright & Gerring, 2008).

Auckland was selected as a case study for a number of practical and academic reasons. Firstly, Auckland is a densely populated, metropolitan setting which is located in a geographical/geological setting which poses a high level of disaster risk (ACDEM, 2016). For this reason, Auckland is an appropriate case study to include in a study of this nature. Another reason for Auckland's selection in this study is that this research is being conducted under the supervision of the University of Auckland. As such, the academic setting in which this research is situated has an interest in undertaking research which aims to benefit the city and its relevant institutions. The pragmatic element of undertaking research in Auckland also played a role in its selection. It being the city in which the sole researcher for this project is currently living rendered researching here a realistic prospect. Finally, from a personal perspective, the researcher's own interests played a role in the inclusion of Auckland in this particular study. Auckland is the city in which the researcher was raised and educated and the opportunity to undertake research which could possibly benefit their home city is desirable and as such, played a role in Auckland being included in this case study. A combination of the aforementioned factors contributed to Auckland's selection in this study however, systematic steps were taken in the research process to ensure that the personal aspect had no effect on any aspects of the research process.

San Francisco was selected as the second case study for analysis for the following reasons. Firstly, it fits the same criteria as Auckland; it is a densely populated, metropolitan setting, faced with significant geological risks. This is the primary factor that makes both San Francisco and Auckland comparable contexts. The second criteria was that, in a cultural sense, San Francisco and Auckland share numerous physical and cultural similarities. English is the primary language spoken in both cities, which has significant practical advantages in terms of data collection. San Francisco is comparable to Auckland in that levels of multiculturalism are high (SFDEM, 2011). The strong immigrant population is comparable to that which is present in the Auckland context, and this may pose an array of challenges in disaster preparedness development. The final similarity between Auckland and San Francisco which renders them comparable, is the relative infrequency of significant disaster events experienced in each setting (SFDEM, 2011). Again, this is another factor which acts to significantly hinder disaster preparedness development and, in the comparative analysis process, this may generate novel solutions in this space. The final reason for the selection of San Francisco as a case study is due to a gap in the literature. Comparative studies examining disaster preparedness have been undertaken between Fukui, Japan and the San Francisco Bay Area by Kazuko Tanaka (2005) and between Napier, New Zealand and Kyoto, Japan by Paton et al., (2010). As outlined in the preceding literature review, a comparative analysis concerning disaster preparedness between a New Zealand context and a context in the United States of America has yet to be undertaken. San Francisco was selected as the

comparative case study to Auckland as the two cities are inherently similar and, by selecting San Francisco, a gap in the literature on disaster preparedness is being addressed.

### 3.2.2 Participant Selection

To answer the sub-questions which were formulated by the literature study, a comprehensive set of semi-structured interviews with emergency management professionals directly involved in disaster preparedness efforts in Auckland and San Francisco were conducted. The purpose of this interview study was to secure answers to the research sub-questions as they pertain to each context with which this research is concerned. All participants contacted were either involved in the development and implementation of disaster preparedness in their given contexts or were situated in institutions directly involved in the field of disaster preparedness. To address the primary research aim, it was imperative that participants from the range of institutional settings concerned with disaster preparedness and its proliferation throughout their respective communities were interviewed.

To ensure that this diversity was represented equally across both of the contextual settings, a mixed methods sampling approach was adopted. Participants were sourced using the purposive sampling method. Purposive sampling is the most applicable method when undertaking an investigation into a domain occupied by experts with a specific knowledge set (Tongco, 2007), which is exactly what this particular study requires. The purposive sampling technique entails a non-probabilistic approach to participant selection. Purposive sampling is predominantly adopted when looking to investigate a domain which is occupied by a group of knowledgeable experts (Tongco, 2007). To complement the sample of participants attained through the purposive method, the snowball sampling technique was adopted as a secondary method. A systematic approach was adopted in which, directly following the conclusion of interviews, participants were asked if they would be comfortable recommending the names of people who would be of value to the research being undertaken. The reason for adopting this extra sampling method was that the contact details of disaster preparedness professionals was often difficult to obtain. The adoption of this mixed methods sampling approach allowed for the widest possible net to be cast across institutional settings to connect with people most capable of offering answers to the research sub-questions.

One particularly interesting challenge faced in the sampling process for interviewees was the matching of roles across contexts. To conduct a fair comparison, it was deemed necessary to ensure that interviewees in each context were as comparable as possible. To ensure this, the institutional settings in which disaster preparedness professionals were situated had to be identified. After a brief analysis of the grey literature on the emergency management institutional structures existent in each context, the following settings were identified as being the most integral to this research;



- Federal/Central Government
- Local/City Government
- Non-Government Organisations (NGO)/Community Based Organisations (CBO)
- Private Sector
- Scientific Community

Participants selected needed to meet a certain set of criteria to be eligible for this study. Upon some research it became clear that the number of professionals directly concerned with disaster preparedness is small. Whilst there are some, they only account for a portion of the emergency management community. If the prospective participant's role was in disaster preparedness or community resilience development, utilising the purposive sampling technique regardless of their institutional placement, they were made the highest priority for selection. Once participants directly involved in preparedness were secured, participants were selected based on their institutional setting. What a brief review of the pertinent grey literature in each context made clear is that the local/city government authorities represented the largest block of the emergency management communities in both contexts. The relevant organisations in this case being the San Francisco Department of Emergency Management (SFDEM) and Auckland Civil Defence and Emergency Management (ACDEM).

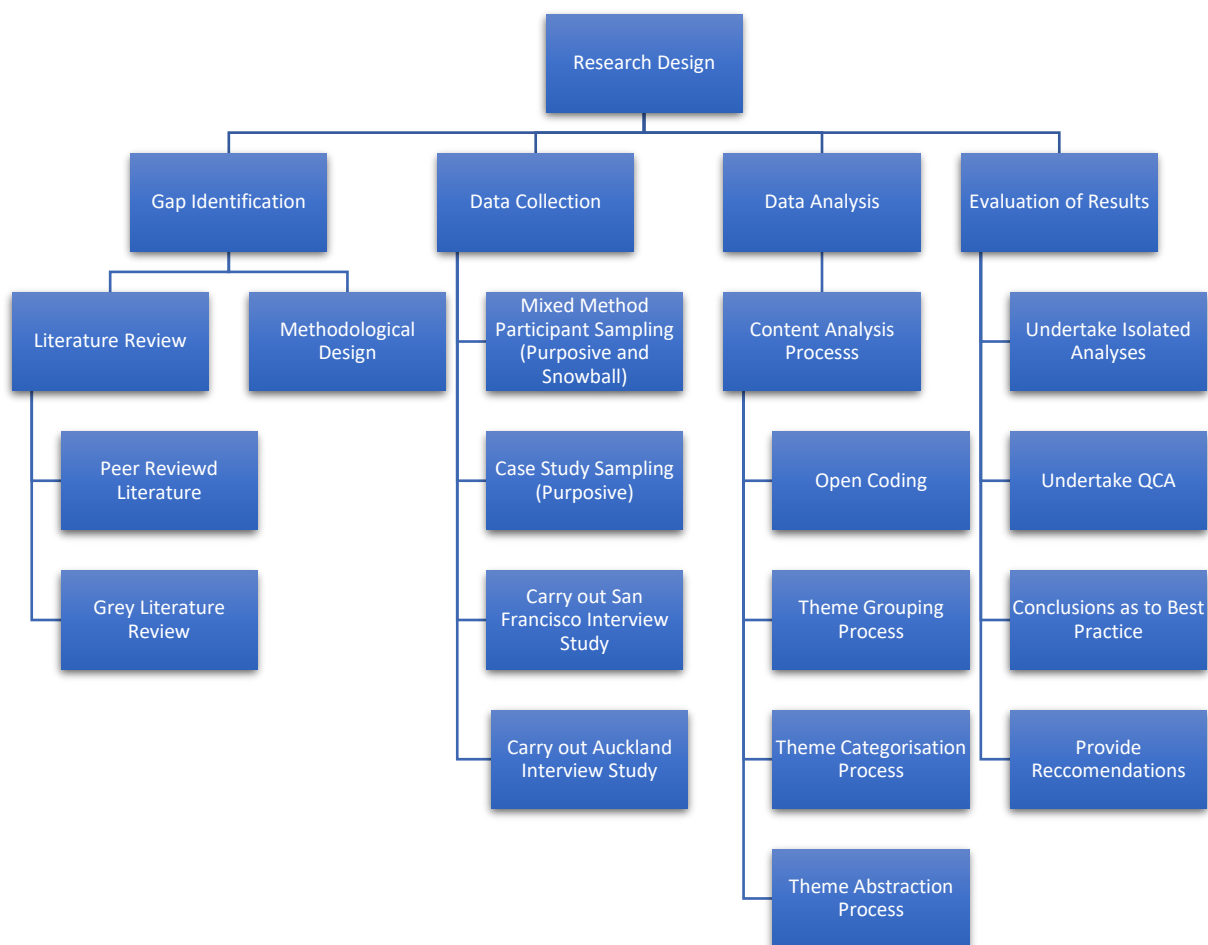
Federal government, NGOs and the private sector play a less significant, but equally important role, in disaster preparedness in both contexts and the final sample represents that. The less involved participants differed greatly between the two cities. In the San Francisco context, the private sector had a far more significant role in disaster preparedness and emergency management in general than was the case in Auckland. As such, in San Francisco, emergency management professionals in the private sector were sought after more strongly than in Auckland and this difference is illustrated in the final samples.

In the Auckland context, it was clear that the scientific community played a more significant role in disaster preparedness than was the case in San Francisco. As a result, obtaining participants from the scientific community was emphasised and, as a result, the Auckland sample consists of three participants from the scientific community while the San Francisco sample has no representation from the scientific community.

In terms of local/city government, NGO's and central/federal government, the representation across cities was essentially equal and the samples in each context convey this. Both samples have one participant from an NGO setting, whilst local/city government participants made up six out of thirteen in San Francisco, and seven out of thirteen in Auckland. The final discrepancy in the two samples is in regard to federal government. The Bay Area Urban Areas Securities Initiative (BAUASI) is a subsidiary

of the Department of Homeland Security, whose role is outlined in Chapter 5. Their presence and influence in the emergency management sphere in the San Francisco Bay Area warranted their inclusion in the sample and, as such, the federal/central government contingent is stronger in the San Francisco sample than in Auckland's due to the absence of an analogous organisation.

Having access to comparable samples in each context was the most difficult task in this process. The stark differences between Auckland and San Francisco made it clear that the distribution of professionals across these institutional settings was very different.



**Figure 3.2: Research Design Breakdown**

### 3.3 Interview Study

#### 3.3.1 San Francisco Interview Process

In January 2018, contact was made with disaster preparedness professionals in San Francisco. A total of 22 interview requests were sent out and 19 responses were received as a result. Four responders indicated that this area of research was outside their realm of expertise and as a result, interviews were not conducted with those respondents. A total of 16 semi-structured interviews with willing

participants were conducted, however, three of the interviews were deemed to be of minimal use and were thus omitted from the official analysis process. All interviews with San Francisco participants were conducted between the dates of February the 13<sup>th</sup> to February the 27<sup>th</sup> 2018. Funding through the University of Auckland Early Career Research Excellence Award (project number 3711625) supported the trip to San Francisco for a period of 17 days in which all possible interviews were conducted face to face. Unfortunately, not all interviews were able to be conducted face to face, and when a face to face meeting was not viable, telephone interviews were conducted.

For the purposes of anonymity, as outlined by the ethics approvals associated with this research (reference number 014584), all participants have been assigned an identification code according to the city on which they are commenting. While their specific institutions are also omitted the type of institution for which they work is identified to provide context for their contributions (UAHPEC, 2017). All participants agreed to their interviews being recorded. Each participant was sent a copy of the research aims and objectives prior to the interview (see appendix B) to ensure that the participant’s area of expertise was relevant to this study. Before each interview commenced, they were given a brief overview of the purpose of the research and an opportunity to ask the researcher any questions they had. All interviews were of a duration between 30 minutes and one hour. Table 3.1 lists the contingent of San Francisco participants.

**Table 3.1: San Francisco Participants**

<i>Identification</i>	<i>Institutional Setting</i>	<i>Role</i>
SF 01	NGO	Disaster Program Manager
SF 02	City Government	Emergency Planner
SF 03	Private Sector	Emergency Management Consultant
SF 04	City Government	Department Director
SF 05	Federal Government	Preparedness Expert
SF 06	City Government	Emergency Manager
SF 07	City Government	Resilience/Recovery Expert
SF 08	Private Sector	Emergency Management Consultant
SF 09	Federal Government	Resource Allocation
SF 10	Federal Government	Regional Project Manager
SF 11	City Government	Community Preparedness Manager
SF 12	Federal Government	Business Continuity Expert
SF 13	City Government	Community Outreach Strategist

### 3.3.2 Auckland Interview Process

Upon the researchers return from San Francisco on the 28<sup>th</sup> of February 2018, the canvassing process for Auckland based participants started. A total of 21 requests were sent to prospective participants with 16 resultant responses. A total of 12 interviews were conducted with these participants, however, two interviews consisted of two participants being interviewed at the same time as this was the only viable option for these participants. This is a limitation in the data collection process, and will be addressed fully in Chapter 5. The information gathered from one interview was seen to be of minimal relevance to this research and, as such, it was omitted from the analysis process. The same interview format as was conducted with the San Francisco participants was adopted in the Auckland sample to ensure the integrity of the collected data across contexts. The same five questions were asked of each participant with space allowed through the semi-structured interview format for digressions where appropriate, as the contextual difference often demanded. The majority of interviews were conducted face to face; however, as was the situation in San Francisco, this was not always a viable option. Three interviews were conducted over the telephone, with every effort being made to replicate the face to face interview setting. This is a further limitation to my data collection process which I will address in more detail in Chapter 5. Table 3.2 lists the contingent of Auckland participants.

**Table 3.2: Auckland Participants**

<i>Identification</i>	<i>Institutional Setting</i>	<i>Role</i>
AKL 01	Local Government	Strategic Planning
AKL 02	Ex-Local Government	Resilience and Recovery
AKL 03	Local Government	Senior EM Advisor
AKL 04	Local Government	EM Advisor
AKL 05	Local Government	Resilience Expert
AKL 06	Central Government	Regional EM Advisor
AKL 07	Central Government	Regional Coordinator
AKL 08	Ex-Local Government	Public Education Expert
AKL 09	Scientific Community	Social Research Expert
AKL 10	Local Government	Emergency Management Specialist
AKL 11	NGO	Disaster Management Officer
AKL 12	Scientific Community	Emergency Management & Paramedicine
AKL 13	Scientific Community	Risk Management Specialist

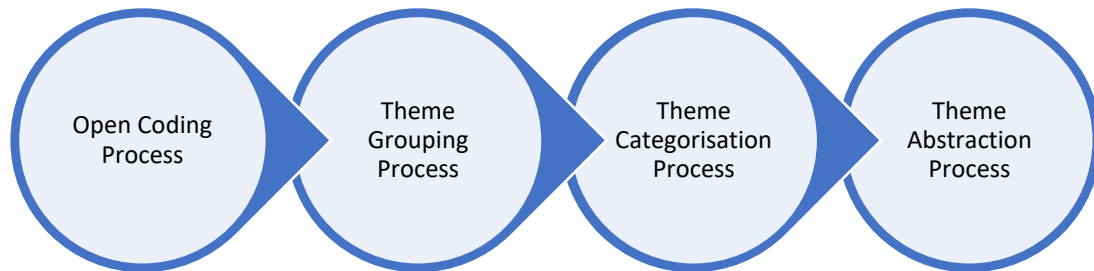
### 3.3 Data Analysis

All interviews undertaken were recorded using a Sony 4GB digital Mp3 voice recorder (lcdbx140), with handwritten notes taken by the interviewer where deemed necessary. Subsequently, all interviews were transcribed for ease of analysis. As mentioned in the methodology overview, the QCA approach was adopted as the primary means to analyse the information collected.

Kan et al. (2016) cite the QCA analytical method as an effective means by which two poorly understood conceptual frameworks can be understood on their own merits and can be constructively critiqued in reference to their counterpart. Schneider and Wagemann (1972) state that QCA differentiates itself from comparable qualitative approaches in a number of ways. Primarily, its intention is to conduct a causal interpretation of the subject in question. This is appropriate in the context of this research, as the relationship between the institutional frameworks set up to develop preparedness and the levels of preparedness in each contextual setting are inherently causal in that the state of the former will directly affect the latter. Any conclusions and recommendations made will assume this to be true and, as such, the causal analysis inherent in the QCA approach is the most appropriate for the scope and nature of this research. The QCA approach allows for the systematic comparison of cases using specific tools and techniques, and with a conception of each case which allows for a more in-depth understanding of the cases as they relate to one another. The results of a QCA whilst thorough are rarely definitive and require an ongoing interchange between the findings of the cases under examination and the knowledge provided in the conceptual framework which surrounds the cases (Berg-Schlusser, De Meur, Rihoux & Ragin, 2012). Again, this is highly compatible with the motives of this study. This analysis does not intend to pass final judgement as to the quality/efficacy of the disaster preparedness frameworks in San Francisco or Auckland. It intends to analyse certain features of each as a means of furthering knowledge which would move towards a standard idea of best practice in disaster preparedness governance, institutional structure and approach. More thought and analysis will be required in the wake of this research, thus emphasising the applicability of the QCA methodology to this research.

In practice, the intention of the analysis process is to identify key common themes which arise out of the answers to the sub-questions which were posed to the interviewees. To ensure a systematic approach to the analysis of the collected information, the method prescribed by Elo & Kyngäs (2008) was adopted. The inductive approach to content analysis was adopted in this case because only a minimal amount of research into these specific fields of inquiry has been undertaken prior to this research. The inductive approach requires the researcher to begin the data coding process from the widest possible perspective. This entails beginning with the open coding of data. After a

number of open coding iterations had been completed, codes which were similar were grouped into a single code. These newly developed codes were then categorised as themes and were subsequently split into subthemes. The sub thematic codes were then abstracted from the original data sources or transcripts.



**Figure 3.3: Content Analysis Process**

## 4.0 RESULTS

This chapter aims to systematically outline the results of this qualitative study on the disaster preparedness frameworks existent in Auckland and San Francisco. As outlined in the previous chapter, a systematic process was undertaken to analyse the interview transcripts and so accordingly, they will be presented in the same manner in which they were analysed. The key recurrent themes, as they relate to the research objectives in each context will be outlined first. The recurrent sub themes from both Auckland and San Francisco which presented themselves within the primary themes will then be extrapolated, as a means of providing a more granular level of detail to the findings. This chapter will not provide any discussion or analysis in regard to the findings, it serves solely to represent the key findings of this research in the most systematic manner possible. Subthemes at times arose in one context and did not arise in the other. In such cases, the absence of a subtheme in my is not displayed in this chapter. Such differences however, are comprehensively discussed in Chapter 5.

### 4.1 San Francisco Thematic Results

**Table 4.1: Recurrent Themes in San Francisco Participants' Answers**

<b>Participant Identification</b>	<b>Community Engagement Approach</b>	<b>Messaging</b>	<b>Application of Theory</b>	<b>Preparedness Barriers</b>
<b>SF 01</b>	Yes	Yes	No	Yes
<b>SF 02</b>	Yes	Yes	No	Yes
<b>SF 03</b>	Yes	Yes	Yes	Yes
<b>SF 04</b>	Yes	Yes	No	Yes
<b>SF 05</b>	No	No	Yes	Yes
<b>SF 06</b>	Yes	Yes	No	No
<b>SF 07</b>	Yes	Yes	Yes	Yes
<b>SF 08</b>	No	Yes	No	Yes
<b>SF 09</b>	Yes	Yes	No	Yes
<b>SF 10</b>	Yes	Yes	No	Yes
<b>SF 11</b>	Yes	Yes	No	Yes
<b>SF 12</b>	Yes	Yes	No	Yes
<b>SF 13</b>	Yes	Yes	Yes	Yes

**Table 4.2: Community Engagement Approach Subtheme Results SF**

<i>Participant Identification</i>	<i>Agree with Approach</i>	<i>Content with current application</i>	<i>Aim for 'Culture of Preparedness'</i>
SF 01	Yes	No	No
SF 02	Yes	No	No
SF 03	Yes	No	No
SF 04	Yes	Yes	No
SF 05	Yes	No	Yes
SF 06	Yes	No	No
SF 07	Yes	Yes	Yes
SF 08	No	No	No
SF 09	Yes	No	Yes
SF 10	Yes	No	No
SF 11	Yes	Yes	No
SF 12	Yes	Yes	Yes
SF 13	Yes	Yes	Yes

**Table 4.3: Preparedness Messaging Subtheme Results SF**

<i>Participant Identification</i>	<i>Advocates for Empowerment Messaging</i>	<i>Advocates for Tailored Messaging</i>	<i>Advocates for Timed Messaging (shortly after events)</i>	<i>Advocates for Honest/Frank Messaging</i>
SF 01	No	Yes	No	No
SF 02	No	No	No	Yes
SF 03	Yes	Yes	Yes	No
SF 04	Yes	No	No	No
SF 05	Yes	No	No	No
SF 06	Yes	No	Yes	Yes
SF 07	Yes	Yes	No	No
SF 08	No	Yes	Yes	No
SF 09	Yes	Yes	No	No
SF 10	Yes	Yes	Yes	No
SF 11	No	No	Yes	Yes
SF 12	Yes	No	Yes	No
SF 13	No	No	No	No



**Table 4.4: Barriers to Preparedness Subtheme Results SF**

<i>Participant Identification</i>	<i>Socio-economic Barriers</i>	<i>Transience of Populations</i>	<i>Absence of Disaster Events Breeding Complacency</i>
<i>SF 01</i>	Yes	Yes	No
<i>SF 02</i>	Yes	Yes	No
<i>SF 03</i>	No	Yes	Yes
<i>SF 04</i>	Yes	No	Yes
<i>SF 05</i>	Yes	No	No
<i>SF 06</i>	No	No	No
<i>SF 07</i>	Yes	Yes	Yes
<i>SF 08</i>	Yes	No	Yes
<i>SF 09</i>	Yes	Yes	No
<i>SF 10</i>	Yes	Yes	Yes
<i>SF 11</i>	No	No	Yes
<i>SF 12</i>	No	No	Yes
<i>SF 13</i>	Yes	Yes	Yes

**Table 4.5: Preparedness Governance Structure Subtheme Results SF**

<i>Participant Identification</i>	<i>Perceived Lead Agency</i>	<i>Secondary Agencies</i>	<i>Opinion on Institutional Approach</i>
<i>SF 01</i>	SFDEM	NGO's	-
<i>SF 02</i>	SFFD	SFDEM, NEN	Scattered
<i>SF 03</i>	NGO's	SFDEM	Fragmented
<i>SF 04</i>	SFDEM	-	Fragmented, legislation would be good
<i>SF 05</i>	SFDEM	SFFD	-
<i>SF 06</i>	SFDEM	SFFD, FEMA	Content
<i>SF 07</i>	SFDEM	NGO's, SFFD	Content
<i>SF 08</i>	SFDEM	NGO/ Private Sector	Scattered
<i>SF 09</i>	SFDEM	-	Siloed
<i>SF 10</i>	SFDEM	SFFD, NEN, Health Service	-
<i>SF 11</i>	SFDEM	SFFD	Scattered
<i>SF 12</i>	SFDEM	FEMA, State office	Content
<i>SF 13</i>	DEM	NEN	Scattered

## 4.2 Auckland Thematic Results

**Table 4.6: Recurrent Themes in Auckland Participants' Answers**

<i>Participant Identification</i>	<i>Community Engagement Approach</i>	<i>Messaging</i>	<i>Theory Backing Approach</i>	<i>Barriers to Preparedness</i>
<b>AKL 01</b>	Yes	Yes	Yes	Yes
<b>AKL 02</b>	Yes	Yes	No	Yes
<b>AKL 03</b>	Yes	Yes	Yes	Yes
<b>AKL 04</b>	Yes	Yes	Yes	Yes
<b>AKL 05</b>	Yes	Yes	No	Yes
<b>AKL 06</b>	No	Yes	No	Yes
<b>AKL 07</b>	Yes	Yes	No	Yes
<b>AKL 08</b>	Yes	Yes	No	Yes
<b>AKL 09</b>	Yes	Yes	No	Yes
<b>AKL 10</b>	Yes	Yes	No	Yes
<b>AKL 11</b>	Yes	Yes	No	Yes
<b>AKL 12</b>	Yes	Yes	No	Yes
<b>AKL 13</b>	Yes	Yes	No	Yes

**Table 4.7: Community Engagement Approach to Preparedness Subtheme Results AKL**

<i>Participant Identification</i>	<i>Agree with Approach</i>	<i>Content with Current Application</i>	<i>Aim for 'Culture of Preparedness'</i>
<b>AKL 01</b>	Yes	Yes	No
<b>AKL 02</b>	Yes	No	No
<b>AKL 03</b>	Yes	Yes	No
<b>AKL 04</b>	Yes	Yes	No
<b>AKL 05</b>	Yes	Yes	No
<b>AKL 06</b>	No	No	No
<b>AKL 07</b>	No	No	No
<b>AKL 08</b>	Yes	No	No
<b>AKL 09</b>	Yes	No	No
<b>AKL 10</b>	Yes	No	No
<b>AKL 11</b>	Yes	Yes	No
<b>AKL 12</b>	Yes	No	No
<b>AKL 13</b>	Yes	No	No

**Table 4.8: Preparedness Messaging Subtheme Results AKL**

<i>Participant Identification</i>	<i>Advocates for Empowerment Messaging</i>	<i>Advocates for Tailored Messaging</i>	<i>Advocates for timed messaging (shortly after events)</i>	<i>Advocates for Honest/Frank Messaging</i>
AKL 01	Yes	Yes	No	No
AKL 02	Yes	No	No	No
AKL 03	Yes	No	No	No
AKL 04	Yes	No	No	No
AKL 05	Yes	Yes	No	No
AKL 06	Yes	Yes	No	No
AKL 07	Yes	Yes	No	No
AKL 08	Yes	No	No	Yes
AKL 09	Yes	No	Yes	No
AKL 10	Yes	No	No	No
AKL 11	Yes	Yes	No	Yes
AKL 12	Yes	No	Yes	No
AKL 13	Yes	No	Yes	No

**Table 4.9: Barriers to Preparedness Subtheme Results AKL**

<i>Participant Identification</i>	<i>Socio-Economic Barriers</i>	<i>Transience of Populations</i>	<i>Absence of Disaster Events Breeding Complacency</i>
AKL 01	Yes	Yes	No
AKL 02	No	No	Yes
AKL 03	Yes	Yes	Yes
AKL 04	Yes	Yes	Yes
AKL 05	Yes	No	No
AKL 06	Yes	Yes	Yes
AKL 07	Yes	Yes	Yes
AKL 08	No	No	No
AKL 09	Yes	No	Yes
AKL 10	Yes	Yes	No
AKL 11	Yes	Yes	No
AKL 12	Yes	No	Yes
AKL 13	No	Yes	No

**Table 4.10: Application of Theory in Approach to Disaster Preparedness AKL**

<i>Participant Identification</i>	<i>Presence of Theory in Approach</i>	<i>Not Utilised but Believe they Need To</i>	<i>Type of Theory Cited as useful</i>
AKL 01	Yes	-	Human Behavioural Theory
AKL 02	No	Yes	Collab. with Academia
AKL 03	Yes	-	Participatory Communication
AKL 04	Yes	-	Human Behavioural Theory
AKL 05	No	Yes	Ideas from Green Movement
AKL 06	No	Yes	Must consult more with social science research
AKL 07	No	Yes	-
AKL 08	No	Yes	Ideas from health sector
AKL 09	No	Yes	Human Behavioural Theory
AKL 10	No	Yes	-
AKL 11	No	Yes	Psychology/Human Behavioural Theory
AKL 12	No	Yes	Human Behavioural Theory
AKL 13	No	Yes	Human Behavioural Theory

**Table 4.11: Preparedness Governance Structure Subtheme Results AKL**

<i>Participant Identification</i>	<i>(Perceived ?) Lead Agency</i>	<i>Secondary Agencies</i>	<i>Opinion on Institutional Approach</i>
AKL 01	ACDEM	MCDEM	Content
AKL 02	ACDEM	FENZ	Content
AKL 03	ACDEM	FENZ, MCDEM	Content with TAG Review Results
AKL 04	ACDEM	RC	Content
AKL 05	ACDEM	NGO's	Content
AKL 06	ACDEM	FENZ, NGO's	Siloed
AKL 07	ACDEM	FENZ, NGO's, Religious Groups	Siloed
AKL 08	ACDEM	NGO's,	Scattered
AKL 09	ACDEM	MSD, RC, CBO's	Can be effective
AKL 10	ACDEM	FENZ, NZPD	Was siloed but improving
AKL 11	ACDEM	RC, SALV, Religious Groups	Was Siloed but Improving
AKL 12	ACDEM	N/A	Improving
AKL 13	ACDEM	MCDEM	Depends on Framework

## 5.0 DISCUSSION

The purpose of this chapter is to address the research aims stated at the beginning of this undertaking, which are as follows;

- 1) To identify the key institutions tasked with the responsibility of designing and implementing disaster preparedness measures in Auckland and San Francisco and how effective their institutional structure is at increasing levels of preparedness.
- 2) To identify and understand the obstacles which are faced by each city to increasing levels of preparedness.
- 3) To understand the theoretical foundations which have shaped each city's approach to the development of preparedness.
- 4) To understand how each city perceives the concept of disaster preparedness by understanding their adopted approach to increasing levels of preparedness.

This will be achieved through in-depth analysis of the empirical results which were laid out in detail in the previous chapter. The nature of the aims addressed in this research is such that they are broad and are not intended to provide direct comment as to the quality or functionality of the disaster preparedness frameworks in Auckland or San Francisco. The in-depth analysis of the results in each context will allow for the discussion of both the negative and positive aspects of each context in relation to the other as a direct means of satisfying the four research aims posed.

To begin, this chapter I will outline in detail the most significant limitations which potentially stand to affect the results and subsequent conclusions drawn by this research. This will be followed by brief reviews of the grey literature pertaining to disaster preparedness in both Auckland and San Francisco. Next, separate in-depth discussions of the data collected in Auckland and San Francisco. This will lay the foundations for the comparative analysis in which the results from each context will be critically discussed in relation to each other with the intention of understanding these contexts through the lens of the aims stated at the beginning of this thesis. To conclude the chapter a brief summary will indicate how this research has illuminated what best practice in disaster preparedness governance, institutional structure, and approach in a densely populated, metropolitan setting may entail.

### 5.1 Limitations of the Study

Prior to embarking on a discussion of the findings of this research, the limitations of the study must be identified and outlined. The most notable being the sample of preparedness experts recruited to participate in the study. The intention was to match as closely as possible institutional settings in which participants were situated. The most notable difference was in securing participants from the private

sector. In the San Francisco context, an abundance of private consultants in the emergency management field were willing to participate in this research, in the Auckland context however, not one emergency management professional in the private sector responded to a request for an interview. As a result, the institutional settings of my participants do not match perfectly across contexts, although the matchings are reasonable and will not negatively impact conclusions drawn at the end of this discussion.

The next most notable limitation in this research was the interview process. In San Francisco I was able to secure individual interviews with all thirteen final participants whose results were included in this study. However, in the Auckland setting, securing participants in general was more challenging and, due to this, two interviews were conducted with two participants at one time. This format more closely resembles a focus group than a classic semi-structured interview. The issue here is that when two participants are interviewed together, it is less likely that either participant will be as candid in their answers as they may be if interviewed alone. Four Auckland participants are in this category, whereas there were none in San Francisco, which may ultimately impact the outcomes of this research.

The final notable limitation of this research was a part of the interview process. The initial intention was to conduct all interviews face to face; however, this was not always possible. In San Francisco, I undertook a total of three interviews over my iPhone 5 which was connected to a Bluetooth speaker. This allowed me to clearly record conversations when permission was given for me to do so, even when the participant was not physically present. In the Auckland setting, I conducted a total of three interviews over the telephone which were eventually included in this study. The implications of this are not thought to be of great significance, as all telephone interviews were of high quality and all efforts were made to ensure that the conversation resembled a face to face interview as much as possible.

## 5.2 Auckland Contextual Analysis

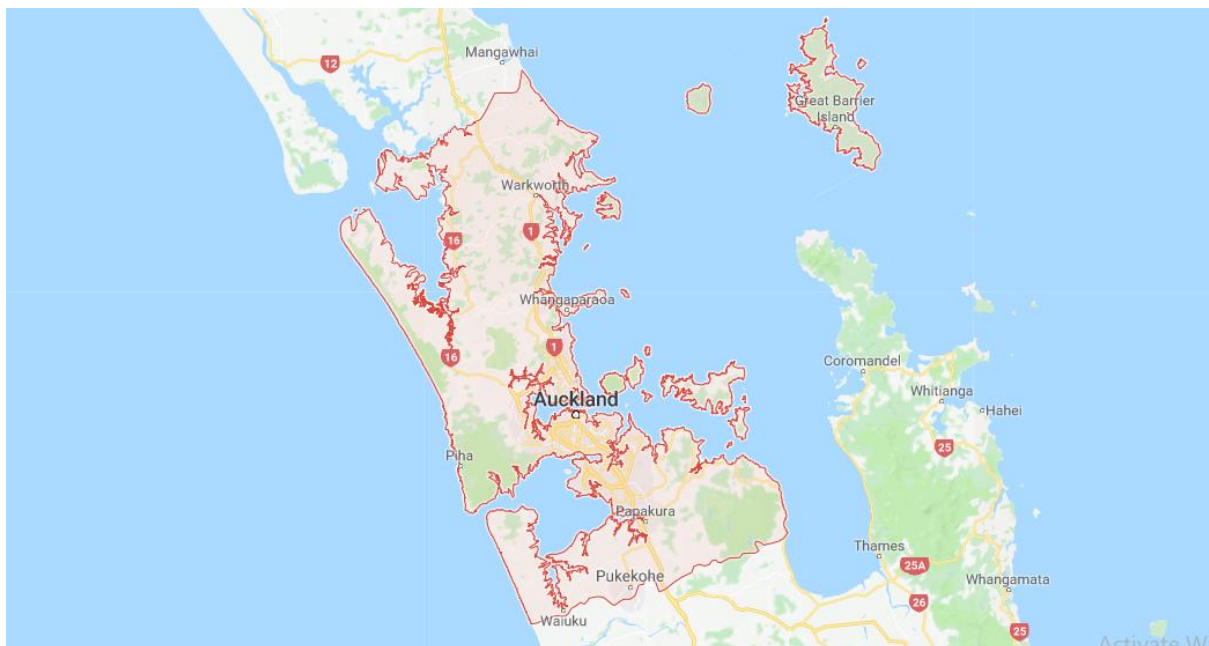
The structural element of Auckland's disaster preparedness framework is dictated by a pivotal piece of legislation adopted by the central government of New Zealand, the Civil Defence Emergency Management (CDEM) Act 2002. This act repealed and replaced the Civil Defence Act 1983 with the purpose of improving the way in which communities sustainably managed the risks posed by hazards across the country. The CDEM Act 2002 requires that ***“all regional councils and every territorial authority must unite to establish a CDEM Group for the purposes of this act....”*** (New Zealand Government, 2002, p. 19). The act dictates that CDEM groups carry out the following functions;

- i) Identify, assess and manage all risks and hazards relevant to the area in question.

- ii) Consult with communities about management strategies and communicate relevant risks to them.
- iii) Identify and implement cost effective risk reduction strategies.

Interestingly the word *'preparedness'* does not feature in the CDEM Act 2002.

It is worth noting that the general governance structure in Auckland differs from the majority of New Zealand's 16 regions. In 2011, Auckland's numerous governing bodies amalgamated to form one governing body, the Auckland Council. In the case of Auckland, decisions pertaining to CDEM are all made at the regional level by the ACDEM group. The Auckland region does not comprise of any smaller governing bodies or 'Territorial Authorities', therefore the Auckland CDEM group is responsible for all decisions made in regard to civil defence and emergency management across the Auckland region. The Auckland region is home to 1,415,550 residents as of the 2013 census and covers an area of 4,894 square km (Statistics New Zealand, 2013). The Auckland regional boundaries are illustrated in Figure 5.1;



**Figure 5.1: Auckland Regional Boundary**

The other key institution in the Auckland emergency management area is Ministry of Civil Defence and Emergency Management (MCDEM). MCDEM is the governing body responsible for the administration of the CDEM Act 2002. In the area of emergency preparedness, MCDEM plays a supporting role to the sixteen regional CDEM groups. MCDEM expends considerable resources developing preparedness and readiness initiatives which are then disseminated to the groups who

tailor these initiatives to fit the societal contexts in which they will eventually be implemented (MCDEM, 2017). The Auckland CDEM group falls under the umbrella of the Auckland Council. It is comprised of numerous organisations situated across local government, lifeline utilities organisations and emergency services. The CDEM group's sole purpose is to take the lead role in working to develop the resilience of Auckland as a city and a region to the risks posed by numerous natural and man-made hazards (ACDEM, 2016).

Every five years, the Auckland CDEM group releases their five-year plan as required by the CDEM Act 2002. The most recent publication was the Auckland CDEM Group Plan 2016 – 2021 (ACDEM, 2016). This document summarises the organisational approach to the development of resilience in four key areas; Reduction, Readiness, Response and Recovery. The ACDEM group classifies preparedness in the Readiness framework. The group plan does not provide a definition of preparedness however it does define readiness as the extent to which ***“Individuals, households, communities, businesses, agencies and organisations are aware of, understand and are prepared for emergencies”*** (ACDEM, 2016, p. 42). Their organisational goal in the area of readiness is to increase levels of the understanding of risks, general awareness and most notably, preparedness in the Auckland region. The Group Plan also outlines the approach which the Auckland CDEM group takes toward developing readiness. They concede that a state of comprehensive disaster preparedness is a goal government agencies alone are incapable of achieving and thus perceive the goal as requiring efforts by all members of the community. This sentiment is made clear in a quote by participant AKL 03 in their research interview. They state that;

***“Civil Defence and Emergency Management is everybody's responsibility. It's a whole of council, whole of government, whole of society approach and everyone has their own role to play”.***

The Auckland Council Long Term Plan 2015-2025 (Auckland Council, 2015b) provides an insight into the functions of the organisation in the area of emergency preparedness. This document highlights the legislative requirement for the Auckland Council to deliver CDEM services as outlined in the CDEM Act 2002. The 10-year budget acknowledges the importance of improving levels of preparedness as an important component in the mission to develop societal resilience. This brief review of the grey literature illustrates that the Auckland CDEM understands both the mammoth task of developing levels of preparedness as well as the complexities involved when accounting for more marginalised sections of the community. The 2015 publication entitled 'Get Ready Auckland: Know, Prepare, Connect' (ACDEM, 2015) gives the most recent insight into the Auckland CDEM group's perception of specific elements of preparedness. It outlines a roadmap for residents to follow to develop their own levels of preparedness. They advocate that residents actively build emergency kits whilst emphasising



that the cost of doing so is not high (Auckland Council, 2015a). However, this document is particularly interesting as it marks a turning point in the messaging strategy of the Auckland CDEM group. In conjunction with the message to build kits, they emphasise the importance of social cohesion and connections being just as effective a means of preparing for an emergency as having a store of food and water. This is fast becoming orthodoxy in the emergency management and preparedness community world-wide, as an effective and achievable means of preparing a society against disaster events (Eisenman et al., 2009).

The most notable element of the Auckland disaster preparedness framework in relation to other contexts is the fact that specific organisations are mandated through legislation to play certain roles in this area. Another key fact to be pulled out of this brief review is how the documentation represents key organisation's perceptions of the concept of disaster preparedness as a key component of the mission to develop resilience. This has a number of implications which will be discussed in more depth later in the chapter.

### 5.3 San Francisco Contextual Analysis

One of the key differences between the emergency management framework and more specifically disaster preparedness in Auckland and San Francisco is that San Francisco has no legislative framework which dictates specific responsibilities as to the delivery of services in this area. The closest measure to this exists in the form of a Mayoral Executive Directive which was issued on May the 10<sup>th</sup> 2006. This directive outlined that all departments under the umbrella of the City and County of San Francisco are to appoint a disaster preparedness coordinator, the coordinator's specific role being the coordination of preparedness actions in the context of the numerous departments. The interesting factor here being the emphasis on organisational preparedness as opposed to the preparedness of the city residents (City and County of San Francisco, 2008). Said directives are also outlined in the All Hazards Strategic Plan (SFDEM, 2011) which is updated on a yearly basis.

Whilst no organisation has a specifically defined mandate to take the lead in the mission to develop levels of disaster preparedness in the city, this role is largely undertaken by SFDEM. The organisation's mission statement outlined in their annual report 2011-2012 states that ***"The SFDEM leads the city in planning, preparedness, communication, response, and recovery for daily emergencies, large scale citywide events and major disasters."*** (SFDEM, 2011, p. 6).

The next most notable institution in the area of preparedness is the Federal Emergency Management Agency (FEMA) who are an agency of the United States Department of Homeland Security. San Francisco is situated in FEMA's ninth region which covers the states of Nevada, Arizona, California,

Hawaii and all states and territories located in the Pacific region. Within the FEMA Region Nine organisational structure lies the National Preparedness Division, which provides support to agencies concerned with preparedness development. FEMA plays a role analogous to New Zealand's MCDEM in that they develop preparedness campaigns and disseminate them to local authorities to tailor to the cultural dynamics of their contextual setting. The 'Prepareathon' being a notable example of this in terms of a preparedness initiative which was designed at a federal level and disseminated to the regions. The key difference between these two being that the MCDEM has the authority to assume control of a response situation whereas FEMA has no such authority under any circumstance (FEMA, 2017). There is one more institution of note which does not have an analogous counterpart in the Auckland/New Zealand setting. This being the BAUASI. BAUASI is a subsidiary of the Department of Homeland Security whose mission is to increase the capacity of urban areas to act across the disaster management cycle. In a pragmatic sense, BAUASI procures funding from the Department of Homeland Security and collaborates with stakeholders through all areas of society in projects aimed at developing resilience in the face of catastrophic events. An interesting characteristic of this organisation is its self-proclaimed focus on building resilience against terrorist attacks. This represents an interesting difference between the two contexts, this being born out of the Homeland Security Act of 2002 in response to the events of September 11, 2001 (BAUASI, 2018). The presence and influence of BAUASI is the reason for the stronger contingent of participants situated in the Federal Government than in the Auckland sample.

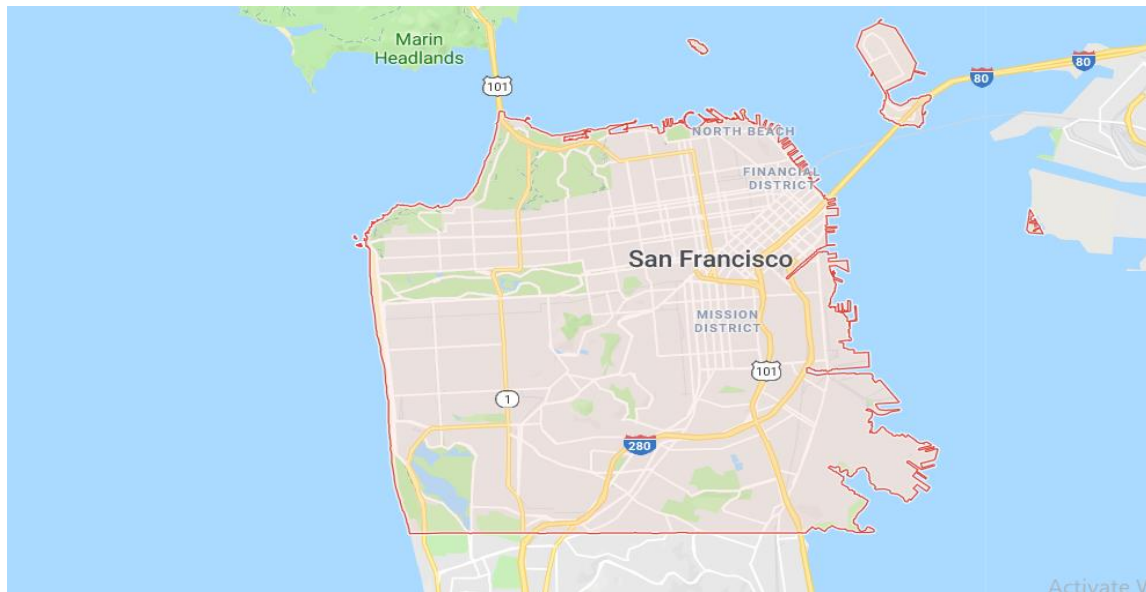
From an organisational perspective, San Francisco's approach to developing levels of disaster preparedness is multi organisational. Numerous city government departments, NGO's community-based organisations and city offices have been formally and informally delegated roles to play. The extent of this is highlighted in a quote by participant SF 13;

***"Everybody has an oar in the water".***

The positive and negative aspects of this multi institutional approach will be explored in detail later in this discussion. From a governance perspective, it is important to note that during the course of this research project, the Mayor of the City and County of San Francisco, Edwin M. Lee passed away. He was a strong advocate for disaster preparedness and emergency management in general. His unexpected passing was a recurrent topic throughout these research interviews in regard to the state of disaster preparedness efforts in the city.

The City and County of San Francisco is home to 884,363 residents and covers an area of 600.59 square km (US Census Bureau, 2017). The City and County of San Francisco is located on the western side of

San Francisco Bay and is considered an economic powerhouse which attracts workers on an extremely large scale .



**Figure 5.2: City and County of San Francisco Boundary**

Aside from brief articles located on the websites of San Francisco city government departments, official contemporary grey publications pertaining to the approach taken to disaster preparedness is not as prevalent as it is in the Auckland context. Subsequently, the focus on the second question of the research questionnaire (Section 1.3, Q2) was of particular importance to San Francisco based participants. However, an interesting factor that does arise throughout the available organisational sources concerned with the development of disaster preparedness is the emphasis placed on the development of a '*culture of preparedness*' (The Intersector Project, 2014). The prevalence of the idea of developing this culture is important as it alludes heavily to the approach which these organisations have adopted. Specifically, this means taking a multi sectoral/organisational approach to developing a sense of social cohesiveness as a means of creating support networks, will provide a base of community support in the event of a disaster which significantly disrupts societal functions (SFDEM, 2017). What is clear in this brief analysis is that the importance of social connectivity and cooperation takes precedence over the idea of building physical disaster survival kits as a means of preparing communities for the effects of disaster. This is an interesting phenomenon which will be further illuminated throughout the course of this discussion.

One final notable element of the approach to disaster preparedness adopted in San Francisco which differs from the Auckland context is the perceived importance of the private sector. The Intersector Projects' 2014 report explicitly highlights the private sector as one of three key sectors integral to the development of disaster preparedness in San Francisco. They are perceived to be a useful entity in that they possess expertise in fields which the city government inherently does not. As such, they can

be utilised by the public sector to undertake projects which will aid them in their mission. The third sector of perceived importance is not for profit organisations, whose existing connections into communities of concern are inherently useful in terms of gaining a portal through which the message of the importance of preparedness can be disseminated (The Intersector Project, 2014).

## 5.4 San Francisco Analysis

The most significant findings of this research as they pertain to San Francisco are the following;

- *The structure of their disaster preparedness framework.*
- *Their approach to messaging aimed at informing the public about disaster preparedness.*
- *The nature of their approach to increasing levels of disaster preparedness.*
- *The theoretical foundations in which their efforts at improving levels of disaster preparedness are based.*
- *The barriers which impede the drive to increase levels of disaster preparedness.*

### 5.4.1 Disaster Preparedness Framework Structure

Due to the fact that San Francisco has no formal legislative structure which delegates responsibility to particular agencies, participant's responses to who the key agencies tasked with the responsibility of working in this area were highly important. Eleven out of thirteen respondents believed that the SFDEM was the agency who took the lead role in developing and implementing disaster preparedness initiatives in San Francisco. More illuminating was the fact that in some form or other, seven out of the thirteen participants perceived the wider institutional approach to be 'scattered' or 'fragmented'. This result was unsurprising given the lack of an official mandate which gives any single organisation lead agency in this effort. However, it does have significant implications as to the city's approach to preparedness. Of the participants who displayed concern at the wide range of organisations involved in disaster preparedness, all seven of them claimed that a more collaborative institutional approach to developing disaster preparedness would be beneficial to the drive for preparedness. These findings were significant as they pertain directly to research question one (Q1), regarding the structure of the disaster preparedness framework in San Francisco, however, it builds on this in that participants were willing to comment on the structure's effectiveness.

### 5.4.2 Approach to Disaster Preparedness Messaging

Public disaster preparedness messaging was another field where important findings emerged. Paton and Johnston (2001) identified the need for a public messaging approach which operated within the framework of community development and discourages messaging which attempts to scare the public into action on preparedness. This is a sentiment shared by Frandsen et al. (2011) among numerous

others. Eight out of thirteen participants advocated for a messaging strategy which empowers residents to take control of their own preparedness. This is a strategy which aligns with the majority of existing research in this area as was outlined in detail in the literature review. This result is of particular importance as it is the focus of San Francisco's flagship preparedness initiative, SF72.org., the purpose of which is to act as "**San Francisco's hub for emergency preparedness**" (SFDEM, n.d). It emphasises the effectiveness of social connectivity as an effective means of being prepared for a disaster and endeavours to convince the public that they are more prepared than they currently think. Not all respondents agreed with this approach. Five out of thirteen participants claimed that more important than messaging style was timing. To quote participant SF 03;

***"Seasonality is useful. Tailoring messages to times of the year is very useful. More importantly, timing messaging and events around anniversaries is highly effective".***

This was an interesting insight into San Francisco's history of significant disasters. The fact that they consciously disseminate tailored messages during other significant current disaster events such as the North Bay Fires of 2017 shows a strategic approach to their disaster preparedness messaging efforts. Six out of thirteen respondents highlighted the importance of tailoring preparedness messaging to the specific audience you are attempting to reach. This result, whilst not surprising given the extreme cultural diversity of the residents of San Francisco, is encouraging and again points to a strategic approach to preparedness messaging which is aligned with the base of current literature on this topic. These findings provide insight into Q4 which pertains to how San Francisco approaches increasing levels of disaster preparedness.

#### 5.4.3 Approach to the Development of Disaster Preparedness

Possibly the strongest recurrent theme illustrating the approach adopted by institutions concerned with improving levels of preparedness was the consensus around the need to undertake a 'bottom up' or 'community engagement' approach to disaster preparedness. Eleven out of thirteen participants agreed with this sentiment. Again, this outlines an agreement around an approach which aligns solidly with the literature base on this topic, as highlighted in studies by Finnis (2004), Daly et al. (2009) Eisenmann et al. (2009) and Richards (2014).

These results show that whilst the perception of preparedness and the apparent agreement that a bottom up approach is the most effective means of developing levels of preparedness, professionals in this field are not in agreement as to how this approach is being implemented. Only five out of the eleven participants who agreed that the bottom up approach is the most effective also believed that it was being implemented appropriately. When prompted as to why they believed that the approach was not being appropriately implemented, the most common answer given was that too many

organisations are involved in implementing this approach, many of which show an unwillingness to coordinate their efforts to achieve a common end goal. The finding that the disaster preparedness community adopts the bottom up approach to disaster preparedness was unsurprising as this has been accepted as best practice for some time in emergency management circles. However, this example of the San Francisco disaster preparedness community's discontent with its application is illuminating. The perceived fragmented structure of San Francisco's disaster preparedness framework as outlined in the analysis of interview question one (Q1), would appear to have a direct effect on the implementation of an approach (bottom up) which has its validity solidly grounded in the literature. From the answers given to the fourth interview question, it would seem clear that whilst the approach that the San Francisco Disaster Preparedness community has adopted to increase levels of disaster preparedness aligns with best practice, the apparent inability for the collection of organisations to strategically coordinate their efforts in disaster preparedness is stifling their ability to achieve their common goal.

#### 5.4.4 Notable Barriers to Disaster Preparedness

A strong factor which dictates the approach to developing preparedness in any context is phenomena which hinder or make it more difficult for people to prepare for disasters. In both the San Francisco and the Auckland contexts, three factors were identified by participants which appeared to be notable barriers. They are as follows;

- *Socio-economic barriers.*
- *Transient populations.*
- *An absence of disaster events resulting in apathy toward disaster preparedness in their particular contextual setting.*

Whilst it was often the case that participants cited that populations were transient and did not live in the same locations for extended periods of time, this issue was often cited separately from socio-economic factors. However, it is undoubtedly the case that the two are inextricably linked and will be treated as such throughout this discussion. Eight out of thirteen participants in San Francisco cited socio-economic barriers as being a significant hindrance to the city's preparedness efforts, whilst six out of thirteen cited the transience of the San Francisco population as being a hindrance to preparedness efforts. The sentiment expressed by participants on this topic are eloquently summarised in a quote from participant SF 07;

***"We almost double our population during the work day, it's crazy. There was a headline recently that stated that if you want to be in contention to buy a one-bedroom place in San Francisco you need an income of \$300,000 USD per year. That seems to be why people leave, and fair enough".***

This is an interesting result for two reasons, the first being that this would seem to be a highly significant barrier to overcome for the community engagement approach to developing disaster preparedness. If residents only intend to reside in the city for a period of a few years, they will be very difficult to convince of the importance of preparing for an event which may only occur every 100 or so years. It is clear that extended periods of time are required to effectively engage with a section of the community and utilise newly gained trust to convince them that disaster preparedness is worthwhile (Richards, 2014). Given this reality it could be posited that socio-economic factors are making it highly difficult for residents to remain in the area for extended periods of time and this is the primary reason that only five out of thirteen participants cited that the bottom up approach to preparedness development was showing positive results. This result is important, and authorities concerned with developing preparedness levels would be wise to consider this in a pragmatic fashion moving forward with efforts aimed at improving disaster preparedness.

The final significant barrier cited as being a significant hindrance to preparedness was a sense of apathy toward the risks posed by disaster events. Seven out of thirteen participants stated, in some form or other, that an absence of significant events in San Francisco has resulted in a false sense of security. This has resulted in either a belief that either they will not be affected by the effects of a disaster, or an all-encompassing apathy which prevents them from even considering that taking preparedness action is worthwhile. Participant SF 04 outlines their concern in this area when they claim that;

***“One of the biggest challenges we have is that we don’t actually have things happen here, which causes people to fall into a sense of complacency”.***

This result is both unsurprising and surprising for the following reasons. It is unsurprising as the contemporary literature base on preparedness acknowledges this in detail. Becker et al. (2013) and Najafi et al. (2016) both cite denialism, fatalism and warped outcome expectancy as a prevalent salient belief which infiltrates the public mind and discourages individuals and organisations from undertaking comprehensive preparedness actions. Both articles state that these complacent tendencies need to be addressed through tailored public education campaigns that account both for the hazards specific to a given area, and the cultural context in which they present. However, said complacency is surprising in the San Francisco context given the city’s history of city-defining disasters such as the devastating earthquake of 1906, the Loma Prieta event of 1989 and the North Bay fires of 2017. One might conclude that this catalogue of devastating events would put the salient belief that *‘it won’t happen here’* to rest, however, this research shows that in the San Francisco context, this most definitely is not the case. The magnitude of the barrier that apathy due to a lack of events poses

in San Francisco is outlined by participant SF 08. When prompted about the relatively recent 1989 Loma Prieta event and the North Bay fires they replied with the following;

***“The Interested period generally lasts six months. In some cases, only a few weeks. At this point people have already forgotten about the fires as the reality is, they (the North Bay Fires) didn’t effect San Francisco.”***

Whilst specific barriers to preparedness are not a direct feature of San Francisco’s disaster preparedness framework per se, they shape the approach which the framework must adopt in tackling the issue of developing levels of disaster preparedness. More importantly to this research, the barriers which San Francisco faces in preparedness development highlight the fact that best practice in disaster preparedness structure, governance and approach will be a highly dependent on context. Responses to this question helped to illuminate the answer to research aim two. This question being integral to understanding how San Francisco’s disaster preparedness framework is attacking the problem of low levels of preparedness compared to what it could be doing if it were looking to abide by its own contextually determined version of best practice.

#### 5.4.5 Theory in Disaster Preparedness

The final common thread which presented itself throughout this research pertaining to San Francisco was the theoretical foundations which underpin the approach to their work in the disaster preparedness development area. Nine out of thirteen respondents claimed that efforts to develop levels of preparedness in San Francisco had no discernible theory or ideology guiding them. Of those who cited a theory upon which their work was based, three cited community engagement as a theoretical approach and one cited an interest in looking into ideas in human behavioural theory as a means of shaping their efforts. This result, at first, seemed surprising given the cities’ history of significant earthquakes, however, upon reviewing the literature on disaster preparedness in San Francisco, the reasons for its absence became clearer. The academic literature pertaining directly to disaster preparedness in San Francisco is sparse in comparison to comparable literature pertaining to Auckland. Whilst this result was not particularly surprising, it is nonetheless of some concern. Given the emerging picture of a somewhat fragmented disaster preparedness framework in San Francisco, the lack of a guiding ideology in their work moving into the future will only act to exacerbate this. Whilst these findings do not paint a perfect picture, five out of thirteen respondents claimed that this was a problem with the current approach and that stronger efforts to consult with the academic literature as it pertains to disaster preparedness, was a necessary undertaking. This line of inquiry provided a reasonably coherent answer to research aim three, which seeks to understand the foundations upon which the actions of each disaster preparedness framework are planted.



## 5.5 Auckland Analysis

This research produced results of note in the following areas as they pertain to the disaster preparedness framework present in Auckland;

- *The structure of Auckland's disaster preparedness framework.*
- *The approach adopted by Auckland's disaster preparedness framework to increase levels of preparedness.*
- *The beliefs around public messaging regarding disaster preparedness and the most appropriate messaging style.*
- *The barriers which hinder disaster preparedness efforts in Auckland.*
- *The theoretical approach adopted in Auckland to guide efforts in disaster preparedness.*

In this section the aforementioned areas are discussed in order to address the research aims posed in Chapter 1.

### 5.5.1 Framework Structure

Results in this area of inquiry were uniform and generally unsurprising, given that Auckland's entire emergency management framework is dictated by the Civil Defence and Emergency Management Act 2002. In the field of disaster preparedness, thirteen out of thirteen participants agreed that ACDEM is the body that takes lead agency in designing and implementing measures to improve levels of disaster preparedness in the Auckland region. The results of this research showed no coherent agreement as to who the other significant players in the disaster preparedness space are. However, when participants were questioned as to the effectiveness of the disaster preparedness governance structure, only four out of thirteen participants claimed that they were content with the structure as outlined by the CDEM Act 2002. Six out of thirteen participants stated that they believed the institutional approach to increasing levels of disaster preparedness is scattered and that organisations in this area often operated in a siloed fashion. However, three of those six participants who expressed discontent with Auckland's institutional approach stated that they believed the situation was improving. The nature of opinion among participants on this point can be summarised in a quote by participant AKL 07;

***"The situation that we've found ourselves in, it's that it's been a very siloed approach for years. Fire and Emergency New Zealand (FENZ) works on their own (preparedness) stuff, police do theirs. Never in New Zealand at all have we (CDEM) been successful in tying it all together and saying OK we're the CDEM group and we'll have oversight but we'll all work together. It's not dysfunctional but neither is it properly integrated and it's probably a target that's quite a long way away."***

Whilst it was not a majority of participants who expressed this sentiment, the amount of responses in this vein was sufficient to warrant discussion. It could be posited that even though a legislative framework which dictates the disaster preparedness governance structure is not a solution in terms of developing a cohesive institutional approach to preparedness, it does seem to help in the Auckland context. However, the responses on this topic did provide an answer to research aim one which aims to illuminate the structure of the disaster preparedness framework in each city.

### 5.5.2 Approach to Disaster Preparedness Messaging

This was an area of inquiry which had uniform results across the whole range of participants. Twelve out of thirteen participants concurred that public messaging aimed at increasing levels of preparedness must empower the public to prepare as opposed to scaring them into preparing. Whilst there was a diversity of reasoning for the avoidance of a fear-based approach to preparedness messaging, the general consensus can be identified through a quote by participant AKL 04;

***“Creating fear in people tends to make them run in the opposite direction and into denial. They then feel that there’s nothing they can do. Whereas the ‘more prepared than you think’ approach definitely inspires at least some action. More so than fear-based approaches”***

This is an encouraging finding as, what is clear, in general terms at least, is that the Auckland disaster preparedness frameworks approach to disaster preparedness messaging aligns directly with what the literature perceives to be best practice. Namely that disaster preparedness messaging needs to focus on the benefits of undertaking preparedness actions rather than the consequences which will arise through inaction (Paton et al., 2000).

In the disaster preparedness messaging area, there was one additional common thread which emerged through participant responses. Five out of thirteen participants cited the importance of tailoring preparedness messaging to the context in which you are looking to act. Participant AKL 05, the only Auckland-based participant who did not explicitly agree with the empowerment versus fear approach, makes the case for the importance of tailoring messaging to fit the community setting in the following manner;

***“It is one thing as an expert to have information and understand it, it’s another to have the creative and compassionate skill to interpret it to the right audience. I would say that our craft is to be able to present information appropriate to the audience which we are looking at.”***

The findings gathered in this area have illuminated the approach to a key aspect of disaster preparedness development adopted by the Auckland disaster preparedness framework. As such, the strong advocacy for empowerment-based messaging as opposed to fear-based messaging along with

a commitment to a reasonably well thought out messaging strategy on the part of the Auckland disaster preparedness framework, has helped to address a portion of research aim four.

### 5.5.3 Approach to the Development of Disaster Preparedness

Aligning with findings from the San Francisco context, Auckland participants displayed high levels of agreement around the idea that the community engagement or 'bottom up' approach is the most effective means of increasing rates of disaster preparedness. Eleven out of thirteen participants stated this approach was being undertaken in the Auckland context. However, of the eleven who stated this approach as being the most applicable, only five participants stated that they are content with the current application of this approach in the Auckland context. Participant AKL 12 gives a concise explanation of their concerns with the Auckland disaster preparedness framework's approach in the following statement;

***“Whilst the idea is right, they need to figure out exactly what they (ACDEM) are trying to do and how we can best go about this collectively. This is what they need to figure out. I think strategically it's just lacking clarity at the present time.”***

The Auckland based research on this is illuminating for the same reasons the results in the San Francisco context were illuminating, namely, that the 'bottom up' approach to developing levels of community preparedness has been recognised for a significant period of time in the literature on disaster preparedness as the favoured approach. As was the case in the San Francisco context, in Auckland we have a situation in which our understanding of best practice is being adopted but a significant portion of practitioners are discontent with the means by which it is being applied. Whilst the existent legislative framework dictates roles and responsibilities in the preparedness space for Auckland CDEM; its reach stops there. The results of this research do not directly infer an element of fragmentation in approach on the part of the Auckland disaster preparedness framework. However, the lack of agreement regarding the supporting organisations with an interest in the development of levels of disaster preparedness in Auckland, points to a situation in which peripheral organisations' roles and responsibilities are not well defined.

### 5.5.4 Notable Barriers to Disaster Preparedness

Barriers to disaster preparedness play an equally significant role in shaping the Auckland disaster preparedness frameworks approach as they do in the San Francisco context. Thirteen out of thirteen participants in Auckland cited that significant barriers existed to the development of disaster preparedness levels in Auckland. A deeper thematic analysis highlighted the following as the most cited barriers;

- *Socio-economic factors*
- *Transient populations*
- *Complacency bred from an absence of significant disaster events*

In the Auckland context, there is an acute awareness of the connection between the socio-economic factors and the presence of a transient population. This could be in part attributed to the high levels of publicity in recent years surrounding the unaffordability of housing in the region. Ten out of thirteen participants cited socio-economic factors such as the costs associated with preparing and the time required to get informed as significant barriers to developing levels of preparedness in the Auckland context. Participant AKL 10 provides a concise summary of the connection between transience and economic barriers to disaster preparedness with the following statement;

***“The transient nature of our communities is a significant issue. People move a lot which doesn’t help. Cost is the next main barrier. Living in Auckland is expensive and if you’re surviving here you are succeeding due to the sheer cost of being here. So, when you say you need to prepare for three days or whatever, it just goes over people’s heads as they just don’t have the spare funds to adhere.”***

The strong agreement among participants that cost, time, transience and general socioeconomic issues are substantial barriers is unsurprising. Auckland is a desirable but expensive area to reside and it also happens to be an area that faces substantial natural hazard risks. The fact that cost and the inability for a number of Aucklanders to reside in one location for an extended period is to be expected, however, there are deeper connections to be made here. There has been a move away from emphasising the importance of building a disaster kit, to working to develop social connectivity and engage with community groups to disseminate the preparedness message and this is reflective of a realisation about the nature of the city concerned. This realisation, that Auckland residents are unlikely to expend precious time and resources on preparing, corresponds directly with Auckland’s shift away from a top down approach aimed at convincing Aucklanders to build disaster preparedness kits. An approach which has largely been usurped by the community driven bottom up approach to developing preparedness (Frandsen et al., 2011).

The other notable barrier corresponds with the responses gathered in San Francisco. Seven out of thirteen participants in Auckland cited complacency toward disasters and their effects as a significant barrier to the development of preparedness in the region. As was the case in the San Francisco data, this result is somewhat surprising, given that in this decade, three significant earthquakes have affected Christchurch and Kaikoura respectively. This was dismissed by participants when prompted on this idea. The following quote from participant AKL 02 when asked what the greatest barriers to

preparedness development in Auckland were, provides a concise summation of the range of views surrounding the complacency of Aucklanders towards disasters;

***“A lack of experience with disasters. This breeds an apathy and complacency in Aucklanders. Those who have been through one, say Christchurch residents living Auckland, won’t have the same problem. They know what it’s like, but Aucklanders just don’t.”***

This brings us back to the literature which addresses salient beliefs surrounding disasters. Becker et al. (2013) and Najafi et al. (2016) make the case that these beliefs are natural in contexts where disaster events are rare and limited experience with such events exists. What the results in this area do show however, is a reasonably strong understanding of the apathy towards disasters which Aucklanders possess. The previously cited articles both advocate for messaging/engagement strategies which are tailored to suit the specific audiences they are addressing. Given that five out of thirteen participants stated that an approach to disaster preparedness messaging that was tailored to specific community contexts is highly important, Auckland seems to show that intentions in this area are beginning to align with best practice as the literature perceives it. The fact that five out of thirteen participants expressed opinions that agree with the literature on this topic, shows that thinking around how to effectively deal with these salient beliefs is showing signs of aligning with the evidence, which is encouraging. However, as was the case when analysing the data from the San Francisco context, these barriers are destined to define the approach which authorities adopt in developing levels of disaster preparedness. The results regarding barriers to preparedness coherently address research aim two for the Auckland context. At this point it is worth commenting on the fact that the notable barriers to preparedness faced in each context were strikingly similar. This will have strong implications in the coming discussion regarding how they may contribute to an outline of best practice in disaster preparedness in a certain context.

### 5.5.5 Theory in Disaster Preparedness

The results produced out of the Auckland context in terms of the theoretical justifications for disaster preparedness efforts mirrored those produced in San Francisco. Only three out of thirteen participants in the Auckland context cited a sound theoretical base for their efforts in disaster preparedness. However, the interesting result extracted from Auckland participants was that there was a far greater awareness of the theory and literature existent in this area. Furthermore, there appears to be an understanding that Auckland’s disaster preparedness framework needs to align its actions in accordance to its guidance. All ten participants who stated that that the approach to developing levels of preparedness did not adhere to any notable theoretical foundation also noted the importance of it doing so. When prompted as to what theory they deemed the most appropriate, five out of these ten

respondents quoted human behavioural theory as an area of inquiry which could contribute significantly to disaster preparedness. Participant AKL 09 expresses the Auckland disaster preparedness framework's initial foray with the literature base when they state;

***“In the past we’ve struggled to connect some of the literature to the solid efforts which we’ve tried to undertake but we’re getting better and practitioners are becoming more interested in making this connection.”***

When prompted further on the avenues which they deemed the most appropriate in the preparedness space, participant AKL 09 states the following;

***“I am interested, from a psychological perspective, in how we can influence human behaviour in positive ways to help prepare them for disasters.....That’s how I see things. The theory of planned behaviour is a big one”.***

This is an important section of the results in the Auckland context, as their seeming intention to design and implement disaster preparedness efforts with a discernible theoretical justification bounded in evidence shows an awareness of the work being done in this field outside of the CDEM sphere. The fact that five out of thirteen participants cited the theory of planned behaviour, as outlined by Najafi et al. (2017), as a useful theory in terms of efforts to develop preparedness is encouraging. To an extent, Auckland's awareness of the array of theoretical foundations is unsurprising given that an extensive amount of research has been undertaken in the New Zealand context in regard to disaster preparedness. Works published by prolific authors in this field such as Douglas Paton, David Johnston, Alice Chang-Richards and many others, provide preparedness practitioners in the Auckland setting with a wealth of ideas ready for application. This research cannot claim to determine what constitutes best practice in disaster preparedness in terms of evidential foundations utilised to guide efforts in disaster preparedness. However, given the resounding agreement on the part of practitioners that efforts need to be guided by evidence, it would indicate that best practice in disaster preparedness would require thoroughly consulting the literature in the initial design and implementation processes, thus addressing research aim three. The results of this research, along with the literature review, also tentatively shows that the theory of planned behaviour should be further interrogated in future efforts to increase levels of disaster preparedness in the Auckland context.

## **5.6 A Comparative Analysis**

To conclude the discussion surrounding the undertaken research, the key findings in each contextual setting will be compared and contrasted. In this manner, the ways in which this research has addressed the overarching aim of this research will be outlined. Namely, **to identify and understand**

**the unique aspects of the disaster preparedness frameworks and how they are designed and implemented in San Francisco and Auckland to gain a clearer understanding of what constitutes best practice in disaster preparedness.** The results of this research show that each disaster preparedness framework studied has strong points and areas in which improvements could be made. Analysing these aspects in relation to one another will help illuminate an idea of what best practice in disaster preparedness looks like in a given setting. The three key aspects of this research which will come under scrutiny are as follows;

- 1) *Implications of differing disaster preparedness institutional structures.*
- 2) *Pragmatic approaches to increasing levels of disaster preparedness.*
- 3) *Theoretical foundations which underpin the aforementioned approaches.*

### 5.6.1 Implications of Differing Disaster Preparedness Structures

The key difference between the disaster preparedness frameworks present in both Auckland and San Francisco is that in the Auckland context, roles and responsibilities of particular agencies are defined by the CDEM Act 2002. The situation in San Francisco is inherently different. In San Francisco, a consensus is present that the SFDEM is the organisation charged with leading efforts in developing disaster preparedness. Whilst this consensus appears strong, the absence of a clear structure has significant implications on the approach which the San Francisco disaster preparedness framework adopts in its pursuit of disaster preparedness. These results show that whilst SFDEM does take lead agency in designing and implementing disaster preparedness initiatives, on the whole, San Francisco takes a multi institutional approach to developing levels of disaster preparedness. Auckland's disaster preparedness framework on the contrary, is more monolithic in nature with ACDEM occupying the lead role and a number of other agencies with similar goals playing certain roles where their particular interests are situated. This research falls short of providing answers as to which structure is more effective; however, what can be posited is that the structure of a disaster preparedness framework has significant effects on the institutional approach to disaster preparedness adopted in each context. The results of this research show that participants in San Francisco perceived the approach taken there was scattered and fragmented. A result which can be attributed in part to the absence of a binding set of directives which outline the roles and responsibilities of specific institutions in disaster preparedness.

In the Auckland context however, the opinion that the approach to developing levels of preparedness was scattered or fragmented was present, but far less so than in San Francisco. This is by no means a perfect correlation however, there being in both contexts perceptions of fragmentation in approach, showing that a binding legislative framework such as the CDEM Act 2002 is no guarantee of a coherent,

collaborative institutional approach to developing levels of disaster preparedness in a given setting. However, the fragmentation in approach which presented itself in either city was different in its nature. In the San Francisco setting there are numerous differing city government departments who are all concerned with raising levels of disaster preparedness. These include SFDEM, the Neighbourhood Empowerment Network (NEN), Office of the Controller, and the San Francisco Human Services Department. The absence of a specified legislative mandate at the city or state level for any given institution to act in the preparedness area gives rise to the opportunity for agencies to act in ways which may be contrary to others who are already operating in a given setting. This issue raised significant concerns among participants. The most notable beneficial function of the CDEM Act 2002 is that, in the local government context, efforts are undertaken in the preparedness area to ensure that they fall under the umbrella of ACDEM efforts in some form or other, as ACDEM is mandated to take a leading role in efforts concerned with developing preparedness (NZ Government, 2002). This is a beneficial factor in the Auckland approach that the San Francisco disaster preparedness framework is not afforded.

### 5.6.2 Pragmatic Approaches to Increase Levels of Disaster Preparedness

In both contexts studied, the community engagement or 'bottom up' approach to preparedness development is recognised as the most effective. Differences arise, however, in actual efforts being undertaken on the ground. The previous section of the discussion established that the San Francisco framework adopts a multi institutional approach to raising preparedness. However, on closer examination what is apparent is that whilst their institutional approach is not the most cohesive, those who are actively working to develop preparedness in certain settings are doing so through rather innovative means. One notable example of a small organisation operating within the San Francisco city government umbrella, that has fully immersed itself in the community engagement approach to preparedness, is the Neighbourhood Empowerment Network (NEN). The NEN make it their priority to engage directly with disaster-risk prone communities to understand their specific goals and needs and subsequently devise disaster preparedness strategies which are tailored to each setting. This has empowered communities to build resilience on their own terms, an approach which strongly aligns with contemporary literature in this area.

The Neighbourhood Emergency Response Team (NERT) is another on-the-ground strategy to develop preparedness undertaken by the San Francisco Fire Department (SFFD). The NERT program provides training to willing volunteers around how to first, prepare for a disaster, and second, effectively respond to one. SF72.org is the final initiative which deserves mention for acting as a hub from which the public can easily access information on disaster preparedness. SF72.org subscribes heavily to the belief that empowering residents to prepare is the only effective means of disaster preparedness



communication. Dwelling on specific initiatives is outside the scope of this research, however an understanding of their nature and prevalence provides an indication as to the broader trends present at higher levels of the respective frameworks. Whilst participants' opinions varied as to the success and relevance of these initiatives, when mentioned, a sense of innovation and lateral thought was regularly attributed to them.

Whilst the Auckland disaster preparedness framework undoubtedly possess a higher degree of clarity in terms of its structure, it is not clear that efforts on the ground display the same adherence to contemporary literature on the topic as its San Franciscan counterpart. Initiatives such as *'What's the Plan Stan'* and *'Never Happens? Happens'* play an analogous role to SF72.org. They provide all of the relevant information as to what hazards are present in certain areas and what practical means residents can undertake to prepare for them (ACDEM, n.d). *'What's the Plan Stan'* is a particularly interesting effort in that it engages directly with schools. Another initiative which highlights ACDEM's pivot towards a community engagement approach to disaster preparedness. Participants in Auckland identified the value in connecting with existing community networks and working with them to develop preparedness strategies appropriate to their cultural setting. *'What's the Plan Stan'* has shown promising results, however, it could be argued that its scope is not quite as broad as the approach adhered to by the NEN in San Francisco. Another example of pragmatic effort was ACDEM's Community Response Planning initiative. The rationale and approach of this effort was outlined by participant AKL 11;

***"It was a good experiment for ACDEM but just reaching out to create new groups was not effective. That's why now we are targeting existing community groups, which gives us far greater reach for the efforts and resources expended."***

As this participant alludes, the initiative no longer exists under its previous moniker, however, what is clear is that lessons have been learned from this approach and an emphasis is now being placed on leveraging existing networks as a means of effectively conveying the disaster preparedness message, an approach which aligns with the contemporary understanding of best practice (Wise, 2007). However, not all participants were so pleased with the abandonment of the aforementioned initiative. Participant AKL 13 perceived the egress from the community response planning initiative in the following manner;

***"The community response plan framework was very successful, and you had that local element which helps you build on existing events that are being undertaken in the community and you're growing a network of people across the city that can be used in those events."***

This research did not provide any conclusive insight into the continuation of analogous efforts. This research does show that this bottom up approach to engaging with the community to develop levels of disaster preparedness is in line with the literature which perceives it to be best practice in this area.

The extensive discussion surrounding the structures and approaches adopted by each disaster preparedness framework paints the following picture. The disaster preparedness framework in San Francisco consists of a group of entities which have difficulties coordinating their efforts to form one cohesive approach to developing levels of disaster preparedness; however, the efforts that are being devised by organisations concerned are strikingly innovative. While there is no comprehensive quantitative data set validating the effectiveness of their efforts, the approaches that said initiatives adopt are aligned with the literature and the contemporary understanding of best practice. The Auckland disaster preparedness framework presents itself in the opposite fashion. Whilst there are a number of organisations involved in developing levels of preparedness, ACDEM is required by law to take a leading role in this area and, as such, peripheral organisations generally play supporting roles. When questioned on this, participant AKL 11 states that;

***“We’ve taken the approach that we don’t just go out and conduct our own initiatives. We do things under the banner of ACDEM to show a coordinated public approach to the community.”***

This commitment to coherence is admirable and aligned with best practice; however it seems that on the ground, the efforts being undertaken in Auckland do not possess the innovation or optimism present in efforts currently being implemented in San Francisco.

### 5.6.3 Shortcomings in Theoretical Justification

***“Theory without practice is lame, and practice without theory is blind”***. This well used adage was utilised in the article “Integrating Theory into Practical Emergency Management” (2009), to illustrate what the author believed to be a dismissal by the emergency management community of academic literature as ivory tower abstraction. This article was written in 2009 and the contemporary willingness shown by participants in this research, to adhere more closely to theory in their preparedness efforts shows that in Auckland and San Francisco, this dismissive attitude is becoming less prevalent. However, according to the majority of participants in both contexts, it is the case that current preparedness efforts are not comprehensively guided by formally established theoretical frameworks. Participant AKL 10 in their research interview stated the following;

***“Generally, the efforts are made up on the spot without any real theoretical underpinning. Again, you can look at the health sector. Every approach they take to anything has to have a foundation in solid evidence. In our sector there isn’t.”***

Participant SF 08 in their research interview, when questioned as to the theoretical underpinnings which back preparedness efforts in San Francisco, stated the following;

***“No. None of this is taken into account. Not even at a national level I don’t think”***

Whilst these comments are at the extreme ends of the spectra of answers in each context, they appear to reflect the strong agreement in both contexts, namely, that disaster preparedness efforts in both Auckland and San Francisco do not have their origins in a sound theoretical base of evidence. It was most definitely that case that in the Auckland context there was a sound awareness of applicable theoretical frameworks in which their disaster preparedness efforts could be placed. The challenge moving forward for the Auckland framework is to begin to incorporate these theories in disaster preparedness into the design process of their preparedness development initiatives. The San Francisco disaster preparedness framework finds itself in a similar situation, perhaps one slightly direr than its Auckland counterpart. This research shows that there is limited awareness of the theories, particularly in the human behavioural field, which could greatly aid existing and future initiatives concerned with developing levels of disaster preparedness.

For San Francisco the road to best practice in this area is slightly longer, however, for the Auckland disaster preparedness framework, it is a matter of understanding how to cross the bridge between understanding that a certain avenue of action is necessary and adopting that behaviour in their efforts on the ground (Najafi et al, 2017). The answer to which is outlined in the theory of planned behaviour.

#### **5.6.4 Best Practice in Disaster Preparedness in the Metropolitan Setting**

To end this discussion, the final aspect of the primary aim of this research will be addressed. From the outset, this research aimed to gain a clearer understanding of what constitutes best practice in disaster preparedness by undertaking in-depth research into the disaster preparedness frameworks of both Auckland and San Francisco. Throughout this discussion, areas in which each framework shows signs of adhering to best practice have been detailed, however, this concept has proved a difficult one to grasp conceptually.

In terms of a disaster preparedness governance structure, it is clear is that the contrasting nature of each framework studied has both negative and positive aspects which have filtered down to their respective approaches. In San Francisco, the presence of an amorphous, undefined institutional approach acts to compromise the cohesiveness of their approach to developing levels of preparedness. At the same time however, the lack of officially defined roles and responsibilities allocated to specific organisations has resulted in a certain flexibility for a vast array of institutions to

innovate and experiment with differing ideas and approaches. These have, according to this research, begun to show promising results.

The Auckland disaster preparedness framework on the other hand, with its more rigid institutional structure, has clearly acted to produce a sense of cohesiveness in approach to which participants in the Auckland context deem to be necessary to the successful development of disaster preparedness levels. What these results show however, is that this rigid structure and emphasis on cohesion has resulted in a one-dimensional approach in which any variation in approach is determined by a single institution. Both frameworks have their respective advantages and shortcomings as previously discussed. What the results of this research have not shown in any meaningful way is specific areas in which either context could effectively adopt its counterpart's approaches in order to see a significant improvement in levels of disaster preparedness among its residents.

There are recommendations that could conceivably be made that would in theory benefit the opposing context, however, it is highly likely that they would have little to no chance of ever being implemented due to inherent cultural differences which exist in either context. For example, the perceived issues surrounding the cohesion of the San Franciscan approach could be remedied by a legislative framework which formulated the roles and responsibilities of certain agencies. It is unclear however how this would affect the innovative developments made by specific organisations that may be locked out of the preparedness development process. Another issue on this front is the inherent differences in the nature of governance in each context. As established, governance in the United States is bottom up in nature in that higher branches of government exert power onto smaller localities only in the most sparing of instances or never at all. This is in contrast to the New Zealand approach to governance in which is broadly top down and in which the cession of control to higher levels of government is not uncommon. The overuse of legislated power by the Canterbury Earthquake Recovery Authority (CERA) in the wake of the 2011 earthquakes being a notable example of this (Wilkinson, Crampton & Krupp, 2018). In short, the American psyche displays a tendency to be sceptical of the creation of new regulatory frameworks which limit individuals' and organisations' capacity to act in what they perceive to be their own best interests (Pew Research Centre, 2015). On the pavilion situated directly outside San Francisco City Hall among a diverse range of flags, flies the Gadsden flag. A bright yellow flag bearing a coiled snake lying atop the words "Don't Tread on Me". The roots of this symbol of liberty stem from the drive for independence from British rule of colonists in the lead up to the American Revolutionary War (Walker, 2016). Its presence outside San Francisco City Hall demonstrates the presence of this cultural characteristic more effectively than any carefully crafted words could.



**Figure 5.3: Gadsden Flag**

The significant question here being, what do we mean when we inquire as to what best practice in disaster preparedness actually encompasses? Is it an adherence to the literature on certain topics? Is it a cohesive, coherent institutional approach as demonstrated by the Auckland disaster preparedness framework? Is it a mass of small outfits paving their own way in a complex societal setting such as can be seen in San Francisco? The results of this research show that what constitutes best practice in the approach to disaster preparedness will differ from context to context. Cultural differences, socio economic differences, and differing hazard profiles will always determine what the most appropriate means of developing disaster preparedness is. What this research does provide is a snapshot of the current disaster preparedness structures in two densely populated, diverse metropolitan settings, facing considerable risks from the effects of possible disaster events. One of the strengths of this research is its strong representation of disaster preparedness practitioners in each context. The areas upon which practitioners in both settings resoundingly agree which also align with the literature base, could be considered to be best practice in the broader approach to disaster preparedness in the context of large densely populated metropolitan settings. These areas are as follows;

- 1) *A community centred, 'bottom up' approach to developing levels of preparedness which leverages existing community networks, is the approach which constitutes best practice in a diverse metropolitan, setting. (Consideration given to Auckland in that, from a regional perspective, it is a combination of both metropolitan and rural areas)*
- 2) *The adoption of a messaging strategy that empowers residents to prepare for disasters and are tailored to the specific audiences for which they are intended.*
- 3) *Thorough consultation with the academic literature needs to be incorporated into the design and implementation process of initiatives. Best practice would imply that all efforts have their foundations in a solid base of theoretical evidence.*

## 6.0 CONCLUSION

The overarching aim of the research undertaken was to identify and understand the unique aspects of the disaster preparedness frameworks and how they are designed and implemented in San Francisco and Auckland, and to gain a clearer understanding of what constitutes best practice in disaster preparedness. In places, the research was successful in providing insights into certain aspects of these areas. The scope of this research lacked the breadth required to formulate a model of what constitutes best practice in disaster preparedness. However, a notable contribution of this research to the field is that it lays the initial foundations for the construction of a conceptual framework which outlines what constitutes best practice in disaster preparedness governance and approach for densely populated metropolitan areas.

This study also shows that whilst there is a clear understanding as to what the most effective approaches are in disaster preparedness, gaps exist between the conceptual understanding of said concepts and the capacity to successfully implement them on the ground. These gaps are far from insurmountable and organisations in both contexts clearly have initiatives in place which are on track to achieve their desired outcomes. The challenge however remains in the ability of concerned organisations to make these efforts succeed on the scales which are required. The Community Response Planning Initiative in Auckland and the efforts of the NEN in San Francisco being telling examples of this.

This research reiterates the findings of studies undertaken over the past decade and beyond by demonstrating that a community centred, bottom up approach is the most effective means of increasing levels of disaster preparedness. The results of this research also show that differences in organisational governance structures that delegate roles to associated organisations have profound implications on the nature of the approaches implemented by disaster preparedness frameworks. As outlined previously, neither San Francisco nor Auckland's framework are preferable. The reality is that the idea of best practice in terms of structure, governance and approach is a highly nuanced concept that depends greatly on the cultural context in question. Policy makers and practitioners in the preparedness area need not radically alter the structures which currently exist to see an upturn in levels of preparedness among their residents. What needs to be focussed on is the development of an understanding around what influences their existent governance structures have on their pragmatic efforts to preparedness. Concerted efforts then must be made to account for these influences when an approach to preparedness is being designed and implemented.

## REFERENCE LIST

- Adams, R., Karlin, B., Eisenman, D., Blakely, J., & Glik, D. (2017). Who Participates in the Great Shakeout? Why Audience Segmentation Is the Future of Disaster Preparedness Campaigns. *International Journal of Environmental Research and Public Health*, *14*(11). Retrieved May 5, 2018, from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5708046/>
- Alexander, D. (2015). *Disaster and Emergency Planning for Preparedness, Response, and Recovery*. Oxford Research Encyclopedia of Natural Hazard Science. doi:10.1093/acrefore/9780199389407.013.12
- American Red Cross (2006), available at: [www.redcross.org](http://www.redcross.org) (accessed May 13, 2018).
- Auckland Civil Defence and Emergency Management (ACDEM). (2016). *Working Together to Build a Resilient Auckland: Auckland CDEM Group Plan 2016-2021* (Rep.). Auckland: ACDEM. Retrieved February 3, 2018, from [http://www.aucklandcivildefence.org.nz/media/56013/BC5620-CDEM-Group-Plan---formal-document\\_LORES-ref.pdf](http://www.aucklandcivildefence.org.nz/media/56013/BC5620-CDEM-Group-Plan---formal-document_LORES-ref.pdf)
- Auckland Civil Defence and Emergency Management (ACDEM). (n.d.). What's the Plan Stan. Retrieved April 4, 2018, from <https://www.whatstheplanstan.govt.nz/>
- Auckland Council. (2015a). *Get Ready Auckland: Know Prepare Connect* (pp. 1-24, Rep.). Auckland: Auckland Council.
- Auckland Council. (2015b). *The 10-Year Budget: Long Term Plan 2015-2025* (pp. 1-326, Publication). Auckland: Auckland Council.
- BAUASI. (2018). About the Bay Area UASI. Retrieved April 14, 2018, from <http://www.bayareauasi.org/about-us>
- Becker, J. S., Paton, D., Johnston, D. M., & Ronan, K. R. (2013). Salient Beliefs About Earthquake Hazards and Household Preparedness. *Risk Analysis*, *33*(9), 1710-1727. Retrieved May 5, 2018, from <https://onlinelibrary.wiley.com/doi/full/10.1111/risa.12014>.
- Berg-Schlosser, D., De Meur, G., Rihoux, B., & Ragin, C. C. (2012). *Configurational Comparative Methods: Qualitative Comparative Analysis (QCA) and Related Techniques*. SAGE Publications. <http://dx.doi.org/10.4135/9781452226569>

- Bolton, P., Dirks, K., & Neuwelt, P. (2014). Natural hazard preparedness in an Auckland community: Child and community perceptions. *Personal Care in Education, 23*(1), 23-41. Retrieved May 6, 2018, from <https://www.tandfonline.com/doi/abs/10.1080/02643944.2014.881909?journalCode=rped20>.
- Burke, S., Bethell, J. W., & Britt, A. F. (2012). Assessing Disaster Preparedness among Latino Migrant and Seasonal Farmworkers in Eastern North Carolina. *International Journal of Environmental Research and Public Health, 9*(9), 3115-3133. Retrieved May 16, 2018, from <http://www.mdpi.com/1660-4601/9/9/3115/htm>
- Caiden, G. E. (1989). The Value of Comparative Analysis. *International Journal of Public Administration, 12*(3), 459-475. Retrieved April 3, 2018, from <https://www.tandfonline.com/doi/abs/10.1080/01900698908524634>.
- Chang-Richards, A., Vargo, J., & Seville, E. (2013). Organisational Resilience to Natural Disasters: New Zealand's Experience. *China Policy Review, 10*, 117-119. Retrieved May 5, 2018.
- Chan, J. C. (n.d). *The Role of Social Media in Crisis Preparedness Response and Recovery* (Rep.). Vanguard. doi:<https://www.scribd.com/doc/300586211/The-Role-of-Social-Media-in-Crisis-Preparedness-Response-and-Recovery>
- City and County of San Francisco. (2008). *All-Hazards Strategic Plan* (pp. 1-70, Rep.). San Francisco: City and County of San Francisco. Retrieved February 2, 2018, from <https://sfdem.org/ftp/uploadedfiles/DEM/PlansReports/StrategicPlan2008.pdf>.
- Creswell, J. W. (2007). *Qualitative Inquiry and Research Design: Choosing Among Five Approaches* (2nd ed.). Sage, CA: Thousand Oaks. Retrieved May 17, 2018.
- Cronin, P., Ryan, F., & Coughlan, M. (2008). Undertaking a Literature Review: A Step by Step Approach. *British Journal of Nursing, 17*(1). Retrieved May 13, 2017, from <https://www-magonlinelibrary-com.ezproxy.auckland.ac.nz/doi/pdf/10.12968/bjon.2008.17.1.28059>.
- Daly, M., Becker, J., Parks, B., Johnston, D., & Paton, D. (2009). *Defining and measuring community resilience to natural disasters: A case study from Auckland* (pp. 1-13, Rep.). Wellington: Ministry of Civil Defence and Emergency Management.
- Dearnley, C. (2005). A Reflection on the use of Semi Structured Interviews. *Nurse Researcher, 13*(1), 19-28. Retrieved April 1, 2018, from <https://www.ncbi.nlm.nih.gov/pubmed/16220838>.



- Denzin, N.K. and Lincoln, Y.S. (2005) Introduction: The Discipline and Practice of Qualitative Research. In: Denzin, N.K. and Lincoln, Y. S., Eds., *Handbook of Qualitative Research, 3rd Edition*, Sage, Thousand Oaks, 1-32.
- Dooley, D., Catalano, R., Mishra, S., & Serxner, S. (1992). Earthquake Preparedness: Predictors in a Community Survey. *Journal of Applied Social Psychology, 22(6)*, 451-470. Retrieved May 6, 2018, from <https://onlinelibrary.wiley.com/doi/pdf/10.1111/j.1559-1816.1992.tb00984.x>.
- Eisenman, D. P., Glik, D., Gonzales, L., Maranon, R., Zhou, Q., Tseng, C., & Asch, S. M. (2009). Improving Latino Disaster Preparedness Using Social Networks. *American Journal of Preventative Medicine, 37(6)*, 512-517. Retrieved May 6, 2018, from <https://www.ncbi.nlm.nih.gov/pubmed/19944917>.
- Elo, S., & Kyngäs, H. (2008). The Qualitative Content Analysis Process. *Journal of Advanced Nursing, 62(1)*, 107-115. doi:10.1111/j.1365-2648.2007.04569.x
- Elsevier Science. (2017). *A Global Outlook on Disaster Science* (Rep.). Elsevier Science. Retrieved May 5, 2018, from <https://www.elsevier.com/research-intelligence/research-initiatives/disasterscience2017>.
- FEMA. (2017, October 10). *National Preparedness Directorate*. Retrieved May 26, 2018, from <https://www.fema.gov/national-preparedness-directorate>
- Finnis, K. (2004). *Creating a Resilient New Zealand. Can public education and community development campaigns create prepared communities? An examination of preparedness motivation strategies*. (pp. 1-133, Rep.). Wellington: Ministry of Civil Defence and Emergency Management. Retrieved May 6, 2018, from <https://www.civildefence.govt.nz/assets/Uploads/publications/finnis-creating-a-resilient-new-zealand.pdf>.
- Frandsen, M., Paton, D., & Sakariassen, K. (2011). Fostering community bushfire preparedness through engagement and empowerment. *The Australian Journal of Emergency Management, 26(2)*, 23-30. Retrieved May 5, 2018, from <https://search.informit.com.au/documentSummary;dn=140692861394554;res=IELAPA>.
- Gowan, M. E., Sloan, J. A., & Kirk, R. C. (2015). Prepared for what? Addressing the disaster readiness gap beyond preparedness for survival. *BMC Public Health, 15(1139)*, 1-5. Retrieved May 6, 2018, from <https://bmcpublikealth.biomedcentral.com/articles/10.1186/s12889-015-2440-8>.

- Integrating Theory into Practical Emergency Management. (2009). *IACLEA Campus Law Enforcement Journal*. Retrieved June 4, 2018, from [http://www.challengingrisk.com/docs/Integrating\\_Theory\\_into\\_Practical\\_Emergency\\_Management.pdf](http://www.challengingrisk.com/docs/Integrating_Theory_into_Practical_Emergency_Management.pdf)
- Kan, A., Adegbite, E., Omari, S. E., & Abdellatif, M. (2016). On the use of qualitative comparative analysis in management. *Journal of Business Research*, *69*(4), 1458-1463. Retrieved May 7, from <https://www.sciencedirect.com/science/article/abs/pii/S0148296315005482>.
- Kapucu, N. (2008). Culture of preparedness: Household disaster preparedness. *Disaster Prevention and Management: An International Journal*, *17*(4), 526-535. doi:[doi.org/10.1108/09653560810901773](https://doi.org/10.1108/09653560810901773)
- Kendall, C., Kerr, L. R., Gondim, R. C., Werneck, G. L., Macena, R. H., Pontes, M. K., . . . McFarland, W. (2008). An empirical comparison of respondent-driven sampling, time location sampling, and snowball sampling for behavioural surveillance in men who have sex with men, Fortaleza, Brazil. *AIDS and Behaviour*, *12*(4), 97-104. Retrieved April 5, 2018, from <https://www.ncbi.nlm.nih.gov/pubmed/18389357>.
- Kitchenham, B., & Charters, S. (2007). *Guidelines for performing Systematic Literature Reviews in Software Engineering* (pp. 1-65, Rep.). Durham: University of Durham.
- Kulemeka, O. (2015). Teaching disaster preparedness via a mobile device: A study of Auckland Civil Defence's Smartphone Application. *Natural Hazards and Earth Systems Sciences*, *3*, 4555-4583. Retrieved May 6, 2018, from <https://www.nat-hazards-earth-syst-sci-discuss.net/3/4555/2015/nhessd-3-4555-2015.pdf>.
- Levac, J., Toal-Sullivan, D., & O'Sullivan, T. L. (2012). Household Emergency Preparedness: A Literature Review. *Journal of Community Health*, *37*, 725-733. doi:[10.1007/s10900-011-9488-x](https://doi.org/10.1007/s10900-011-9488-x)
- Larsson, G., & Enander, A. (1997). Preparing for disaster: Public attitudes and actions. *Disaster Prevention and Management: An International Journal*, *6*(1), 11-21. <http://dx.doi.org/10.1108/09653569710162415>
- Lentini, R. (2014). Bracing for the 'new normal': How communities are preparing for disasters. *Australian Journal of Emergency Management*, *29*(4), 52-54. Retrieved May 6, 2018, from <https://ajem.infoservices.com.au/items/AJEM-29-04-11>

- MCDEM. (2017, June 29). *Roles and responsibilities of MCDEM*. Retrieved May 25, 2018, from <https://www.dpmc.govt.nz/our-business-units/ministry-civil-defence-emergency-management/roles-and-responsibilities>
- Mulilis, J., & Lippa, R. (1990). Behavioural Change in Earthquake Preparedness Due to Negative Threat Appeals: A Test of Protection Motivation Theory. *Journal of Applied Social Psychology, 20(8)*, 619-638. Retrieved May 6, 2018, from <https://onlinelibrary.wiley.com/doi/pdf/10.1111/j.1559-1816.1990.tb00429.x>
- Najafi, M., Ardalan, A., Akbarisari, A., Noorbala, A. A., & Elmi, H. (2016). Salient Public Beliefs Underlying Disaster Preparedness Behaviours: A Theory-Based Qualitative Study. *Prehospital and Disaster Medicine, 32(2)*, 124-133. doi:10.1017/S1049023X16001448
- Najafi, M., Ardalan, A., Akbarisari, A., Noorbala, A., & Elmi, H. (2017). The Theory of Planned Behaviour and Disaster Preparedness. *PLOS Currents Disasters, 1*, 1-17. doi:10.1371/currents.dis.4da18e0f1479bf6c0a94b29e0dbf4a72.
- New Zealand Government. (2002). *Civil Defence Emergency Management Act 2002* (Rep.). Wellington: NZ Government. Retrieved May 6, 2018, from <http://www.legislation.govt.nz/act/public/2002/0033/48.0/DLM149789.html>
- Parahoo K (2006) *Nursing Research – principles, process and issues*. 2nd edn. Palgrave, Houndsmill
- Paton, D., Bajek, R., Okada, N., & McIvor, D. (2010). Predicting community earthquake preparedness: A cross-cultural comparison of Japan and New Zealand. *Natural Hazards, 54(3)*, 765-781. Retrieved May 6, 2018, from <https://link.springer.com/article/10.1007/s11069-010-9500->
- Paton, D. (2003). Disaster Preparedness: A Social-cognitive Perspective. *Disaster Prevention and Management: An International Journal, 12(3)*, 210-216. Retrieved April 4, 2018, from <https://doi.org/10.1108/09653560310480686>.
- Paton, D., Johnston, D., & Smith, L. (2005). When Good Intentions Turn Bad: Promoting Natural Hazard Preparedness. *The Australian Journal of Emergency Management, 20(1)*, 25-30. Retrieved May 5, 2018, from <https://ajem.infoservices.com.au/items/AJEM-20-01-05>.
- Paton, D., & Johnston, D. (2001). Disasters and Communities: Vulnerability, Resilience and Preparedness. *Disaster Prevention and Management: An International Journal, 10(4)*, 270-277. Retrieved May 5, 2018, from <https://doi.org/10.1108/EUM0000000005930>.

- Paton, D., Kelly, G., Burglet, P. T., & Doherty, M. (2006). Preparing for bushfires: Understanding intentions. *Disaster Prevention and Management: An International Journal*, *15*(4), 556-575. Retrieved May 5, 2018, from <https://doi.org/10.1108/09653560610685893>.
- Paton, D., Parks, B., Daly, M., & Smith, L. (2008). Fighting the Flu: Developing Sustained Community Resilience and Preparedness. *Health Promotion Practice*, *9*(4), 45-53. Retrieved May 5, 2018, from <https://www.ncbi.nlm.nih.gov/pubmed/18936259>.
- Paton, D., Smith, L., & Johnston, D. M. (2000). Volcanic Hazards: Risk Perception and Preparedness. *New Zealand Journal of Psychology*, *29*(2), 86-91. Retrieved May 5, 2018, from [https://www.researchgate.net/publication/285889529\\_Volcanic\\_Hazards\\_Risk\\_Perception\\_and\\_Preparedness](https://www.researchgate.net/publication/285889529_Volcanic_Hazards_Risk_Perception_and_Preparedness).
- Pew Research Centre. (2015, November 23). Beyond Distrust: How Americans View Their Government. Retrieved June 2, 2018, from <http://www.people-press.org/2015/11/23/1-trust-in-government-1958-2015/>
- Rañeses, M. K., Chang-Richards, A., Richards, J., & Bubb, J. (2018). Measuring the level of disaster preparedness in Auckland. *Procedia Engineering*, *212*, 419-426. Retrieved May 6, 2018, from <https://www.sciencedirect.com/science/article/pii/S1877705818300729>.
- Richards, J. (2014). *Reaching Communities with the Social Resilience Message: Be Prepared* (pp. 82-88, Rep.). Paper presented at the International Institute for Infrastructure Resilience and Reconstruction Conference, West Lafayette, Indiana, USA.
- Russell, L. A., Goltz, J. D., & Bourque, L. B. (1995). Preparedness and Hazard Mitigation Actions Before and After Two Earthquakes. *Environment and Behaviour*, *27*(6), 744-770. Retrieved May 6, 2018, from <http://journals.sagepub.com/doi/abs/10.1177/0013916595276002>
- San Francisco Department of Emergency Management (SFDEM). (2017). *City and County of San Francisco Department of Emergency Management 2017 Annual Report* (pp. 1-28, Rep.). San Francisco, CA: San Francisco Department of Emergency Management.
- San Francisco Department of Emergency Management (SFDEM). (2011). *Department of Emergency Management* (pp. 1-48, Rep.). San Francisco: SFDEM.
- San Francisco Department of Emergency Management (SFDEM). (n.d.). SF 72. Retrieved May 26, 2018, from <https://www.sf72.org>
- Schneider, C. Q., & Wagemann, C. (1972). *Set-Theoretic Methods for the Social Sciences: A Guide to Qualitative Comparative Analysis*. City: Cambridge University Press.

- Seawright, J., & Gerring, J. (2008). Case Selection Techniques in Case Study Research: A Menu of Qualitative and Quantitative Options. *Political Research Quarterly*, 61(2), 294-308. Retrieved April 7, 2018, from <http://journals.sagepub.com.ezproxy.auckland.ac.nz/doi/pdf/10.1177/1065912907313077>
- Simpson, D. M. (2002). Earthquake Drills and Simulations in Community based Training and Preparedness Programmes. *Disasters*, 26(1), 55-69. Retrieved May 6, 2018, from <https://www.ncbi.nlm.nih.gov/pubmed/11929160>.
- Statistics NZ. (2013, October 5). 2013 Census Quick Stats about a place: Auckland Region. Retrieved May 25, 2018, from [http://archive.stats.govt.nz/Census/2013-census/profile-and-summary-reports/quickstats-about-a-place.aspx?request\\_value=13170&tabname](http://archive.stats.govt.nz/Census/2013-census/profile-and-summary-reports/quickstats-about-a-place.aspx?request_value=13170&tabname)
- Sutton, J., & Tierney, K. (2006). *Disaster Preparedness: Concepts, Guidance, and Research* (pp. 1-44, Rep.). Boulder, CO: Institute of Behavioural Science.  
doi:<http://www.fritzinstitute.org/pdfs/whitepaper/disasterpreparedness-concepts.pdf><http://www.fritzinstitute.org/pdfs/whitepaper/disasterpreparedness-concepts.pdf>
- Tanaka, K. (2005). The impact of disaster education on public preparation and mitigation for earthquakes: A cross-country comparison between Fukui, Japan and the San Francisco Bay Area, California, USA. *Applied Geography*, 25(3), 201-225. Retrieved May 6, 2018, from <https://www.sciencedirect.com/science/article/pii/S0143622805000251>.
- The Intersector Project. (2014). *Creating a Culture of Disaster Preparedness in San Francisco* (pp. 1-4, Rep.). San Francisco: The Intersector Project. Retrieved May 26, 2018, from [http://intersector.com/wp-content/uploads/2014/09/H2\\_SF72\\_VF.pdf](http://intersector.com/wp-content/uploads/2014/09/H2_SF72_VF.pdf)
- Tongco, M. D. (2007). Purposive Sampling as a Tool for Informant Selection. *Ethnobotany Research and Applications*, 5, 148-158. Retrieved May 18, 2018, from <https://scholarspace.manoa.hawaii.edu/handle/10125/227>.
- UNISDR. (2009). 2009 *UNISDR Terminology on Disaster Risk Reduction* (Rep.). Geneva: UNISDR.
- UNISDR. (2015). *Sendai Framework for Disaster Risk Reduction 2015 - 2030* (Rep.). Geneva: UNISDR. Retrieved May 5, 2018, from [https://www.preventionweb.net/files/43291\\_sendaiframeworkfordrren.pdf](https://www.preventionweb.net/files/43291_sendaiframeworkfordrren.pdf).

- United States Census Bureau. (2017, July 1). What's New & FAQs Quick Facts San Francisco County, California. Retrieved May 25, 2018, from <https://www.census.gov/quickfacts/fact/table/sanfranciscocountycalifornia/PST045217#viewtop>
- Webster, J., & Watson, R. T. (2002). Analysing the Past to Prepare for the Future: Writing a Literature Review. *MIS Quarterly*, 26(2), 13-23. Retrieved May 12, 2018, from <http://www.jstor.org/stable/4132319>
- University of Auckland Human Participants Ethics Committee. (2017). *Change of Ethics Approval*. Auckland: UAHPEC.
- Walker, R. (2016, October 2). The Shifting Symbolism of the Gadsden Flag. *The New Yorker*. Retrieved May 26, 2018, from <https://www.newyorker.com/news/news-desk/the-shifting-symbolism-of-the-gadsden-flag>
- Wilkinson, B., Crampton, E., & Krupp, J. (2018, January). *Recipe for Disaster: Building Policy on Shaky Ground* (Rep.). Retrieved March 13, 2018, from The New Zealand Initiative website: <https://nzinitiative.org.nz/reports-and-media/reports/recipe-for-disaster-building-policy-on-shaky-ground/>
- Wise, G. I. (2007). Preparing for Disaster: A Way of Developing Community Relationships. *Journal of Emergency Nursing*, 5(1), 14-17. Retrieved January 25, 2018, from [https://www.jenonline.org/article/S1540-2487\(06\)00074-5/abstract](https://www.jenonline.org/article/S1540-2487(06)00074-5/abstract).
- Zamboni, L. M. (2017). Theory and Metrics of Community Resilience: A Systematic Literature Review Based on Public Health Guidelines. *Disaster Medicine and Public Health Preparedness*, 11(6), 756-763. Retrieved May 5, 2018.

# APPENDIX A

## Semi Structured Interview Guide:

- 1) Which metrics are used to measure levels of disaster preparedness in Auckland/San Francisco?
- 2) Which organisations are primarily involved in the development and implementation of disaster preparedness initiatives in Auckland/San Francisco? Which of these organisations takes lead agency in the approach to preparedness development, and under what mandate?
- 3) From your perspective, what are the most notable barriers and/or enablers to residents undertaking disaster preparedness actions?
- 4) In terms of the disaster preparedness initiatives which have previously been undertaken in your context, which were effective, which were not and what are the reasons for their success and/or failure?
- 5) What are the theoretical foundations or assumptions which underpin the approaches to developing preparedness which have produced positive results.

# APPENDIX B

## Participant Information Sheet

### **Best Practice in Disaster Preparedness in Auckland and San Francisco: A Cross-city Comparative Analysis**

#### ***Project Outline:***

I will be analysing the disaster preparedness measures which have been adopted by the city of San Francisco and comparing those to the measures which constitute the disaster preparedness framework currently in place in Auckland. This project will centre around an investigation of what constitutes both best practice regarding preparedness planning and implementation, in the two cities. A comparative analysis will allow me to determine more precisely what best practice is in these areas. The successful conclusion of this project will allow me to understand whether authorities in the respective cities currently adhere to best practice. If this is not the case, my research will allow me to pose recommendations to better align their actions toward best practice procedure.

#### ***Project Aim:***

The overarching aim of this project is to identify and understand the unique aspects of the disaster preparedness frameworks and how they are designed and implemented in San Francisco and Auckland in order to gain a clearer understanding of what constitutes best practice in disaster preparedness.

#### ***Objectives:***

- 1) To identify the key institutions and administrators who are tasked with the responsibility of devising and implementing preparedness measures in Auckland and San Francisco.
- 2) To identify and understand the key mechanisms which constitute the preparedness frameworks currently present in Auckland and San Francisco and which theoretical frameworks said mechanisms have emerged from.
- 3) To understand how the key administrators of the preparedness frameworks in the two cities perceive and subsequently implement said preparedness mechanisms. A heavy emphasis will be placed on investigating how administrators currently set about quantifying levels of preparedness in their communities of concern.



# APPENDIX C

## Participant Consent Form

### CONSENT FORM

**THIS FORM WILL BE HELD FOR A PERIOD OF 6 YEARS**

**Research Project Title:**

**Best Practice in Disaster Preparedness in Auckland and San Francisco: A Cross-city Comparative Analysis**

**Principal Investigator: Dr. Alice Chang-Richards (nee Yan Chang)**

**Researcher(s): Jake McPhee**

I have read the Information Sheet concerning this project and understand what the study is about. I understand that I am free to request further information at any stage.

I know that:

1. My participation in the project is entirely voluntary.
2. I am happy or not happy (please tick or cross accordingly) for the interview to be recorded.
3. I am free to withdraw from the interview at any time without any disadvantage.
4. Personal identifying information will be securely stored independent of the interview data, which itself will be stored confidentially. Data will be retained in secure storage for 6 years after the project's completion.
5. The interview will take approximately 30-45 minutes and the analysis of the interview results will be conducted by the researchers without involvement of a third party.
6. Upon request, I have the right to have a hard copy of the final report from this research project.
7. The results of the project will be published in reports and academic journals, but my identity will be kept confidential at all times. My name and personal details will never be divulged to anyone, nor used in any written or published material from the project.

Name: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN PARTICIPANTS ETHICS COMMITTEE ON

**25/05/2015 FOR 3 YEARS REFERENCE NUMBER 014584**