

# Laying Down Foundations:

## Reflecting on Disaster Management Planning in Museums in Christchurch after the 2010 and 2011 Earthquakes

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This thesis is submitted in fulfilment of the requirements of the

Degree of Master of Arts in Art History and Theory

at the University of Canterbury

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University of Canterbury

2017

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## **Acknowledgements**

I would firstly like to thank my supervisors Dr Barbara Garrie and Dr Rosie Ibbotson. Their sense of humour is unmatched and made the project fun and enjoyable. They consistently allowed this paper to be my own work, but steered me in the right the direction whenever they thought I needed it.

I would also like to thank the participants and their institutions who were involved in the interviews for this research project. Without their participation and input, the project could not have been successfully conducted.

I would like acknowledge my friends Genevieve and Christie as well as my office mates Gordon, Holly, Nick and Ruth who constantly provided advice, support, listened to me talk about this thesis for months on end and always knew when to bring out the chocolate.

To my partner Nick, thank you for the endless emotional support, motivational talks and advice you have given me. I could not have done this without you.

Finally, I would like to thank my incredibly supportive parents Lynne and Bruce. Their unconditional love, support, and their passion for education have enabled me to access my full potential.

## **Abstract**

This thesis looks at the protocols museums and galleries adopt for the safeguarding of art, artefacts and cultural heritage. In particular, it analyses these procedures in relation to the 2010 and 2011 earthquakes in Christchurch, and considers how these events shaped the preventative conservation measures in place in museum and gallery institutions. Through gathering, assessing, and comparing this information about Christchurch's institutions to disaster management best practices in national and international organisations, this thesis gauges the extent to which disaster management was changed in response to the events in Christchurch. This thesis first considers the growth in disaster management as a field, before examining what are considered best practices within this sector. Finally, it looks at specific institutions in Christchurch, including the Christchurch Art Gallery Te Puna o Waiwhetu, Canterbury Museum, and the Air Force Museum of New Zealand.

## **List of Abbreviations**

AIC - American Institute for Conservation  
AFMNZ – Air Force Museum of New Zealand  
CAGTPOW – Christchurch Art Gallery Te Puna o Waiwhetu  
CCAAA – Coordinating Council of Audio visual Archives Association  
CCCRC – Canterbury Cultural Collections Recovery Centre  
CERA – Canterbury Earthquake Recovery Authority  
CM – Canterbury Museum  
CNZ – Creative NZ Arts Council of New Zealand Toi Aotearoa  
CoCA – Centre of Contemporary Art Christchurch  
COSTEP – Coordinated Statewide Emergency Preparedness  
DRM – Disaster Risk Management  
EOC – Emergency Operations Centre  
FICCI – Federation of Indian Chambers of Commerce and Industry  
ICA – International Council on Archives  
ICCROM – International Centre for the Preservation and Restoration of Cultural Property  
ICBS – International Committee of the Blue Shield  
ICOM – International Community of Museums  
ICOMOS – International Council on Monuments and Sites  
ICRC – International Committee of the Red Cross  
IFLA – International Federation of Library Associations and Institutions  
MEP – Museum Emergency Programme  
NZDF – New Zealand Defence Force  
NSTP – National Services Te Paerangi  
UNESCO – United Nations Educational, Scientific, and Cultural Organisation

## Introduction

Cultural heritage is at risk from conflict, climate change, and disasters, as well as a variety of other sources, and mitigating these risks is essential for the survival of the materials that constitute a significant part of this heritage. Institutions like museums and art galleries serve as caretakers for movable cultural heritage, so disaster management planning is an essential part of reducing risks within these institutions. The field of disaster management is constantly progressing; new techniques and ways of managing disaster are being developed, and learning from events informs best practice in the management and future-proofing of cultural heritage. The series of earthquakes beginning in 2010 that struck in Christchurch, New Zealand had a considerable effect on communities, infrastructure and cultural heritage institutions. This thesis examines the extent to which these events influenced disaster management Christchurch museums over this period.

Christchurch and the wider Canterbury region were shaken awake at 4:35 am on the 4th of September 2010 by a severe earthquake at the shallow depth of 10 kilometres. It was widely felt across the South Island of New Zealand and caused considerable damage around Canterbury, particularly in Christchurch.<sup>1</sup> There was a significant amount of damage to infrastructure; railways buckled, pipes burst, roads cracked, and a mix of liquefied soil and sand (commonly known as liquefaction) rose out of the ground. It was the first time New Zealand had seen large-scale seismic activity in an urban area since the Napier earthquakes

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<sup>1</sup> Te Ara Encyclopedia of New Zealand. (2016). *The 2010 Canterbury (Darfield) earthquake*.

of 1931.<sup>2</sup> Over the next year, Christchurch and the wider Canterbury region would experience nearly 9,000 aftershocks, including the even more devastating earthquake in February 2011.<sup>3</sup>

In this event, which took place at 12:51pm on 22nd February 2011, 185 lives were lost.<sup>4</sup> This earthquake brought down many buildings previously damaged by the September event the year before.<sup>5</sup> Although smaller on the Richter scale, the February quake was even shallower than the September event, and had one of the world's highest recordings of peak ground acceleration at 2.2g.<sup>6</sup> The New Zealand Government activated the National Crisis Management Centre at once, and the day after the quake, the government declared a national state of emergency. Liquefaction was more widespread and concentrated than in the previous earthquake, and thick layers of silt, water, and sewage from broken pipes rose through cracks in the ground and filled streets and properties.<sup>7</sup> Christchurch's central business district remained cordoned off for more than two years after the earthquake, which meant that many civic services had to be relocated to other parts of the city and wider Canterbury region.<sup>8</sup>

This research project aims to assess the extent to which disaster management was developed in cultural institutions during and after the Christchurch 2010 and 2011 earthquakes. This will be done through establishing why disaster management is crucial, and

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<sup>2</sup> Te Ara Encyclopedia of New Zealand. (2016). *The 1931 Hawke's Bay earthquake*. [online] Available at: <http://www.teara.govt.nz/en/historic-earthquakes/page-6> [Accessed 22 Nov. 2016] 2016].

<sup>3</sup> *ibid.*

<sup>4</sup> NZ History. (2011). *Christchurch earthquake kills 185*. [online] Available at: <https://nzhistory.govt.nz/page/christchurch-earthquake-kills-185> [Accessed 23 Nov. 2016].

<sup>5</sup> Te Ara Encyclopedia of New Zealand. (2016). *The 2011 Christchurch earthquake and other recent earthquakes*. [online] Available at: <http://www.teara.govt.nz/en/historic-earthquakes/page-13> [Accessed 22 Nov. 2016].

<sup>6</sup> The American Surveyor. (2014). *Not Broken, But Slightly Bowed: Lifting a Landmark Art Gallery in New Zealand*. [online] Available at: <http://www.amerisurv.com/content/view/13158/153/> [Accessed 24 Oct. 2016].

<sup>7</sup> Moore, C. & Fairfax Media (Firm). (2011). *Earthquake: Christchurch, New Zealand 22 February 2011*, Random House, Auckland, N.Z. p.13.

<sup>8</sup> Te Ara Encyclopedia of New Zealand. (2016). *The 2011 Christchurch earthquake and other recent earthquakes*. [online].

by examining disaster management best practice in cultural institutions and organisations. Lastly, by turning the focus to the planning for and responses to disaster by Christchurch cultural institutions, and comparing this to best practice, this thesis will look at the knowledge gained from the 2010 and 2011 earthquakes. This thesis also considers the extent to which New Zealand cultural heritage institutions and organisations should plan compared other nations because of the unique heritage housed and cared for in the country's museums.

This thesis will review best practice across cultural institutions, local, national and international organisations, government policies and disaster management guides. Looking at practice across these organisations presents a cross-sectional survey of what is considered to be important in disaster management planning, and what might be overlooked in the literature. From this review, key principles of current disaster management strategies will emerge, including where the most importance is placed in disaster management planning. This offers a benchmark in comparison to which the planning, reaction and recovery of cultural institutions in Christchurch can be assessed, and which will reveal where the institutions followed best practice and where best practice was diverged from. Furthermore, this comparison will indicate new insights into and practices of disaster management which emerged as a result of the experience of the 2010 and 2011 earthquakes.

This research focuses on three institutions, all of which are public institutions that maintained and housed permanent and loaned collections before the 2010 earthquake, and continued to house and maintain collections after the 2011 earthquake. These criteria allow the developments and the changes in their disaster management practices to be examined. For this analysis, four stages of development have been identified: before the first quake; after the first quake and before the second; immediately after the second quake; and long term post



the two major earthquakes. These stages will show what changes – if any – were made to the institutions' disaster management strategies after experiencing seismic activity. This analysis will also discuss which changes were implemented, and whether these changes improved or had little effect on the institutions' ability – or potential – to recover from disaster. Finally, the stages of development identified will highlight issues of planning for the future, and the knowledge gained from both earthquakes. The institutions selected for this research include the Christchurch Art Gallery Te Puna o Waiwhetu (CAGTPOW), the Canterbury Museum (CM), and the Air Force Museum of New Zealand (AFMNZ). The challenges faced by each institution, and the recovery strategies that they implemented and devised, make them invaluable sources of knowledge about disaster management, and arguably leaders in the field.

The research for this thesis draws on oral histories; interviews conducted with representatives from each of the three institutions constitute key sources. The questions asked in these interviews concerned the institutions' disaster management practices, how these had changed during and as a result of the institutions' experiences of disaster, and also concerned the initiatives implemented by these organisations. The interviews were conducted with participants who were involved in disaster management processes at their institutions over the period of the earthquakes, including in the responses and actions their institutions took post-earthquakes. As the Christchurch earthquakes were a recent event, many aspects of museum and gallery responses to these have not been discussed very much in literature. Oral history accounts therefore supply information missing from secondary sources, or information about a timeframe that has not yet been discussed in detail.

The first section of this thesis will discuss terminologies of disaster, and how these relate to a museum context. This will clarify what the term 'disaster' refers to throughout this thesis, as what is considered a disaster in a museum may not be considered a disaster in other circumstances. Next, the development of the disaster management field will be discussed, along with possible influences that have caused the field to develop, including climate change, media, technological advances, and disastrous events. Finally, this first section will consider contemporary views on rules and conventions of preservation, and how disaster management relates to these.

The second section will review best practices of disaster management across local, national and international organisations, and will also look at instances in international institutions where disaster management strategies have been put into place. The section will focus on policies used to guide these institutions' approaches to disaster management and risk mitigation in relation to world heritage, as well as initiatives that have been implemented by these organisations. This section will then turn to New Zealand cultural institutions and organisations, and how they plan and prepare for disaster. Lastly, this section considers the extent to which the bicultural status of New Zealand influences best practice recommendations for the safeguarding and protection of cultural heritage within New Zealand organisations.

The final section of this thesis focuses on the Christchurch earthquakes, and the cultural institutions that experienced and responded to these disasters. Discussing the individual challenges these museums and galleries faced, this third section assesses the extent to which the best practices identified in the previous section were followed or adapted. This will establish differences and similarities between the responses of Christchurch institutions and established best practice recommendations, and will make apparent the new

developments in these institutions' planning for, reaction to, and recovery from disaster. Key developments will then be discussed, including how these might be applied to cultural heritage institutions and the wider cultural heritage sector both nationally and internationally. The section also considers the extent to which New Zealand should plan for disaster differently from other countries and cultural organisations because of New Zealand's bicultural status and the unique cultural heritage the nation cares for.

## **Section One: The growth of disaster management in museums**

This section will provide a contextual overview of disaster management and what it means in a museum and art museum context. It will broadly outline the ways in which concepts of disaster and preservation have been framed in the disaster management policies of cultural institutions and organisations. In doing so, this section maps out some of the specific ways in which the concept of disaster is articulated in the museum sector, and considers the growing field of disaster management research in this context. .

Disasters create extraordinary circumstances, and they can occur even in the best-run institution.<sup>9</sup> In the 1996 UK overview of libraries by Graham Matthews and Paul Eden, disaster is described as ‘any incident which threatens human safety and or damages, or threatens to damage [or destroy], a library's buildings, collections, contents, facilities or services’.<sup>10</sup> Causes of such disaster might range from arson, to a burst pipe, or it could stem from poor maintenance, an earthquake, hurricane, flooding, terrorism, or war. All of these can vary in scale and impact. For example, an electrical fault could cause more damage than a hurricane. While some events may cause minor inconvenience, others can have extreme and damaging consequences to heritage and assets, can cause disruption to services, and can have sizable fiscal implications on an institution.<sup>11</sup>

There are many potential disaster and emergency situations that a museum or gallery could face, and the different responses they could implement are incredibly broad. Matthews

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<sup>9</sup> Doig, J. (n.d.). *Disaster recovery for archives, libraries and records management systems in Australia and New Zealand*. 12th ed. NSW: Centre for Information Studies, Charles Sturt University.

<sup>10</sup> Matthews, G. and Eden, P. (1996). *Disaster Management in British Libraries: Report and Guidelines*. p.4.

<sup>11</sup> Matthews, G., Smith, Y. and Knowles, G. (2009). *Disaster management in archives, libraries, and museums*. 1st ed. Farnham: Ashgate, p.7.

and Eden's definition does not clearly articulate the fact that, within the museum and gallery sector, disaster takes a diverse range of forms, many of which would not affect other businesses and organisations to the same extent. The report's definition of disaster is similar to that found in other documents. For example, John Feather gives Matthews and Eden's definition in his book *Disaster Management for Libraries and Archives*, but adds that 'destroy' could have been included in that definition due to the wanton destruction of cultural heritage around the globe.<sup>12</sup> Valerie Dorge and Sharon Jones simplify the definition of disaster even further to 'an event that results in significant loss, damage, or destruction'.<sup>13</sup> Again, this definition does not fully encompass the differentiation of a disaster in a cultural institution and a disaster in any other organisation.

In many documents surrounding disaster management, the term 'emergency' often goes hand and hand with 'disaster'.<sup>14</sup> The Te Papa Tongarewa National Services 2001 guide 'Minimising Disaster', for example, states that 'With good planning, you can prevent emergency turning into a disaster, or disaster turning into a tragedy'.<sup>15</sup> This suggests that an emergency happens before a disaster, and a disaster is the cause of a tragedy. In this, there is an implied scale of severity. Te Papa's definition further suggests an emergency is a precursor to disaster, and that a *disaster* and an *emergency* are considered two separate scenarios. Dorge and Jones state that 'an emergency can become a disaster if immediate action is not taken to protect staff, visitors, and the collection', again separating an emergency as a

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<sup>12</sup> Matthews, G. and Feather, J. (2003). *Disaster management for libraries and archives*. 1st ed. Aldershot, Hampshire, England: Ashgate Pub., p.4.

<sup>13</sup> Dorge, V., Jones, S. (1999). *Building an Emergency Plan: A Guide for Museums and Other Cultural Institutions*. Los Angeles, CA: Getty Conservation Institute. Available at: [http://hdl.handle.net/10020/gci\\_pubs/emergency\\_english](http://hdl.handle.net/10020/gci_pubs/emergency_english) [Accessed 30 Jul. 2016]

<sup>14</sup> International Council of Museums & International Committee on Museum Security . (1993), *Guidelines for disaster preparedness in museums*, ICOM, Paris. p.3.

<sup>15</sup> Museum of New Zealand Te Papa Tongarewa. (2001). *Minimising Disaster He Rauemi Resource Guide*. [online] Available at: [https://www.tepapa.govt.nz/sites/default/files/6-minimising-disaster\\_0.pdf](https://www.tepapa.govt.nz/sites/default/files/6-minimising-disaster_0.pdf) [Accessed 24 Mar. 2016].

precursor to disaster.<sup>16</sup> Emergencies require immediate reaction and an urgent need for assistance or relief; however, this can also be said of disaster, which is inherently an emergency situation.<sup>17</sup> Moreover, disasters are often seen as wide-spread, affecting more people and having more devastating consequences, whereas an emergency can be considered localised or more contained.

Nonetheless, it is clear that responses to either an emergency or a disaster might be similar as they contain many of the same qualities. As Victoria Chisholm notes, the terms disaster and emergency are both used when discussing threats to cultural heritage.<sup>18</sup> Chisholm considers United Nations Office for Disaster Risk Reduction (UNISDR) and International Council of Museums (ICOM) definitions in her reasoning for this. The UNISDR definition of disaster states that a disaster can be born out of an emergency, and ICOM considers 'a disaster is an emergency situation that is out of control'.<sup>19</sup> It is Chisholm's opinion that even though emergencies are often seen as less severe, both emergencies and disasters have the potential to harm museum collections and for this reason both are used when discussing threats to cultural heritage.<sup>20</sup> For example, armed conflict and civil disturbances can be events that could both be emergencies and disasters.

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<sup>16</sup> Dorge, V., Jones, S. (1999). *Building an Emergency Plan: A Guide for Museums and Other Cultural Institutions*. p.3.

<sup>17</sup> Chisholm, V. (2015). *Preventative Conservation and Disaster Management Planning in Cultural Institutions*. Masters. Brunswick Rutgers The State University of New Jersey. p.8.

<sup>18</sup> *ibid.*

<sup>19</sup> *ibid.*; International Council of Museums & International Committee on Museum Security . (1993), *Guidelines for disaster preparedness in museums*, p.3.

<sup>20</sup> Chisholm, V. (2015). *Preventative Conservation and Disaster Management Planning in Cultural Institutions*. Masters. p.8.

Disasters that could affect cultural institutions are often divided into three categories; natural disasters, civil disturbance and armed conflict.<sup>21</sup> These broad categories represent multiple different kinds of threat or hazard, which might range in severity and cause.<sup>22</sup> Such hazards are events that can occur at any time, with or without warning and can result in significant damage; for example, structural damage, water damage, deterioration and corrosive or toxic contamination.<sup>23</sup> Civil disturbance and armed conflict have had a considerable effect on the growth disaster management, particularly in the last two decades.

Matthews and Feather trace the growth of the disaster management field to the events of 11 September 2001.<sup>24</sup> They argue that the event illustrated in the most striking and poignant manner the impact of disaster, and that it caused library information services along with other public and commercial organisations to revisit emergency and security plans and procedures.<sup>25</sup> This is also an example of how changing political climates and mass media can increase growth in the field. Mass and broadcast media constantly display footage of the latest disaster and its overwhelming impact on the affected areas.<sup>26</sup> Conflict and disasters take place constantly on the television screens in our living room, bringing it closer to home and making it harder to maintain the 'that will never happen here' attitude.<sup>27</sup> Not only do we have these examples of what could go wrong, but we also have examples of how they were managed and prepared for. The impact of Hurricane Katrina, which struck with a devastating effect on much

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<sup>21</sup> Upton, M. and Pearson, C. (1978). *Disaster planning and emergency treatments in museums, art galleries, libraries, archives, and allied institutions*. 1st ed. Canberra: Institute for the Conservation of Cultural Material, p.3.

<sup>22</sup> *ibid.*

<sup>23</sup> *ibid.*

<sup>24</sup> Matthews, G. and Feather, J. (2003). *Disaster management for libraries and archives*. p.4.

<sup>25</sup> *ibid.*

<sup>26</sup> Matthews, G., Smith, Y. and Knowles, G. (2009). *Disaster management in archives, libraries, and museums*.p.15.

<sup>27</sup> Burningham, K., Fielding, J. and Thrush, D. (2007). 'It'll never happen to me': understanding public awareness of local flood risk. *Disasters*, 32(2), pp.216-238.

cultural heritage, has been thoroughly documented both in the media and within the cultural sector.<sup>28</sup>

Often broadcasted by mass media, the targeting of world heritage sites and museums during conflict can be seen as another source of growth in disaster management and the wider field of preservation. The destruction of cultural heritage during conflict has been present throughout history. In the last few decades, extremist groups around the world have been decimating world heritage sites, specifically targeting religious or cultural markers that do not represent their own culture and beliefs.<sup>29</sup> The recent and ongoing conflicts in Iraq and Syria have again focused news media and the public eye on the destruction of cultural heritage during conflict. The ISIS led destruction of cultural heritage at Palmyra in 2015, for example, brought renewed attention to the importance of protecting cultural heritage. As well as ancient ruins being destroyed, the Palmyra Museum and its contents were vandalised. The full extent of damage to the site has only been realised at the beginning of 2017.<sup>30</sup> Before ISIS invaded, the Museum staff and authorities removed what they could from the Museum, however, large statues and objects fixed to the walls had to be left behind.<sup>31</sup> The destruction of historic and religious monuments or sites are characterised by UN security council as violations of international law. This and other legislation and conventions around the protection of cultural heritage have also developed the field of disaster management.<sup>32</sup>

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<sup>28</sup> Frost, G. and Silverman, R. (2005) 'Disaster recovery in the artefact fields - Mississippi after Hurricane Katrina', *International Preservation News* 37, pp35-47.

<sup>29</sup> Drazewska, B. (2015) 'The Human Dimension of the Protection of the Cultural Heritage from Destruction during Armed Conflicts', *International Journal of Cultural Property*, 22(2-3), pp. 205-228.

<sup>30</sup> CNN. (2017). *Reports: ISIS destroys facade of Roman theater in Syrian city of Palmyra*. [online] Available at: <http://edition.cnn.com/2017/01/20/middleeast/palmyra-isis-theater/> [Accessed 24 Feb. 2017].

<sup>31</sup> *ibid.*

<sup>32</sup> Drazewska, B. (2015) 'The Human Dimension of the Protection of the Cultural Heritage from Destruction during Armed Conflicts'. pp.205-228.



The effects of armed conflict and civil disturbance are sometimes foreseen, and some protective preparation may sometimes be put into place before disaster strikes.<sup>33</sup> However, this may not always be the case, or the scale of the conflict may mean that such protections are futile. Civil disturbance and armed conflict are similar as they are both influenced by the cultural, financial, political, social and geographical context of individual institutions.<sup>34</sup> Arguably these things also have quite an influence on how an institution can prepare for or respond to natural disaster. The categories of natural, armed and civil conflict suggest a distinction between natural and human-made phenomena, however this binary is a misleading one. As much of the world is becoming increasingly populated, the distinction between these categories is becoming much less clear. Flooding in urban areas is one example of the merging of human-made and natural events. Concrete and asphalt cover large surface areas, and in a heavy rain, water is diverted to backed up and overloaded drainage systems causing flooding. In this, the categorisation of a flood as a purely 'natural' disaster is misleading and does not take account of the complex ways in which natural and human-made worlds intersect.

UNESCO suggests in 'Managing Disaster Risks for World Heritage' that 'cultural and natural properties are increasingly affected by events, which are less and less 'natural' in their dynamics'.<sup>35</sup> The world is now described as being in the 'Anthropocene' epoch, a human-dominated geological period defined by the human modification and control of the Earth's

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<sup>33</sup> Upton, M. and Pearson, C. (1978). *Disaster planning and emergency treatments in museums, art galleries, libraries, archives, and allied institutions*. 1st ed. Canberra: Institute for the Conservation of Cultural Material, p.3.

<sup>34</sup> Matthews, G., Smith, Y. and Knowles, G. (2009). *Disaster management in archives, libraries, and museums*.

<sup>35</sup> UNESCO., et al. (2010). *Managing Disaster Risks for World Heritage*. Paris: United Nations Educational, Scientific and Cultural Organization. Available at: <http://whc.unesco.org/en/managing-disaster-risks/> [Accessed 30 Jul. 2016].

environment.<sup>36</sup> An important marker of the Anthropocene is climate change. No longer considered a theory or speculation, there is scientific consensus that climate change is a reality resulting in increasing catastrophic weather patterns and disasters.<sup>37</sup> As Matthews and Eden noted, in 2003 disasters were already becoming ‘more frequent, larger, more wide-spread, more diverse, more complex and more difficult to predict’.<sup>38</sup> World and cultural heritage will not be, and has not been, exempt from the increasing scale and frequency of such disasters.<sup>39</sup>

As the human-made and natural disasters intersect more and become more intertwined, the need to link risks to the concepts of the human-made or natural may become less necessary. Instead, it may be more useful to assess disasters in terms of their scale and likely impact. This is something that is not yet widely considered in discourse around disaster management, with many documents advising to plan for individual vulnerabilities (i.e. fire, flood, earthquake).<sup>40</sup> Juergen Weichselgartner argues that new approaches to disaster reduction can develop if the full range of interacting hazards are taken into account that occur in modern societies.<sup>41</sup> Such an approach might, for example, identify in-house events and out-of-house events. Within the categories of human-made and natural are events that are only limited to a museum or gallery’s facilities (in-house) and risks that have implications for the wider-area around the institution (out-of-house). For example, a burst pipe may only influence

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<sup>36</sup> Smith, B. and Zeder, M. (2013). The onset of the Anthropocene. *Anthropocene*, 4, pp.8-13.

<sup>37</sup> Brooks, T. (2013). The Real Challenge of Climate Change. *PS: Political Science & Politics*, 46(01), pp.34-36.

<sup>38</sup> Matthews, G. and Feather, J. (2003). *Disaster management for libraries and archives*. p.3.

<sup>39</sup> Sugio, K. (2015). Large-scale Disasters on World Heritage and Cultural Heritage in Japan: Significant Impacts and Sustainable Management Cases. *Landscape Research*, 40(6), pp.748-758.

<sup>40</sup> Museum of New Zealand Te Papa Tongarewa. (2001). Minimising Disaster He Rauemi Resource Guide. [online]. Available at: [https://www.tepapa.govt.nz/sites/default/files/6-minimising-disaster\\_0.pdf](https://www.tepapa.govt.nz/sites/default/files/6-minimising-disaster_0.pdf) [Accessed 24 Mar. 2016].

<sup>41</sup> Weichselgartner, J. (2001). Disaster mitigation: The concept of vulnerability revisited. *Disaster Prevention and Management*, 10(2), 85-94. [online]. Available at: <http://search.proquest.com.ezproxy.canterbury.ac.nz/docview/214378175?accountid=14499> [Accessed 1 May 2017].

in-house operations, but the earthquake that caused the pipe to burst would be an out-of-house event. Measuring the different levels of impact incidents can cause could prevent an overlap of planning for events that may have a similar impact or preparation measures that need to be taken. A bomb explosion, (a human-made disaster) may have the same impact as an earthquake (a natural event), for example. The probability of individual disasters will also affect the degree to which an institution will equip itself for certain scenarios.<sup>42</sup> For example, some areas are more prone to seismic activity than others. An institution that is aware of this risk may take extra precaution in their disaster planning, such as earthquake strengthening the building or fixing sculptures to plinths. Not only will all these circumstances dictate how disaster preparation might be focused, but also how the recovery of a gallery or museum might be focused.

The Florence Flood of 1966 reappears consistently in the literature on cultural institution disaster management. The flood received a substantial international response and had a far-reaching impact. It is considered by Wellheiser and Scott as ‘...a pivotal point in disaster planning and recovery for archives, libraries and records centres and indeed the entire field of preservation’.<sup>43</sup> International paper and book conservators came together and shared techniques and ideas and in this, stimulated the development of comprehensive preventative programmes in libraries and archives.<sup>44</sup> Many of the conservators who assisted in the recovery in Florence went on to establish preservation programmes that would gain international recognition based on lessons learned in Florence.<sup>45</sup> The information gained from Florence

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<sup>42</sup> Dorge, V., Jones, S. (1999). *Building an Emergency Plan: A Guide for Museums and Other Cultural Institutions*. Los Angeles, CA: Getty Conservation Institute. Available at: [http://hdl.handle.net/10020/gci\\_pubs/emergency\\_english](http://hdl.handle.net/10020/gci_pubs/emergency_english) [Accessed 30 Jul. 2016].

<sup>43</sup> Wellheiser, J., Scott, J. and Barton, J. (2002). *An ounce of prevention*. 2nd ed. Lanham (Md.): Scarecrow Press.

<sup>44</sup> Devine, S.W. 2005, "The Florence flood of 1966: A report on the current state of preservation at the libraries and archives of Florence", *The Paper Conservator*, vol. 29, no. 1, pp. 15-24.

<sup>45</sup> *ibid.*

further developed many modern principles of conservation, such as the need to preserve as much original information as possible and the need for thorough documentation. Furthermore, the 1966 Florence flood developed an international professional network that had considerable influence on the development of integrated preservation programmes; programmes that would not only consider conservation but wider preservation administration such as disaster management planning.<sup>46</sup>

Museums and galleries can be considered to be among other necessary civil institutions such as schools, libraries, universities and prisons. Galleries and museums serve a useful purpose in the public arena as centres of community and education.<sup>47</sup> The educational role of the museum has expanded greatly; previously, museum education was a provision that had been limited to schoolchildren or adult tour groups.<sup>48</sup> Exhibitions, workshops, talks, publications and displays are used as educational tools, and the role of the museum educator has expanded widely.<sup>49</sup> It is the belief of many directors of these cultural institutions that the museum must act as a civic centre.<sup>50</sup> Museums and galleries often used for community purposes as sometimes in smaller communities the only public meeting space available is in the museum building. Some consider that the effectiveness of a museum rests primarily on its exhibits and the community use of the museum.<sup>51</sup> Through museums and galleries performing such duties, they can be seen as 'not just nice to have' institutions, and therefore it is important to protect and preserve the buildings and their contents.<sup>52</sup> Furthermore, in the many roles that

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<sup>46</sup> *ibid.*

<sup>47</sup> Macdonald, S. (2006). *A companion to museum studies*. p.5.

<sup>48</sup> Hooper-Greenhill, E. (1999). *The educational role of the museum*. 2nd ed. London: Routledge, p.3.

<sup>49</sup> *ibid.*

<sup>50</sup> MacFarlane, J. (2014). Museums as Community Centres. *Museum International*, 66(1-4), pp.31-34.

<sup>51</sup> *ibid.*, p.34.

<sup>52</sup> Harper, J. (2015). *Director's Foreword*. Bulletin (179). Christchurch: Christchurch Art Gallery Te Puna o Waiwhetu. Christchurch. p.4.

museums and galleries perform is an inherent need to define what constitutes a disaster in these institutions differently from that of other industries.

Not only does a museum or gallery definition of disaster need to be outlined and defined differently from other institutions because of the numerous roles they perform, they also have a fundamentally different duty of care than other organisations. In a disaster situation, cultural institutions have a duty of care in which personnel and visitors must be put first. However they also have a responsibility to protect the collections in their care to the best of their ability.<sup>53</sup> Disasters can cause damage to collections and buildings, and can result in the loss of unique and often valuable material. Public cultural institutions that are state funded also have a responsibility to protect their buildings and contents as part of civil service, and included in this is a sense of public ownership. Museums and galleries have a number of roles, acting not only as storehouses but also exhibition makers, cultural educators, preservers of intangible heritage, facilitators of community, and even potential agents of social change.<sup>54</sup> All of these roles need to be taken into account when planning for disaster. In *Disaster Response and Planning for Libraries*, Miriam Kahn asks institutions to consider how the loss of access to its building and collections might most affect the services it provides.<sup>55</sup> For example, a museum may need to consider the types of collections it holds and how it might recover and salvage these if they were affected by a disaster.<sup>56</sup> This would be inherently different than the planning of other institutions and businesses, as collections management and preservation is a central focus for cultural organisations.

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<sup>53</sup> Nafziger, J., Paterson, R. and Renteln, A. (2010). *Cultural Law: International, Comparative, and Indigenous*. 1st ed. Cambridge: Cambridge University Press.

<sup>54</sup> Earle, W. (2013) "Cultural education: Redefining the role of museums in the 21st century", *Sociology Compass*, vol. 7, no. 7, pp. 533-546.

<sup>55</sup> Kahn, M. (2012). *Disaster response and planning for libraries*. p.3.

<sup>56</sup> *ibid.*

Preserving world history has long been a concern of society, and a role undertaken by museums specifically. There are many reasons for the desire to preserve tangible and intangible cultural heritage. Sharon MacDonald suggests that this desire can be linked to an eagerness to prevent 'social amnesia' or forgetting of the past, as well as an attempt to address fragmented identity and individualisation, and an interest in lifelong learning.<sup>57</sup> Preservation of heritage also contains concepts of morality, and remembrance or to leave a legacy.<sup>58</sup> Leaving behind physical items, written histories, photographs and portraits are some of the ways memories are kept alive. Indeed, Michael Kears and Zygmunt Bauman point out that a great deal about the formation of human identity comes from the knowledge of the past,<sup>59</sup> and in this, there is a sense of urgency around the protection of cultural heritage. Not only do museums have a place in cultural identity, but they are also social institutions. Museums are the products and agents of political and social change.<sup>60</sup> Periods of significant growth in museums can be related to upsurges of nationalism.<sup>61</sup> In the late twentieth century, for example, processes of globalisation brought issues of national identity, and many museums were found to instil a sense of national pride in their citizens.<sup>62</sup> In this, it is not only what is inside that is important, but also the building and institution itself, and its place in the formation of human and social identities that needs to be preserved.

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<sup>57</sup> Macdonald, S. (2006). *A companion to museum studies*. 12th ed. Malden, MA: Blackwell Pub., p.5.

<sup>58</sup> Hunter, E. and Rowles, G. (2005). Leaving a legacy: Toward a typology. *Journal of Aging Studies*, 19(3), pp.327-347.

<sup>59</sup> Kears, M. and Bauman, Z. (1993). Morality, Immortality, and Other Life Strategies. *Contemporary Sociology*, 22(5), p.711.

<sup>60</sup> Kaplan, F. (1996). *Museums and the making of "ourselves"*. 1st ed. London: Leicester University Press.

<sup>61</sup> McLean, F. (1998). Museums and the construction of national identity: A review. *International Journal of Heritage Studies*, 3(4), pp.244-252.

<sup>62</sup> *ibid.*

Disaster management plans can reduce and prevent the loss of preserved cultural and world heritage that help form our identity.<sup>63</sup> The term disaster management encompasses much more than the formulation of written disaster control plans. It includes broader management issues such as finance, risk assessment and training.<sup>64</sup> What is currently considered good disaster management in cultural institutions revolves around the use of a disaster management plan. The National Museum of New Zealand Te Papa Tongarewa states that 'contingency plans are often the last thing that people want to think about. In fact, they should be one of the first things covered if you are taking preventive conservation seriously'.<sup>65</sup> These plans are documents that outline preparatory measures intended to reduce potential risks, and provide reaction and recovery procedures to be undertaken should an event occur.<sup>66</sup> A disaster control plan will normally address four phases of disaster management: prevention, preparedness, reaction and recovery.<sup>67</sup> Another key element to disaster management is risk assessment and management. When hazards and risks are identified the vulnerability or harm they could cause to an institution can be addressed and prepared for. Risk evaluation and management must be ongoing for it to work effectively in preventing disaster.<sup>68</sup> Disaster management also needs to factor business and service continuity, as a disaster may cause disruption or cessation of services and could mean financial loss. How an institution might act to provide temporary services also needs to be considered in disaster management planning.<sup>69</sup>

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<sup>63</sup> Matthews, G., Smith, Y. and Knowles, G. (2009). *Disaster management in archives, libraries, and museums*. p.2.

<sup>64</sup> Matthews, G. and Eden, P. (1996). *Disaster Management in British Libraries: Report and Guidelines*. p.4.

<sup>65</sup> Museum of New Zealand Te Papa Tongarewa. (2017). *Preventative Conservation He Rauemi Resource Guides*. [online] Available at: [https://www.tepapa.govt.nz/sites/default/files/5-preventative-conservation\\_1.pdf](https://www.tepapa.govt.nz/sites/default/files/5-preventative-conservation_1.pdf) [Accessed 24 Mar. 2016].

<sup>66</sup> *ibid.*

<sup>67</sup> Matthews, G. and Feather, J. (2003). *Disaster management for libraries and archives*. 1st ed. Aldershot, Hampshire, England: Ashgate Pub., p.4.

<sup>68</sup> *ibid.*, p.5.

<sup>69</sup> Matthews, G., Smith, Y. and Knowles, G. (2009). *Disaster management in archives, libraries, and museums*. p.9.

Creating a disaster management plan is usually part of a museum's wider conservation policy. Museum conservators are normally involved in the creation of disaster management plans and conservators are often seen as having the role of guardians for the welfare of objects that cannot speak for themselves.<sup>70</sup> The responsibility of protecting cultural and world heritage and conservation as a practice can be seen as a source of anxieties and have contributed to the growth of disaster management discourse and practice. In the museum and gallery context, conservation and preservation refer to 'actions aimed at the safeguarding of cultural property for the future'.<sup>71</sup> Preventive conservation seeks to protect tangible cultural items and collections from deterioration and damage through the design and implementation of control procedures and policies dealing with a range of activities: storage, object handling, exhibitions, environmental conditions, pest management, packing, transport, reproduction, reformatting, duplication, and emergency preparedness and response. The aim of preventive conservation is to minimise the daily stresses on collections that amount over time and to avoid catastrophic damage or loss.<sup>72</sup> Preventative conservation is concerned with the preservation of the material object as well as its 'authenticity'.

The issue of authenticity has always been a critical issue for cultural institutions and conservation as a practice. The 'authenticity' of an object is not only concerned with whether the item is real or fake but also how much material of the item is original. David Scott argues that originality is at the crux of authenticity, as well as the materiality and aesthetic of an

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<sup>70</sup> Browne, M. (2017). *Practical Taxidermy A manual of instruction to the amateur in collecting, preserving, and setting up natural history specimens of all kinds. To which is added a chapter upon the pictorial arrangement of museums. With additional instructions in modelling and artistic taxidermy.* p.3.

<sup>71</sup> Canadian Association for Conservation of Cultural Property. (2000). *Code of Ethics and Guidance for Practice of the Canadian Association for Conservation of Cultural Property and of the Canadian Association of Professional Conservators.* [online] Available at: <https://www.cac-accr.ca/files/pdf/ecode.pdf> [Accessed 4 Apr. 2016].

<sup>72</sup> Merritt, J. and Reilly, J. (2010). *Preventive conservation for historic house museums.* 1st ed. Lanham, Md.: AltaMira Press.



object.<sup>73</sup> Material authenticity is concerned with original materials and their possible alterations with time, and aesthetic authenticity is concerned with works whose value lies in their visual appreciation.<sup>74</sup> Scott and many other contemporary conservation theorists argue that much of the value or significance of an object is based on its material form and how the viewer values it.<sup>75</sup>

Conservation should not to be confused with restoration. A conservator is different from a restorer in allied museum fields<sup>76</sup> John Ruskin makes a distinction between the terms 'preservation' and 'restoration' in his book *The Seven Lamps of Architecture*.<sup>77</sup> It is Ruskin's view that preservation is care given to heritage, while restoration can cause harm to heritage. Ruskin went so far as to call restoration 'the most total destruction which a building can suffer'.<sup>78</sup> One characteristic of modern conservation that distinguishes it from restoration is the emphasis on preventative measures. Although in restoration there are records as early as 1691 stating the importance of taking measures to prevent damaging environments from harming museum objects, the recovery of movable cultural objects is focused primarily on work concerned with the object itself.<sup>79</sup> Preservation does not always mean keeping the object in its exact condition but rather maintaining the integrity of the object. For example, Gaynor Kavanagh points out, during the First World War, the British Museum removed large portions of its collections to safer locations. These measures successfully safeguarded the collections

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<sup>73</sup> Scott, D.A. 2015, "Conservation and authenticity: Interactions and enquiries", *Studies in Conservation*, vol. 60, no. 5, pp. 291-305.

<sup>74</sup> *ibid.*

<sup>75</sup> Jive'n, G. and Larkham, P. (2003). Sense of Place, Authenticity and Character: A Commentary. *Journal of Urban Design*, 8(1), pp.67-81.

<sup>76</sup> Clavir, M. (2002). *Preserving what is valued*. 1st ed. Vancouver: UBC Press, p.4

<sup>77</sup> Ruskin, J. (1849). The Seven Lamps of Architecture. *Bulletin of the American Art-Union*, 2(6), p.11.

<sup>78</sup> *ibid.*

<sup>79</sup> Clavir, M. (2002). *Preserving what is valued*. 1st ed. Vancouver: UBC Press, p.15.

from bomb damage, but the effort to preserve the objects was at a cost to their condition.<sup>80</sup> Although the works were moved to (what was considered to be at the time) a 'safer' location away from bomb threats, the cost to their condition came from the environment that they were moved to in the tunnels under the city.<sup>81</sup>

Within conservation and preservation practice, the term 'compensation' is now used to include all aspects of intervention designed to address visual and structural degradation resulting from material loss.<sup>82</sup> As Frank Matero suggests in *Loss, Compensation and Authenticity in Architectural Conservation*, discussions concerning material loss, its remedy and compensation challenge large questions about artwork and heritage: authenticity, value, and artistic intent.<sup>83</sup> The atrophy of objects and materials is to some extent inevitable, indicating the passage of time. Matero considers that certainly, in a contemporary view the term conservation does not necessarily imply freezing an object in time. Instead, it can include maintaining an object by keeping its original form and elements, favouring restoration rather than replacement and, when restoring is impossible; scale, period and character can be recreated.<sup>84</sup>

Over the last three decades there has been increased interest in preservation management – specifically disaster management - not just within the museum and gallery sector but also in many other fields.<sup>85</sup> Since the mid-1990s, there have been considerable ongoing professional and institutional activities within the field of disaster management across

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<sup>80</sup> Kavanagh, G. (1988). The first world war and its implications for education in British museums. *History of Education*, 17(2), pp.163-129.

<sup>81</sup> *ibid.*

<sup>82</sup> Matero, F. (2006). *Loss, Compensation and Authenticity in Architectural Conservation*. *Journal of Architectural Conservation*, 12(1), p.71.

<sup>83</sup> *ibid.*

<sup>84</sup> *ibid.*

<sup>85</sup> Matthews, G. and Feather, J. (2003). *Disaster management for libraries and archives*. pp.6-7.

cultural institutions. Training, conferences, the development of disaster management plans, raising awareness, applications from other disciplines and publications are just some of the activities that have been undertaken.<sup>86</sup>

There is no one reason the growth in disaster management, as many scholars note different numerous reasons for the expansion of the field. Rather, it could be seen as an accumulation of heightened anxieties around the protection of cultural heritage because of all these various reasons. Advances in technology and information sharing, mass media, changing political landscapes, financial and legal norms such as insurance and liability, and climate change are just some of the reasons for growth. The overall increase in the number of museums and galleries is also important in the contribution to the amount of discourse that has taken place. Moreover, growth in the number cultural institutions can be considered to have augmented interest and investment in the area of research. The world's increasing population and the dense concentration of that population in many centres raises the likelihood that any significant disastrous event, natural or human-made, will adversely affect a large number of people.<sup>87</sup> This is also true in the context of museums and galleries; especially since many main centres now have more than one major institution and many local institutions. In turn, most large-scale disasters are likely to affect more than one or all institutions in an area.

Scientific and technological advances both in the prediction of disaster and in preservation management tools mean that it is possible to be more prepared for instances of disaster. For instance, over the last few decades there have been substantial improvements in forecasting hurricane tracking and intensity, which allows more time for preventative measures

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<sup>86</sup> *ibid.*, p.15.

<sup>87</sup> Turner, B. and Pidgeon, N. (1997). *Man-made disasters*. 1st ed. Boston: Butterworth-Heinemann, pp.1-2.

to be taken in the likely worst affected areas.<sup>88</sup> However, not all disasters allow for forecasting; seismic activity, for example, is unpredictable but there have been fundamental changes made to building design that will help structures withstand seismic events.<sup>89</sup> One of the probable causes of the growth in discourse is the ability of institutions better prepare themselves. Institutions now have the ability anticipate the severity of disaster and now have many more options to choose from in how they might prepare for or anticipate disaster. Online articles, forums and even blogs have meant that museum, archive, gallery and library professionals or the institutions themselves have been able to share their own advice and experiences regarding preparation and post-disaster management. This rich international network of information sharing can be seen as a source of growth, closing the gap for those who assume it will not happen here.

International agencies have had a profound impact on cultural heritage preservation. The United Nations Educational, Scientific, and Cultural Organisation (UNESCO) has increased discourse surrounding cultural heritage and its preservation in many ways. UNESCO has published a strategic guide to risk management in heritage collections,<sup>90</sup> co-organised conferences,<sup>91</sup> and created informational kits to assist in cases of armed conflict.<sup>92</sup> Nongovernmental and international organisations can also be seen as being significant in developing standards, gathering information and sharing research within the field of disaster

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<sup>88</sup> Zhang, F. and Weng, Y. (2015). Predicting Hurricane Intensity and Associated Hazards: A Five-Year Real-Time Forecast Experiment with Assimilation of Airborne Doppler Radar Observations. *Bulletin of the American Meteorological Society*, 96(1), p.25.

<sup>89</sup> Ghobarah, A. (2001). Performance-based design in earthquake engineering: state of development. *Engineering Structures*, 23(8), pp.878-884.

<sup>90</sup> Blanco, L, et Al. (2007) *Mitigating disaster: a strategic guide to risk management in heritage collections* [website] (updated 2007) <[http://webworld.unesco.org/mitigating\\_disaster/](http://webworld.unesco.org/mitigating_disaster/)>, [Accessed 24 May 2016].

<sup>91</sup> UNESCO (2005), *Kobe report draft. Report of session 3.3, Thematic Cluster 3. Cultural Heritage Risk Management*, *World Conference on Disaster Reduction. 18-22 January, 2005, Kobe, Hyogo Japan*, Available at: <<http://www.unisdr.org/2005/wcdr/thematic-sessions/thematic-reports/report-session-3-3.pdf>>, [Accessed 24 May 2016].

<sup>92</sup> UNESCO (2004). *Protect cultural property in the event of armed conflict*. [online] Available at: [http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/CLT/pdf/armed\\_conflict\\_infokit\\_en.pdf](http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/CLT/pdf/armed_conflict_infokit_en.pdf) [Accessed 10 May 2016].

management.<sup>93</sup> For example, the UN Office for Disaster Risk Reduction (UNISDR) is considered the global hub for the disaster risk reduction community and performs many functions that have had influence in disaster management internationally.<sup>94</sup> The UNISDR coordinates relief efforts, monitors and reports on the implementation of international frameworks, advocates for investment and education for disaster management, produces articles and gathers and disseminates information. New Zealand has signalled a strong commitment to the UNISDR led Sendai Framework for Disaster Risk Reduction, in an effort to minimise New Zealand's future losses from disaster, the nation knowing the possible outcomes of disaster well with the recent events in Christchurch.<sup>95</sup>

The Christchurch earthquakes of 2010 and 2011 on which this thesis focuses are an example of the kind of complex relationship between human-made and natural disaster that might effect museums. Earthquakes themselves are events that can be all encompassing, and disaster management responses must be developed with this in mind. Following the Christchurch earthquakes and its residuum, both scholars and professionals have identified a number of concerns that earthquakes present to heritage and collection preservation and disaster management. For example, in 2013 Fulvio Parisi and Nicola Augenti concluded that damage to artworks caused social, cultural and economic losses, and that its protection against earthquakes 'is a must'.<sup>96</sup> Parisi and Augenti proposed a simplified performance-base assessment of artwork formed on the Italian guidelines for seismic risk.<sup>97</sup> The research included the Christchurch 2010 and 2011 earthquakes, as well as the 2011 Japan earthquake.

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<sup>93</sup> Coppola, D. (2016). *Introduction to international disaster management*. Boston: Elsevier Butterworth Heinemann, p.387.

<sup>94</sup> Haddow, G., Bullock, J. and Coppola, D. (2011). *Introduction to emergency management*. 4th ed. Burlington: Butterworth Heinemann, pp.339-342.

<sup>95</sup> UNISDR. (2015) *New Zealand Strong on Sendai Framework*. [online] Available at: <https://www.unisdr.org/archive/44892> [Accessed 23 May 2017].

<sup>96</sup> Parisi, F., Augenti, N. (2013), Earthquake damages to cultural heritage constructions and simplified assessment of artworks, *Engineering Failure Analysis*, vol. 34, p. 735.

<sup>97</sup> *ibid.*

The Great East Japan earthquake of 2011 clearly demonstrates the various implications that earthquakes can have. The earthquake affected a vast area and a tsunami followed as a consequence of the quake.<sup>98</sup> A nuclear power plant was damaged as a result of the Great East Japan earthquake, and has since been causing serious radiation contamination.<sup>99</sup> Museums and archives inland were damaged by the quake and institutions located near the coast were devastated by the tsunami. The area around the nuclear power station may not be able to be excavated or have any other archaeological investigation to take place for many years to come.<sup>100</sup> There was a large amount of damage to cultural heritage caused by the impact of the quake and tsunami, including to heritage valued as national treasures that was of high importance to the identity of the nation.<sup>101</sup> The extenuating circumstances that the disaster caused meant that the administrative offices that would normally seek to set up salvages of cultural properties and heritage were preoccupied with the reconstruction of people's everyday lives and were commonly victims of the events themselves.<sup>102</sup>

The earthquake and tsunami caused considerable damage across a wide area including fires, electrical failures, sewerage system disruptions, and damage to roads and railways. Salvage of cultural heritage could have possibly faced multiple problems such as; water damage, crushing, breakages, fire damage, possibly even radioactive contamination.<sup>103</sup>

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<sup>98</sup> Okamura, K., Fujisawa, A., Kondo, Y., Fujimoto, Y., Uozu, T., Ogawa, Y., Kaner, S. & Mizoguchi, K. (2013), "The Great East Japan Earthquake and cultural heritage: Towards an archaeology of disaster", *Antiquity*, vol. 87, no. 335, pp. 258-269.

<sup>99</sup> *Ibid.*

<sup>100</sup> *ibid.*

<sup>101</sup> *ibid.*

<sup>102</sup> *ibid.*

<sup>103</sup> Encyclopedia Britannica. (2016). *Japan earthquake and tsunami of 2011*. [online] Available at: <https://www.britannica.com/event/Japan-earthquake-and-tsunami-of-2011> [Accessed 25 Feb. 2017].

An online initiative called saveMLAK started the day after the earthquakes.<sup>104</sup> The wiki site was designed to coordinate responses and gather information after the 2011 earthquake and tsunami.<sup>105</sup> The initiative focused on museums, libraries, archives and kominkans, or community centres.<sup>106</sup> The institutions that used the saveMLAK platform could list the extent of the damage they had sustained, their salvage and rescue requirements, the level of services and resources that remain, and other issues. As well as providing this platform, saveMLAK coordinated relief efforts that helped gain an idea of the needs of cultural institutions and provided assistance in response to the help requested.<sup>107</sup>

Like saveMLAK in Japan, Christchurch had to implement initiatives to assist cultural institutions salvage and recover heritage and artefacts, such as the Cultural Collections Recovery Centre (CCCRC).<sup>108</sup> While saveMLAK served as a platform for identifying institutions that needed assistance and the CCCRC was focused towards helping institutions with the housing and recovery of their collections, both were created and implemented when it was discovered that there was a need for the new initiatives in the wake of disaster. Similar to Japanese cultural institutions, Christchurch culture and heritage organisations faced many different types of damage from the disaster, and some organisations were also confronted with the loss of facilities. During the Japanese disaster administrative facilities that would normally be used to assist in salvage of cultural heritage were preoccupied with carrying out civil functions. Like Japan, Christchurch's Cultural heritage organisations facilities were used to carry out civil services. For example, Christchurch Art Gallery Te Puna O Waiwhetu

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<sup>104</sup> Yamamura, M. (2013), "The saveMLAK project: the Great East Japan Earthquake and new developments in museum-library-archive collaboration", *Art Libraries Journal*, vol. 38, no. 2, pp. 40-44.

<sup>105</sup> *ibid.*

<sup>106</sup> Togiya, N. (2013), "Trends in digital cultural heritage in Japan, 1980-2012", *Art Libraries Journal*, vol. 38, no. 2, pp. 11-16.

<sup>107</sup> Yamamura, M. 2013, "The saveMLAK project: the Great East Japan Earthquake and new developments in museum-library-archive collaboration", pp. 40-44.

<sup>108</sup> Ceismic. (2015). *A Look at the CCCRC and its Taonga*. [online] Available at: <http://www.ceismic.org.nz/news/a-look-at-the-ccrc-and-its-taonga> [Accessed 25 Oct. 2016].

(CAGTPOW) was used as the emergency operations headquarters after the September and February earthquakes, and the Air Force Museum of New Zealand (AFMNZ) lent space to civil services like the Child and Family Courts after the September quake.<sup>109</sup> To an extent, there are similarities that can be drawn between the two events in Japan and New Zealand, emphasising the need for recording and sharing information to contribute to the further growth of disaster management practices internationally.

Disaster Management and the wider field of preservation management have gained much traction and have grown significantly in recent years. This growth in interest comes from many different places, international and national agencies, museum and gallery professionals and conservators are among some of the contributing parties. Attention has been drawn to the field through advances in technology, the bettered ability to predict imminent threats and share information or previous experiences. Mass media has played a significant role in increasing anxieties around disaster with its (at times) instantaneous display of images of damage and destruction when the latest disaster strikes. The different areas of growth all highlight that recording and sharing of information post-disaster is important. The growth in the field is a definite step towards bettering the protection and preservation of cultural and world heritage.

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<sup>109</sup> Blair Jackson, Christchurch Art Gallery Te Puna o Waiwhetu. Interview. 23 November 2016.; Moya Sherriff, Air Force Museum of New Zealand. Interview. 14 December 2016.





[Figure 1. This image shows one of the many libraries affected by the 1966 Florence Flood where a large scale international conservation effort was actioned, shapping disaster management as we know it today.]



[Figure 2. Deystroyed statues are seen inside the damaged Palmyra Museum on March 27.]





Figure 3. The Façade of a building that has fallen off a building in the CBD of Christchurch after the February 2011 Earthquake. Debris is spread over the road and peoples dwellings exposed.]



[Figure 4. A town in Japan that has been devastated by the Great East Japan Earthquake of 2011. Only a few structures stand among piles of debris.]

## **Section Two: A cross sectional look at disaster management best practice**

This section discusses current international and local best practice for disaster management in cultural institutions. It is important to examine best practice to establish methods and procedures that are considered effective by organisations and professionals working with disaster management. Best practice for the management of disasters in cultural heritage institutions is not prescribed by any one organisation; rather, it is an accumulation of knowledge gained through experience and case studies conducted by numerous institutions and organisations. Organisations like UNESCO and ICOM are essential in establishing a consensus on best practice. This thesis aims to assess the extent to which approaches to disaster management were changed by the 2010 and 2011 Christchurch Earthquakes, and as such, it is necessary to assess best practices employed by some New Zealand organisations, as national organisations' policies and resources would have most likely had an influence on Christchurch institutions disaster management at the time of the earthquakes and afterwards. It is also important to assess New Zealand's disaster management in cultural institutions in relation to the country's status as a bicultural nation with responsibilities to protect indigenous cultural heritage. This section will highlight common recommendations for best practice across industries, organisations, countries and institutions.

International organisations are important in providing a broad set of principles that inform approaches to the conservation and protection of cultural heritage around the world. The best practice guidelines that organisations such as UNESCO and ICOM publish are also significant in the education of institutions, training of staff and the sharing of information. Online tools and remaining current are essential to these organisations. The best practices

reflected by these organisations are created in light of real-world experiences and known effective methods.

UNESCO plays a key role in the benchmarking of an international best practice in the culture and heritage sector. A fundamental objective of UNESCO is to contribute to peace and security by promoting collaboration among nations through education, science and culture.<sup>110</sup> UNESCO has long been important in the conservation of cultural heritage, and headed a substantial international rescue effort during the flood of 1966 in Florence. The Florence flood is referenced in numerous publications and had a wide-reaching impact.<sup>111</sup> According to Wellheiser and Scott, the substantial international rescue effort coordinated by UNESCO generated new thinking, collaborative approaches and a wealth of innovative advances that continue to be used and adapted worldwide.<sup>112</sup> The flood affected many institutions, and the international team of conservators compared known methods of conservation to decide which were best, and implemented them.<sup>113</sup> Techniques were adapted to be more effective for the problems the conservators faced.<sup>114</sup> UNESCO's response to the Florence floods was a practical demonstration of their values and functions. The Constitution of UNESCO states that one of their primary functions is to maintain, increase and exchange knowledge by assuring the conservation and protection of the world's inheritance of books, works of art and monuments of history and science.<sup>115</sup> It does this by not only heading relief efforts, but also by

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<sup>110</sup> UNESCO. (2017). *Introducing UNESCO*. [online] Available at: UNESCO <http://en.unesco.org/about-us/introducing-unesco> [Accessed 30 Jun. 2016].

<sup>111</sup> Matthews, G., Smith, Y. and Knowles, G. (2009). *Disaster management in archives, libraries, and museums*. 1st ed. Farnham: Ashgate, p.15.

<sup>112</sup> Wellheiser, J., Scott, J. and Barton, J. (2002). *An ounce of prevention*. 2nd ed. Lanham (Md.): Scarecrow Press.

<sup>113</sup> Doig, J. (n.d.). *Disaster recovery for archives, libraries and records management systems in Australia and New Zealand*. 12th ed. NSW: Centre for Information Studies, Charles Sturt University. pp. 1-3.

<sup>114</sup> Ibid.

<sup>115</sup> UNESCO. (2014). *Basic Texts: Constitution of the United Nations Educational, Scientific and Cultural Organization*. [online] Available at:

recommending the necessary international conventions to the nations concerned.<sup>116</sup> One of the conventions UNESCO is most well-known for is the 'Convention Concerning the Protection of the World Cultural and Natural Heritage' – also known simply as the 'World Heritage Convention'.<sup>117</sup>

The World Heritage Convention sets out the duties of nation states in identifying heritage sites, and their roles in protecting and preserving them. By signing the Convention, each country pledges to conserve not only the world heritage sites situated on its territory, but also to protect its national heritage, which turns focus to the cultural institutions within each state's borders. The World Heritage Convention has also created an international space for dialogue in conservation, as each signatory state must report regularly to the World Heritage Committee.<sup>118</sup> While the Convention sets out clauses, it relies on the introduction of domestic legislation to regulate the management of world heritage sites within a state's jurisdiction.<sup>119</sup> The World Heritage Convention does not enforce any concrete obligations; its articles are more recommendations and guidelines for signatory states.<sup>120</sup>

Although the Convention does not outline specific disaster management strategies, it has become an important mechanism for encouraging further development in the field. The Convention asserts that each state will endeavour to establish 'one or more services for the

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<http://unesdoc.unesco.org/images/0022/002269/226924e.pdf#page=6> [Accessed 20 Jun. 2016].

<sup>116</sup> Ibid.

<sup>117</sup> UNESCO. (1972). *Convention Concerning the Protection of the World Cultural and Natural Heritage*. [online] Available at: <http://whc.unesco.org/archive/convention-en.pdf> [Accessed 5 June 2016].

<sup>118</sup> UNESCO. (2017). *The World Heritage Convention*. [online] Available at: <http://whc.unesco.org/en/convention/> [Accessed 27 Jul. 2016].

<sup>119</sup> ICOMOS. (1996), *Tourism at World Heritage Sites: the Site Manager's Handbook*. [online] Available at: <http://www.icomos.org/publications/93touris1.pdf> [Accessed 14 August 2017].

<sup>120</sup> Paulson. S., *Deterring Destroyers: International Prohibitions and Punishments Against the Destruction of Cultural Property*. *Gonzaga Journal of International Law*. [online] Available at: <https://www.law.gonzaga.edu/gjil/2017/05/deterring-destroyers-international-prohibitions-and-punishments-against-the-destruction-of-cultural-property/> [Accessed 14 Jun. 2017].

protection, conservation and preservation of the cultural and natural heritage with an appropriate staff and possessing the means to discharge their functions'.<sup>121</sup> This means that in cases where heritage management facilities do not exist, they must be established and provided with the necessary resources to carry out their duties. This also has implications for education and training of staff, who must be suitably skilled to meet the needs of the objects or sites in their care. The document also outlines that participating states should undertake the duty of 'developing scientific and technical studies and research...[that will]... make the state capable of counteracting the dangers that threaten its cultural or natural heritage'.<sup>122</sup> UNESCO encourages the cooperation between the nations, including the exchange of information surrounding science and culture.<sup>123</sup> Information collected from each state under the terms of the Convention is also collectively shared to develop and further an international best practice surrounding conservation and preservation.

In 2007, the issue of disaster management planning was dealt with directly by the World Heritage Committee when the group coordinated the workshop 'Strategy for Reducing Risks from Disasters at World Heritage Properties'.<sup>124</sup> The workshop gathered experts and heritage site managers from around the globe, and the participants discussed the scope and content of a possible framework for reducing the risk of disasters at World Heritage sites. The workshop led to the development of the 'Olympia Protocol for International Cooperation' in 2009.<sup>125</sup> The Olympia Protocol's primary objective was to strengthen 'disaster risk management for properties inscribed in the World Heritage List' and to help 'prevent and

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<sup>121</sup> UNESCO. (1972). *Convention Concerning the Protection of the World Cultural and Natural Heritage*. [online].

<sup>122</sup> *ibid.*

<sup>123</sup> UNESCO. (2014). *Basic Texts: Constitution of the United Nations Educational, Scientific and Cultural Organization*. [online].

<sup>124</sup> UNESCO World Heritage Centre. (2009). *Strengthening Disaster Risk Reduction at World Heritage Properties: the Olympia Protocol for International Cooperation*. [online] Available at: [http://www.iaa-conservation.org.il/images/files/pdf\\_docs/Olympia\\_Protocol.pdf](http://www.iaa-conservation.org.il/images/files/pdf_docs/Olympia_Protocol.pdf) [Accessed 9 May 2016].

<sup>125</sup> *ibid.*

reduce damage from disasters and preserve cultural and natural values'.<sup>126</sup> It was intended that states would use this document as a general framework for developing cooperation among them and among world heritage properties to share related disaster risk strategies.<sup>127</sup> Though the Olympia Protocol's recommendations refer to world heritage sites, the recommendations it makes can also be applied to a museum setting. The information and references the Protocol contains help educate professionals and, to an extent, can be applied to both immovable and movable cultural heritage.<sup>128</sup>

One key recommendation of the Olympia Protocol concerned the establishment of workshops and resources specific to disaster management planning, emphasising the central importance of education in developing best practice standards and behaviours at heritage sites.<sup>129</sup> For example, the Acre Workshop of 2009 built on the results of the Olympia Protocol and resulted in a document containing a list of proposed actions for further implementing disaster risk reduction at world heritage sites.<sup>130</sup> A proposed action for states is to write 'debriefing' reports on sites hit by disasters, highlighting lessons learnt, for the dissemination among the world heritage community.<sup>131</sup> These reports are aimed at developing best practice standards and effecting positive change in the way heritage sites are managed. Not only is education important in upskilling those working with heritage objects and sites, it is also critical in engaging local communities. Community education helps ensure that the care and protection of heritage sites is seen as an important aspect of social and cultural life. Indeed, it is important to have community buy-in in this context, as visitors and residents at heritage

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<sup>126</sup> *ibid.*

<sup>127</sup> *ibid.*

<sup>128</sup> Chisholm, V. (2015). *Preventative Conservation and Disaster Management Planning in Cultural Institutions*. Masters. p.54.

<sup>129</sup> UNESCO World Heritage Centre. (2009). *Strengthening Disaster Risk Reduction at World Heritage Properties: the Olympia Protocol for International Cooperation*. [online]

<sup>130</sup> UNESCO. (2009). *2nd International Workshop on Disaster Risk Reduction to Cultural Heritage*. [online] Whc.unesco.org. Available at: <http://whc.unesco.org/en/events/610> [Accessed 11 Aug. 2017].

<sup>131</sup> *ibid.*

sites, for example, might also be involved in aspects of disaster response.<sup>132</sup> Through communication and education of the public, a community for the safeguarding of heritage can be developed. Moreover, efficient methods of communication with the public could streamline responses and help prevent panic and damage in the event of a disaster.

Another recommendation in keeping with these values was the creation of a 'clearinghouse' of resource materials on 'Disaster Risk Reduction', contributed to by state parties, which could include materials such as policy texts, guidance, case studies and illustrations.<sup>133</sup> Information on current initiatives concerning disaster risk reduction of movable heritage, as well as resources collected by ICOM, could also be deposited. The concept of an informational sharing hub on disaster prevention is one that is able potentially to benefit many cultural institutions and is a concept that could be implemented at a national or even a local level.

UNESCO has previously set up clearinghouses for various other projects with great success, and has created web tools for information sharing. Proposed in 2009, the clearinghouse for disaster risk reduction however still has not been implemented nearly a decade later. The implementation of such a recommendation could be immensely helpful if it were to use the same online platform that UNESCO has for other projects, such as the UNESCO HIV and Health Education Clearinghouse.<sup>134</sup> However, the proposed platform is to be 'possibly' located 'at the World Heritage Centre or at ICCROM'.<sup>135</sup> The clearinghouse would give professionals access to current and relevant information on protection, preservation and

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<sup>132</sup> UNESCO World Heritage Centre. (2009). *Strengthening Disaster Risk Reduction at World Heritage Properties: the Olympia Protocol for International Cooperation*. [online]

<sup>133</sup> UNESCO. (2017). *HIV Health Clearing House*. [online] Available at: <http://hivhealthclearinghouse.unesco.org/> [Accessed 30 Jul. 2016].

<sup>134</sup> *ibid.*

<sup>135</sup> UNESCO World Heritage Centre. (2009). *Strengthening Disaster Risk Reduction at World Heritage Properties: the Olympia Protocol for International Cooperation*. [online].



disaster risk mitigation. In the United Nations Office for Disaster Risk Reduction (UNISDR) Work Programme for 2016-2019, there are plans to implement a disaster risk reduction clearinghouse. However, there is no reference as to whether this would include information regarding risk reduction for cultural heritage.<sup>136</sup> Although the objective of establishing a clearinghouse has not been realised, the recommendation alone can be considered useful in formally establishing the importance of exchanging information.

The Olympia Protocol also highlighted the need for a resource manual to ‘provide concrete references and best practices’.<sup>137</sup> *Managing Disaster Risks for World Heritage Resource Manual* was released in 2010, and although it is not considered a direct outcome of the Protocol’s recommendations, it was created by many of the same organisations responsible for the Protocol. The manual outlines the importance of Disaster Risk Management (DRM) planning, what a DRM plan should include, and case studies of implementations of DRM planning and preparation unique to world heritage sites. One of the key aspects of the resource manual is its section on ‘how to implement, reassess and reappraise the DRM plan’.<sup>138</sup> This section emphasises the need to monitor the plan and to periodically review it based on its effectiveness after it has been implemented in a disaster scenario. The resource manual also discusses building a local capacity for deploying and monitoring the plan. For world heritage sites this is sometimes feasible; however, in many cultural institutions this is something that may not be able to be realised, for a number of reasons. For example, some institutions may be restricted by insurance policies, and who can

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<sup>136</sup> UNISDR. (2016). *UNISDR Work Programme 2016-2019*. [online] Available at: [http://www.unisdr.org/files/51558\\_workprogramme.pdf](http://www.unisdr.org/files/51558_workprogramme.pdf) [Accessed 23 August 2017]. pp8-9.

<sup>137</sup> UNESCO World Heritage Centre. (2009). *Strengthening Disaster Risk Reduction at World Heritage Properties: the Olympia Protocol for International Cooperation*. [online].

<sup>138</sup> UNESCO., et al. (2010). *Managing Disaster Risks for World Heritage*. Paris: United Nations Educational, Scientific and Cultural Organization. [online] Available at: <http://whc.unesco.org/en/managing-disaster-risks/> [Accessed 30 July 2016]. p.56.

handle art and objects – many insurance policies call for only recognised professionals to handle valuable objects. While the resource manual and the Olympia Protocol are targeted to world heritage sites and not cultural institutions, this does not mean that their approach to disaster management and planning is not valuable. Both documents call for the raising of awareness and education as well as the establishment of plans that focus across the three stages of disaster: preparedness, response and recovery.

The case studies that the resource manual discusses give insight as to why the manual makes the recommendations it does, as well as giving examples of other sites that have taken measures to ensure their heritage is kept from harm, and the recovery initiatives that have been undertaken when damage has affected their site. For example, section 5.1 discusses measures that can be adopted to prevent or mitigate disaster risks – one measure being effective monitoring systems. The manual then discusses a case study of how Nepal mitigates disaster at one of its world heritage sites, through monitoring and using early warning systems to prevent glacial lake outburst floods from damaging Sagarmatha National Park.<sup>139</sup> The importance of reflecting on and learning from disaster events is highlighted in both the resource manual and the Olympia Protocol, and is an essential component for disaster management. The establishment and maintenance of proper communication channels is similarly identified as significant, as is the importance of keeping disaster management plans current and thorough.

Like UNESCO, ICOM has contributed considerably to disaster management planning and awareness. Two of ICOM's key international missions are risk management, and the

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<sup>139</sup> UNESCO., et al. (2010). *Managing Disaster Risks for World Heritage*. Paris: United Nations Educational, Scientific and Cultural Organization. [online]. p.37.

protection of tangible and intangible heritage.<sup>140</sup> ICOM established the Museum Emergency Programme (MEP) in 2003 as a forward planning emergency intervention programme, designed for museum professionals and experts in emergency-related fields including firefighters, police, etc. ICOM's MEP offers a response to disaster with a global and long-term outlook. The programme considers education and training to be a top priority along with close cooperation with other non-governmental organisations. One of the main aims of ICOM's MEP is 'to provide to the participants the means to ensure coordination of both specialised professional organisations and relief agencies in situ'.<sup>141</sup> The achievement of this aim would mean the fast and effective coordination of resources, and would provide a framework for institutions to work from. In 2005 ICOM implemented the MEP for the first time in Southeast Asia. The programme consisted of a workshop in Thailand in August 2005, a practical working phase from September 2005 until March 2006, and a final review meeting in South Korea in June 2006. In the final meeting participants and organisers reviewed the progress made by each museum exchanging information and insights gained over the many months of practical work.<sup>142</sup>

Like MEP, many publications on disaster management best planning emphasise the importance of working with emergency services and other cultural organisations when planning for emergencies. The Northeast Document Conservation Centre in the United States of America innovated Coordinated State-wide Emergency Preparedness (COSTEP) in 2009, an approach that advocates collaboration. COSTEP exemplifies the philosophy that 'together

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<sup>140</sup> ICOM. (2017). *ICOM Missions*. [online] Available at: <http://icom.museum/the-organisation/icom-missions/> [Accessed 20 Jun. 2016].

<sup>141</sup> ICOM. (2017). *Museums Emergency Programme*. [online]. Available at: <http://icom.museum/programmes/museums-emergency-programme/> [Accessed 23 Jun. 2016].

<sup>142</sup> Getty Conservation Institute. (2008). *Teamwork for Integrated Emergency Management (2004–2008)*. [online]. Available at: [http://www.getty.edu/conservation/our\\_projects/education/teamwork/teamwork\\_component1.html#workshop](http://www.getty.edu/conservation/our_projects/education/teamwork/teamwork_component1.html#workshop) [Accessed 23 Aug. 2018].

is better', and has developed a framework designed to bring cultural institutions with emergency management services together.<sup>143</sup> Building on existing disaster management texts from cross-sector agencies, COSTEP is a framework that focuses on preparing for area-wide disasters and building relationships with federal, state, and local emergency management services.<sup>144</sup> During a large-scale disaster situation, resources are often limited both within and outside of the cultural sector. What COSTEP attempts to address is how these resources can be effectively shared between institutions for the efficiency of salvage and recovery operations. The framework splits disaster management practices into three categories: essential, enhanced, and excellent. Essential practice is the minimum standard every institution should be working to achieve, whereas enhanced practice includes desired practices that may be challenging for states and organisations to implement with fewer resources. Lastly, excellent practice is considered comprehensive and built on previous progress, and would more than likely require additional funding, support and effort from states and institutions.<sup>145</sup> COSTEP's best practice includes a prioritised list of state-wide risks to cultural institutions, and requirements to reduce disaster risks.<sup>146</sup> COSTEP is a large-scale operation and requires willingness to share resources. The framework relies on the cooperation of all parties; problems might arise if an institution wanted to serve its own best interests, or if an institution's priorities and policies did not align with those of others, making it difficult to share resources. These potential issues raise questions of how the framework might prioritise each institution's needs in the event of an area wide emergency. For example, if multiple institutions were to

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<sup>143</sup> COSTEP Coordinated Statewide Emergency Preparedness: An Emergency Management Framework for Cultural Resources. (2009). 1st ed. [ebook] Massachusetts: Northeast Document Conservation Center. Available at: [https://www.nedcc.org/assets/media/documents/COSTEP\\_framework\\_1.pdf](https://www.nedcc.org/assets/media/documents/COSTEP_framework_1.pdf) [Accessed 12 Apr. 2016].

<sup>144</sup> Northeast Document Conservation Center. (2017). *COSTEP: Coordinated Statewide Emergency Preparedness*. [online] Available at: <https://www.nedcc.org/free-resources/costep> [Accessed 12 Apr. 2016].

<sup>145</sup> COSTEP Coordinated Statewide Emergency Preparedness: An Emergency Management Framework for Cultural Resources. (2009). 1st ed. [ebook]. p.11.

<sup>146</sup> Ibid., p.19.

need urgent assistance with vulnerable collections, how would the framework prioritise which institution would be assisted first? Or who got more assistance? As far-fetched as this may seem, planning for disaster is intended to target 'worst case scenarios'. These issues are relevant to both MEP's and COSTEP's approaches, and could lead to problems in the event of an emergency, risking heritage in the process.

An essential element of the MEP programme is to provide some standard formats for simple emergency plans, as examples.<sup>147</sup> These templates, once created, would be interrogated and translated into a local application process for the individualised requirements of specific museum and heritage institutions.<sup>148</sup> Lastly, critical review of the existing training materials, case studies and curricula is an important focus of MEP,<sup>149</sup> as this helps to ensure that content stays current. MEP provides resources and literature through an online database that is multi-purpose, multi-contextual and multicultural – again reflecting the programme's global outlook. For example, in one resource provided on the MEP database, Per Cullhed discusses the 1996 Linköpings Stadsbibliotek fire in Sweden, and debates the problems leading up to the disaster and their implications.<sup>150</sup> The success of the MEP programme will depend on the extent to which it is developed and implemented by institutions in real emergencies, and will rely on the skilled professionals who deal with actualised museum and heritage emergencies.

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<sup>147</sup> ICOM. (2017). *Museums Emergency Programme*. [online]. Available at: <http://icom.museum/programmes/museums-emergency-programme/> [Accessed 23 Jun. 2016].

<sup>148</sup> *ibid.*

<sup>149</sup> Galla, A. "Rethinking Emergency Preparedness for Museums", in ICOM ed. (2003). *Cultural Heritage Disaster Preparedness and Response*. Paris: International Council of Museums. [online]. Available at: [http://archives.icom.museum/disaster\\_preparedness\\_book/intro/galla.pdf](http://archives.icom.museum/disaster_preparedness_book/intro/galla.pdf) [Accessed 20 June 2013] p.17.

<sup>150</sup> Getty Conservation Institute. (2018). *Cullhed, Per The Linköping library fire = L'incendie de la Bibliothèque de Linköping*. [online] Available at: <http://aata.getty.edu/Record> [Accessed 23 August 2018].

A significant international network of organisations working to establish disaster management best practice is the International Committee of the Blue Shield (ICBS), which works to protect world cultural heritage threatened by disaster. Created after the 1954 Hague Convention, ICBS works with museums and archives, audio-visual supports, libraries, and monuments or heritage sites.<sup>151</sup> The committee draws on the work of international networks of non-governmental organisations dealing with cultural heritage, including ICA, ICOM, the International Federation of Library Associations and Institutions (IFLA), the International Council on Monuments and Sites (ICOMOS), and the Coordinating Council of Audiovisual Archives Association (CCAAA). ICBS is a network that intervenes in disaster scenarios as an advisor, and cooperates with other bodies including UNESCO, ICCROM and the International Committee of the Red Cross (ICRC), as well as supporting professionals working within disaster-affected countries.<sup>152</sup> The ICBS currently has 20 national branch committees, and another 19 are being formed. These national branches bring together those working in emergency services, local and national government, and armed forces to create a forum in which these organisations can collectively share information and improve their disaster and emergency preparedness. The committee also function as a locus for raising national and local awareness of threats to cultural heritage that are specific to particular regions.<sup>153</sup> For example, ICBS publicly condemned the destruction of cultural property in Iraq, and issued statements to raise awareness about the severity of the issue. With an initiative developed with the Prince Claus Fund of the Netherlands, ICBS has established the Cultural Emergency Response, an

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<sup>151</sup> Blue Shield International (2017). *Who we are & what we do*. [online] Ancbs.org. Available at: <http://www.ancbs.org/cms/en/about-us/what-we-do> [Accessed 11 Aug. 2017].

<sup>152</sup> ICOM. (2017). *International Committee of the Blue Shield*. [online] Available at: <http://icom.museum/programmes/museums-emergency-programme/international-committee-of-the-blue-shield/> [Accessed 9 Jul. 2016].

<sup>153</sup> *ibid.*

initiative which has facilitated restoration work in Morocco, Iran and Iraq.<sup>154</sup> These efforts have assisted in the ICBS's aim to become the cultural equivalent of the Red Cross.

Another organisation that has a strong conservation focus and aims to further conservation practices is the Getty Conservation Institute.<sup>155</sup> Having commenced operations in 1985, the institute has since conducted scientific research, model field projects, and educational and training workshops, and has shared findings through publications and manuals to benefit professionals and organisations.<sup>156</sup> The organisation makes much of this information available for free on their website, enabling quick and easy access. However, although focused on conservation and preventative conservation, the Getty Conservation Institute only offers one publication that is concerned specifically with emergency management planning: *Building an Emergency Plan: A Guide for Museums and Other Cultural Institutions*, published in 1999.<sup>157</sup> While there have been substantial developments made in the technology and knowledge around preventive conservation and emergency planning since 1999, the guide remains a useful resource in defining best practice. *Building an Emergency Plan's* objective is to communicate the critical importance of emergency planning, and to stress the need for involvement at the top level of an institution's organisation in order to make the development and implementation of successful emergency plans possible.<sup>158</sup> The resource draws on the experiences of advisors in the field, and is designed to lead cultural institutions and staff through a process of growing a team-based emergency preparedness and response

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<sup>154</sup> Shimmon, R. (2004). The International Committee of the Blue Shield 1998–2004: An Overview. *Alexandria*. Vol 16, Issue 3, pp. 133 - 141

<sup>155</sup> Getty Conservation Institute. (2017). *Mission and Values*. [online] Available at: <http://www.getty.edu/conservation/about/mission.html> [Accessed 12 Jul. 2016].

<sup>156</sup> *ibid.*

<sup>157</sup> Dorge, V., Jones, S. (1999). *Building an Emergency Plan: A Guide for Museums and Other Cultural Institutions*. Los Angeles, CA: Getty Conservation Institute. Available at: [http://hdl.handle.net/10020/gci\\_pubs/emergency\\_english](http://hdl.handle.net/10020/gci_pubs/emergency_english) [Accessed 30 July 2016]

<sup>158</sup> *ibid.*, p.8.

program, and the development of their own disaster management plan.<sup>159</sup> The guide is organised into three parts that reflect the roles and responsibilities of three key staff positions that are critical in the emergency preparedness and response planning process: the director, the emergency preparedness manager, and the leaders of the departmental teams. In adopting this structure, the guide stresses a team-based approach, and cooperation, commitment and focus from the highest levels of the organisation. The guide suggests that:

...to be effective, the emergency plan needs to be:

- actively supported by the director, governing body, and all levels of staff;
- simple, focusing mainly on situations that are most likely to occur;
- flexible enough to accommodate unanticipated situations;
- realistic in its assessment of museum resources; and
- tested regularly, and at least annually, with an emergency drill and debriefing.<sup>160</sup>

In this, the guide assists institutions in identifying and establishing their specific needs and requirements for a disaster management plan. The central importance of producing a plan that is responsive to the specific circumstances and conditions of individual institutions is highlighted in this guide, and indeed this is a point that features consistently across the disaster management planning literature. The guide is referenced and recommended by a number of institutions and organisations such as the American Alliance of Museums, the Society of American Archivists, and the Guggenheim Museum Bilbao to name just a few.<sup>161</sup>

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<sup>159</sup> *ibid.*, p.11.

<sup>160</sup> *ibid.*, p.16.

<sup>161</sup> American Alliance of Museums (2012). *Developing a Disaster Preparedness/ Emergency Response Plan*. [online] Available at: <http://www.aam-us.org/docs/continuum/developing-a-disaster-plan-final.pdf> [Accessed 30 Aug. 2017]; Society of American Archivists (2009). *Annotated Resources*. [online] Available at: <https://www2.archivists.org/initiatives/mayday-saving-our-archives/annotated-resources> [Accessed 30 Aug. 2017].; Guggenheim bilbao (2017). *Preparing for Your Disaster It Is Not A Matter of "IF" But "WHEN"*. [online] Available at: [https://www.guggenheim-bilbao.eus/src/uploads/2012/09/No\\_SI\\_sino\\_CUANDO\\_wilbur\\_faulk2.pdf?x59940](https://www.guggenheim-bilbao.eus/src/uploads/2012/09/No_SI_sino_CUANDO_wilbur_faulk2.pdf?x59940) [Accessed 30 Aug. 2017].



Despite these recommendations, there are however problems associated with providing these kinds of templates and 'how to' guides. Mathews and Smith consider the mixed reviews of the effectiveness of templates and models.<sup>162</sup> Such templates often lack detail, and there is concern around whether they encourage enough ownership or whether they are used as a quick fix. It is suggested that such plans could lack detail that is intended to be filled in by the museum or gallery, or perhaps it would be 'just one person ticking boxes and thinking the job is done'.<sup>163</sup> Among the institutions and organisations surveyed in Matthews and Smith's UK review of disaster management practices, a commercial disaster management service stated that it advised background reading rather than the use of a template.<sup>164</sup> Another organisation commented to the same effect that 'one size doesn't fit all – you need to know your institution'.<sup>165</sup> Some institutions in favour of templates still commented that there needed to be additional elements of planning combined with a template, reiterating the idea that a template cannot suffice for an institution's disaster management planning in totality.<sup>166</sup>

Innovation and technology are other key factors in disaster management. As technology advances and more tools for coping with disaster are innovated, the ways that a disaster is managed change. Technologies such as smart phones have led to the innovation of apps designed to assist with disaster. An example of this is the Emergency Response and Salvage Mobile App developed by the American Institute for Conservation (AIC) in 2012. The app is free and available internationally. One of the major contributions of the app is making disaster management more mobile and accessible. Based on the Emergency Response and

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<sup>162</sup> Matthews, G., Smith, Y. and Knowles, G. (2009). *Disaster management in archives, libraries, and museums*. 1st ed. Farnham: Ashgate, pp.60-65.

<sup>163</sup> *ibid.*

<sup>164</sup> *ibid.*

<sup>165</sup> *ibid.*

<sup>166</sup> *ibid.*

Salvage Wheel – a slide chart that provides quick access to information on the salvaging and protection of collections immediately after disaster – the app is designed to be used in the first 48 hours after disaster strikes.<sup>167</sup> The app is intended to make accessing information on salvaging collections and co-ordinating a systematised response effort easier. The information the app provides would be in a prepared organisation's disaster management plan, and includes how to assess damage sustained by collections, salvaging tips, documentation processes, and safety procedures for staff.<sup>168</sup> The AIC describes the app as providing 'reliable content', but although reliable, the information provided is also brief.<sup>169</sup> AIC and their co-developers need to make it more clear to downloaders both on their websites and in app stores that the app is not a replacement for a comprehensive emergency preparedness plan, but the descriptions of the app provided on the AIC website and in app stores may mean the app is mistaken for an 'all you need to know guide' by less informed organisations.<sup>170</sup> A useful addition would be a function that allows institutions to add their own institutional contact details and procedures, as well as a login to ensure that everyone from an institution and the services assisting that institution have the same information at hand.

The international organisations surveyed in this section share a common interest in the protection of cultural heritage, and they each acknowledge that disaster management is central to its protection. Common themes include the important role of education and information exchange in the formulation of robust management strategies – for example the sharing of lessons learnt in disaster events, and the dissemination of guidelines and templates;

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<sup>167</sup> FEMA. (2012). *Emergency Response Action Steps*. [online] Available at: <https://www.fema.gov/office-environmental-planning-and-historic-preservation/emergency-response-action-steps> [Accessed 17 Jun. 2016].

<sup>168</sup> American Institute for Conservation of Historic and Artistic Works (2017). *ERS App*. [online] Available at: <https://www.conservation-us.org/emergencies/ers-app#.WaYAVdOGNE4> [Accessed 20 Mar. 2017].

<sup>169</sup> *ibid.*

<sup>170</sup> *ibid.*

an emphasis on the effective coordination of resources; and the significance of raising public awareness about the need for thorough disaster planning in order to care for our vulnerable cultural heritage sites and collections. In addition, there is a clear consensus that site or institution-specific planning is critical in developing responses that meet the individual needs of cultural heritage sites and collections, and address the particular contexts in which these are located.

The extreme flooding that occurred in Paris in early June 2016 caused the Louvre Museum to close its doors to visitors for the first time since 1982.<sup>171</sup> However, the Museum's response was one that exemplifies the principles of good disaster management that have been advocated by organisations such as UNESCO, ICOM and the Getty Institute. As the Seine River edged towards its banks, the Museum triggered its flood risk prevention plan. With the museum in such close proximity to the river, and most of the gallery being underground, the Louvre had already identified flooding of the river as a primary risk, and has had its flood prevention strategy in place since 2002 (during the intervening years, the museum has also continued to strengthen this).<sup>172</sup> The flood risk reduction plan included the installation of pump devices that would slow the spread of water if the river breached its banks. Furthermore, alongside traditional strategies of flood reduction such as cofferdams and watertight enclosures below the waterline, the underground areas of the Museum also feature a series of concrete channels and heavy metal watertight doors behind exhibition spaces.<sup>173</sup> The Louvre's plan requires a coordinated effort with police, and requires daily observation of the level of the

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<sup>171</sup> New York Times. (2016). *Crowds Are Out, Crates Are In as Louvre Takes Flood Precautions*. [online] Available at: [http://www.nytimes.com/2016/06/04/world/europe/eerily-empty-louvre-what-its-like-when-floods-keep-tourists-away.html?\\_r=0](http://www.nytimes.com/2016/06/04/world/europe/eerily-empty-louvre-what-its-like-when-floods-keep-tourists-away.html?_r=0) [Accessed 11 Jul. 2016].

<sup>172</sup> UNISDR. (2015). *Louvre Museum works to fend off floods*. [online] Available at: <https://www.unisdr.org/archive/47028> [Accessed 29 Jun. 2016].

<sup>173</sup> *ibid.*

Seine and the measurement of its fluctuations by the fire service.<sup>174</sup> Five hundred members of the Museum's staff make up the specially-trained flood prevention squads. For insurance reasons, it is not possible to have outside museum volunteers move or handle the works. The Museum carries out regular exercises of the plan with the personnel that would be responsible for the tasks required.<sup>175</sup> In the event of flooding, the Louvre has detailed records listing the works to be moved to the upper floors, and key works are transported to a special warehouse in the Liévin branch of the Museum in northern France.<sup>176</sup> The Museum has world-respected and extremely valuable collections, and therefore has been able to secure the resources required to manage and appropriately care for them. The actions taken in early June by the Museum were rare, and were some of the most drastic emergency precautions taken in its modern history.<sup>177</sup>

Disaster management endorsed by New Zealand organisations is essential to establishing the best practice that Christchurch institutions can formulate their disaster management plans around. National creative and arts organisations, New Zealand museums, and government documents and policies are all important in the formulation of disaster management best practice. The organisations and their texts or publications selected in this thesis have been chosen for their importance within New Zealand's cultural heritage sector. National best practice is one of the areas to which institutions in Christchurch and across New Zealand may have looked in the formation of their disaster management policies, both before and after the 2010 and 2011 earthquakes.

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<sup>174</sup> *ibid.*

<sup>175</sup> *ibid.*

<sup>176</sup> Twitter. (2016). *Musée du Louvre (@MuseeLouvre)*. [online] Available at: <https://twitter.com/MuseeLouvre?lang=en> [Accessed 23 Jul. 2016].

<sup>177</sup> Washington Post. (2016). *Flooding in Paris threatens the Louvre's most iconic artwork*. [online] Available at: <https://www.washingtonpost.com/news/worldviews/wp/2016/06/02/amid-historic-flood-paris-museums-begin-evacuating-art/> [Accessed 23 Jul. 2016].

*Management of Heritage Collections in Local Museums and Art Galleries, a*

performance audit report carried out by the Tumuaki o te Mana Arotake Controller and Auditor-General in April 2006, contains a section titled 'Caring for the collection'.<sup>178</sup> The report aims to provide an 'independent assessment of collection management policies and practices against recognised principles of sound collection management, [illustrate] good practice, and [suggest] ways for museums and art galleries to work more effectively as individual institutions and collectively as a sector'.<sup>179</sup> The audit includes a subsection on planning for emergencies.<sup>180</sup> This subsection establishes that the priority in a museum or gallery in the event of an emergency is the safety of staff and visitors. The second priority is to prevent damage to collections, or if this is not possible, to respond rapidly and effectively to reduce further harm and treat damaged objects.<sup>181</sup> The audit establishes guidelines of best practice by stating that it is important to identify objects and works in the collection of a museum or gallery that are considered of 'greatest significance' to the institution, and those most vulnerable, and that it is these objects that should be retrieved or dealt with first when salvaging a collection.<sup>182</sup> The prioritisation of collections is intended to ensure that time is used as efficiently as possible, as it is often limited in emergency situations. However, this also engenders the canonisation of flagship artefacts that are considered more important by the institution. The report does not give any pointers as to how a museum or gallery should identify these, nor does it contain suggestions as to which qualities or attributes of objects should be considered when making such assessments. Loaned objects and artefacts from other institutions will also need to be considered when formulating these priority lists. The Controller and Auditor-General again

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<sup>178</sup> Office of the Auditor-General New Zealand. (2006). *Foreword*. [online] Available at: <http://www.oag.govt.nz/2006/heritage> [Accessed 29 Jun. 2016].

<sup>179</sup> *ibid.*

<sup>180</sup> Management of heritage collections in local museums and art galleries. (2006). 1st ed. [ebook] Wellington: Office of the Auditor-General. Available at: <http://www.oag.govt.nz/2006/heritage/docs/heritage.pdf> [Accessed 30 Jun. 2016].

<sup>181</sup> *ibid.*, p.97.

<sup>182</sup> *ibid.*

offers no guidelines for the prioritisation of loaned artefacts, leaving their status rather ambiguous in this context.

The report cites the building services manager(s), that registrar(s) and conservator(s) as the most crucial roles to have defined in an emergency.<sup>183</sup> The audit identified that out of the institutions reviewed, 'nine museums had an emergency plan, although four of those were not complete, and the other museums intended to prepare an emergency plan'.<sup>184</sup> The Controller and Auditor General states that poorly-maintained buildings and facilities put collections at risk. Over half of the museums that were audited had no asset management plan for the buildings and facilities in which their collections were housed. In the view of the Controller and Auditor-General, best practice should include consideration of risks and the provision of the information and funding necessary for the upkeep and repair of facilities.<sup>185</sup> There has been an increased amount of importance placed on disaster management since the report was carried out in 2006, as well as multiple disasters that would have drawn institutions' attention to the necessity of planning; it is possible that many of the institutions assessed may have better prepared for disaster over this time. Another survey of museums is required to analyse whether these issues have been improved or resolved.

The Ministry for Culture and Heritage's policy for the Government's Management of Historic Heritage 2004 was adopted to 'set an example for other owners of historic heritage, including local government, public institutions, and the private sector', and to 'ensure that places of significance to Māori in its care are appropriately managed and conserved in a manner that respects mātauranga Māori and is consistent with the tikanga and kawa of the

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<sup>183</sup> *ibid.*, p.95.

<sup>184</sup> *ibid.*

<sup>185</sup> *ibid.*, p.81.

tangata whenua'.<sup>186</sup> Part of the Policy states that government will provide planning for the conservation of historic heritage, including disaster management planning, and consult hapū and iwi where their heritage is concerned.<sup>187</sup> The importance of consulting Māori in the planning of preservation is highlighted in this policy, and it aims to set best practice standards for this for other government institutions and organisations.<sup>188</sup> The policy also states that the New Zealand government ratifies the 1972 Convention Concerning the Protection of the World Cultural and Natural Heritage, which demonstrates UNESCO's influence on cultural heritage preservation in New Zealand.<sup>189</sup> Lastly, the document outlines possible constraints on the management of historic sites, citing one reason as 'the competing needs for limited resources'.<sup>190</sup> This is also applicable to cultural institutions, as there are some measures that, while deemed best practice, institutions simply cannot afford.

Creative New Zealand Arts Council of New Zealand Toi Aotearoa (CNZ) is a national organisation that promotes and supports the arts in New Zealand.<sup>191</sup> CNZ provides funding, research, and tools to cultural institutions across the country, and is a body that many organisations within New Zealand look to for best practice and industry standards. It provides one central disaster management guide, or as it is called by CNZ, a 'toolkit' titled *Risk Management Toolkit: A resource for arts organisations*.<sup>192</sup> The organisation also has another

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<sup>186</sup> *Policy for Government Departments' Management of Historic Heritage*. (2004). Wellington: New Zealand Government Printing Office. [online] Available at: [http://www.mch.govt.nz/sites/default/files/Policy%20Historic%20Heritage%202004%20%28D-0654735%29\\_0.PDF#overlay-context=research-publications/our-research-reports/policy-government-departments-management-historic-heritage](http://www.mch.govt.nz/sites/default/files/Policy%20Historic%20Heritage%202004%20%28D-0654735%29_0.PDF#overlay-context=research-publications/our-research-reports/policy-government-departments-management-historic-heritage) [Accessed 23 Jul. 2016]. p.2.

<sup>187</sup> *ibid.*

<sup>188</sup> *ibid.*

<sup>189</sup> *ibid.*

<sup>190</sup> *ibid.*, p.4.

<sup>191</sup> Creative NZ Arts Council of New Zealand Toi Aotearoa. (2016). *What we do*. [online] Available at: <http://www.creativenz.govt.nz/about-creative-new-zealand/what-we-do> [Accessed 14 Jul. 2016].

<sup>192</sup> Creative NZ Arts Council of New Zealand Toi Aotearoa. (2014). *Risk Management Toolkit: A resource for arts organisations*. [online] Wellington: Creative NZ Arts Council of New Zealand Toi Aotearoa. Available at:

relevant resource that contains a section on risk management for the boards of trustees of arts organisations: *Getting on Board: A governance resource guide for arts organisations*.<sup>193</sup> The risk management toolkit has been created in consultation with Standards New Zealand's 'Risk Management Standards', and follows a 'Five-stage Process'.<sup>194</sup> The process offers guidance for creating a new disaster management plan, or for reassessing an existing plan, and it can also be used to identify and manage risks for specific events or projects.<sup>195</sup>

The toolkit acknowledges the importance of Te Tiriti o Waitangi/the Treaty of Waitangi, and that Te Tiriti should be factored into the way arts organisations work. In its acknowledgement of the Treaty, the toolkit also acknowledges New Zealand as a bicultural nation, and the impact of a bicultural environment on the way arts organisations should work. Because international standards of best practice are often drawn upon, Te Tiriti is not broadly addressed in disaster management discourses, and can therefore get problematically overlooked. To try to ensure that The Treaty is acknowledged in cultural organisations' disaster management, the toolkit asks a number of questions that aim to help organisations think about how The Treaty applies to the ways they work. One of the issues this section asks organisations to consider is 'How do we ensure that Māori stakeholders contribute to our identification and management of risk?'.<sup>196</sup> This question is left open for each institution to answer according to their own policies. CNZ asks organisations to consider how they are working with local iwi and hapū, and also how culture and tikanga (customs and practice) are

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[http://www.creativenz.govt.nz/assets/ckeditor/attachments/1022/risk\\_management\\_toolkit\\_-\\_august\\_2014.pdf?1409203287](http://www.creativenz.govt.nz/assets/ckeditor/attachments/1022/risk_management_toolkit_-_august_2014.pdf?1409203287) [Accessed 14 Jul. 2016].

<sup>193</sup> Creative NZ Arts Council of New Zealand Toi Aotearoa. (2009). *Getting on Board: A governance resource guide for arts organisations*. [online] Wellington: Creative NZ Arts Council of New Zealand Toi Aotearoa. Available at: <http://www.creativenz.govt.nz/assets/paperclip/publications/files/33/original/getting-on-board.pdf?1300394226> [Accessed 19 Jul. 2016].

<sup>194</sup> Creative NZ Arts Council of New Zealand Toi Aotearoa. (2014). *Risk Management Toolkit: A resource for arts organisations*. [online]. p.6.

<sup>195</sup> *ibid.*

<sup>196</sup> *ibid.*, p.10.



reflected appropriately in the work that they do.<sup>197</sup> This work includes how they care for art and artefacts. One answer to these questions is to consult iwi and hapū during the process of creating or reassessing heritage management documents and policies. The further integration of Te Tiriti into the way cultural heritage organisations care for New Zealand's heritage is essential, and guidelines such as CNZ's toolkit assist in this process.

CNZ views the board of an organisation to be important in the development of risk management policy, and also places a lot of responsibility with the chief executive.<sup>198</sup> It emphasises the significance of conducting regular assessments, and ensuring that perceived risks are 'adequately covered by policy'.<sup>199</sup> Many of the guides and publications assessed in this thesis state that it is important to conduct regular assessments to make sure that policies and documents are specific to the institution's risks. They note that it is important to define roles (including who is responsible for what), and recommend personnel as suitable for these responsibilities.<sup>200</sup> CNZ also considers it vital to factor stakeholders into risk management, as changes in circumstances or disasters would have implications for them.<sup>201</sup> This is something that most documents do not directly ask organisations to consider. However, some publications including CNZ's toolkit ask that institutions consider what might happen if they were to close, or if they were not able to provide normal services for an extended period. Stakeholders are both internal and external, and can include board members, employees, volunteers, the public, iwi, local and central government, emergency services, and others besides.<sup>202</sup> The CNZ toolkit asks organisations to define risks in relation to stakeholders, and

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<sup>197</sup> *ibid.*

<sup>198</sup> *ibid.*, p.13.

<sup>199</sup> Creative NZ Arts Council of New Zealand Toi Aotearoa. (2009). *Getting on Board: A governance resource guide for arts organisations*. [online].p.44.

<sup>200</sup> Matthews, G. and Eden, P. (1996). *Disaster Management in British Libraries: Report and Guidelines*. p.4.

<sup>201</sup> Creative NZ Arts Council of New Zealand Toi Aotearoa. (2014). *Risk Management Toolkit: A resource for arts organisations*. [online]. pp.15-17.

<sup>202</sup> *ibid.*

then manage these defined risks according to their likelihood and probable impact. Like other guides, the toolkit states the need to establish an 'action plan' and to communicate this plan to employees and volunteers, as well as to monitor and review plans and policies at least annually. CNZ highlights the importance of revising policies when an incident or event occurs, and emphasises reviewing the possible causes if plans did not run as expected, or if new areas of risk are exposed.<sup>203</sup>

CNZ provides templates at the end of its toolkit, which are intended to help organisations tailor their plans to their institution and its specific risks. The template gives organisations a format to follow to assist in identifying and managing their risks. Furthermore, these templates are brief in comparison with other templates provided by other organisations discussed in this thesis, and require lots of filling in of blanks, which to an extent could mitigate the risk that organisations will use the templates as easy formulators for policy. CNZ goes one step further than most organisations in this toolkit and discusses legal responsibilities in relation to disaster management. Because this guide is specific to one country, it outlines relevant New Zealand legislation and the need for museums to be aware of the accountabilities and responsibilities for their type of organisation.<sup>204</sup> This is something that international organisations do not often emphasise, but it is discussed in depth here. Whether intentional or otherwise, by placing the templates at the end of the resources, CNZ places less importance on templates.

The Museum of New Zealand Te Papa Te Tongarewa is New Zealand's national museum, and is a leader in the development of conservation practices both nationally and internationally. The Museum website's collection management section states that it provides

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<sup>203</sup> *ibid.*, p.32.

<sup>204</sup> *ibid.*, pp.39-40.

'best-practice advice' on how to manage collections, and this includes disaster planning.<sup>205</sup> Te Papa's National Services Te Paerangi (NSTP) aims to strengthen the museum sector and to work cooperatively with all people around New Zealand.<sup>206</sup> NSTP offers 'how to guides', workshops, training and development for museum professionals, and resources. One of the places that NSTP offers these resources is on Te Papa's website.

Under the collections management section of Te Papa's website, there is a page for 'disaster planning and recovery'.<sup>207</sup> This web page contains downloadable resource guides for museums and galleries.<sup>208</sup> Guides specific to disaster management planning include 'Preventive Conservation', 'Minimising Disaster' and 'Emergency Procedures', and it is suggested that these guides are read in conjunction with each other when planning for emergencies.<sup>209</sup> 'Minimising Disaster' suggests ways in which a museum or gallery can develop a contingency plan for emergencies, and recommends documentation and systems that can be put in place to respond effectively to and recover from an emergency at any museum site.<sup>210</sup> This guide is not very detailed, and mostly consists of bullet points. The guide stresses institution-specific planning for your location and environment, and lists types of disasters that may cause damage to collections and facilities. It also emphasises a pre-prepared emergency manual and an emergency equipment locker. The publication then goes on to offer a list of more resources and publications that may be useful in the planning process. 'Emergency Procedures' sets 'the flipchart' approach as best practice for museums. The flipchart has been researched and developed in consultation with the New Zealand

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<sup>205</sup> Museum of New Zealand Te Papa Tongarewa. (2016). *Collection management*. [online] Available at: <https://www.tepapa.govt.nz/learn/for-museums-and-galleries/how-guides/collection-management> [Accessed 29 Jul. 2016].

<sup>206</sup> <https://www.tepapa.govt.nz/learn/for-museums-and-galleries/national-services-te-paerangi>

<sup>207</sup> Museum of New Zealand Te Papa Tongarewa. (2016). *Collection management*. [online].

<sup>208</sup> *ibid.*

<sup>209</sup> *ibid.*

<sup>210</sup> Museum of New Zealand Te Papa Tongarewa. (2001). *Minimising Disaster He Rauemi Resource Guide*. [online]. Available at: [https://www.tepapa.govt.nz/sites/default/files/6-minimising-disaster\\_0.pdf](https://www.tepapa.govt.nz/sites/default/files/6-minimising-disaster_0.pdf) [Accessed 24 Mar. 2016].

emergency services.<sup>211</sup> The guide then gives a template of a flipchart for museums and galleries to adapt to their specific requirements, and notes that ‘the flipchart should be supported with specific notices, for example, [about] where staff should assemble in an emergency’.<sup>212</sup> Under headings naming emergency scenarios, the flipchart details (with bullet points under each section) how to respond to the situation. These charts would be placed around the museum or gallery to inform responders about the correct procedures for how to handle the various scenarios quickly. The procedures in the flipchart have been developed around the policy of Te Papa and, like in many other institutions, this sets visitors and staff as its highest priority.<sup>213</sup> Differing from best practice by other organisations, Te Papa then prioritises the building(s) and then collections, and finally museum property (such as furniture etc).<sup>214</sup> This conflicts with the Controller Auditor General’s statement that collections should come directly after the safety of staff and visitors. It is interesting that these two organisations differ in the setting of priorities: Te Papa’s reasoning for prioritising the building(s) after visitors and staff might be because these secure a space for the protection of the collections;<sup>215</sup> however, time spent attending to buildings instead of salvaging and minimising damage to collections could prove costly to cultural heritage. It should be noted however that the flipchart can be adjusted to an individual institution's priorities if their priorities do not align with those of Te Papa.

The ‘Emergency Procedures’ Guide places importance on involving local emergency services in the planning and development of contingency plans. The last Te Papa NSTP resource ‘Preventive Conservation’ focuses on hazards in relation to such things as storage,

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<sup>211</sup> Museum of New Zealand Te Papa Tongarewa. (2001). *Emergency Procedures*. [online] Available at: <https://www.tepapa.govt.nz/sites/default/files/7-emergency-procedures.pdf> [Accessed 20 Oct. 2016]. p.2.

<sup>212</sup> *ibid.*, p.3.

<sup>213</sup> *ibid.*, p.2.

<sup>214</sup> *ibid.*

<sup>215</sup> *ibid.*, p.2.

control of buildings' environments, humidity control, pest management, security and planning for emergencies.<sup>216</sup> The guide states that 'A lot of preventative conservation is good housekeeping and common sense',<sup>217</sup> the phrase 'good housekeeping' here implying basic regular upkeep, which can consume a lot of resources in cultural institutions. 'Emergency Procedures' takes into account budgetary and funding restrictions that museums and galleries in New Zealand and elsewhere face, and recognises that best practice is not always financially viable.<sup>218</sup> This is something that is not discussed in most resources specific to disaster management, and is an issue that should have more importance placed on it. For example, many museums would not have the funds to be able to implement the Louvre's flood measures previously discussed. The 'Emergency Procedures' guide is focused towards institutions that do not already have access to specialist conservators, and those with financial constraints. Indeed, institutions with high budgetary allowances are advised to source additional professional help.<sup>219</sup> This again highlights disparities in the types of conservation practices that cultural institutions can provide for their collections, based on the institutions' financial capabilities.

The NZTP guides are easy to use and make information accessible; however, the information they provide is limited. Even if the guides are read in conjunction with each other, they are only a starting point for the formation of preventive conservation measures and disaster management policies within cultural institutions. There is a possibility that institutions will not go beyond these guides in their contingency planning, as Te Papa quotes themselves to be providers of best practice. These templates risk institutions using them as a quick fix and

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<sup>216</sup> Museum of New Zealand Te Papa Tongarewa. (2001). *Preventative Conservation He Rauemi Resource Guides*. [online] Available at: [https://www.tepapa.govt.nz/sites/default/files/5-preventative-conservation\\_1.pdf](https://www.tepapa.govt.nz/sites/default/files/5-preventative-conservation_1.pdf) [Accessed 24 Mar. 2016].

<sup>217</sup> *ibid.*

<sup>218</sup> *ibid.*

<sup>219</sup> *ibid.*, pp.4-11.

not adapting them to their own specific risks.<sup>220</sup> It has been established by many publications and organisations, including Te Papa, that tailoring disaster management to institutions' own risks and needs is of high importance.

The rest of the 'Disaster planning and recovery' web page contains titles with types of disasters, such as earthquakes and 'flood and water damage'. These titles have bullet points underneath them with links to external websites, one of the links leads to a series of short videos made in 2007 by the Northeast Museum Services Center in the USA.<sup>221</sup> The impact of the 9/11 terrorist attacks is evident here, and is discussed in these videos as being an important reason for developing disaster management plans.<sup>222</sup> These videos are also referenced on other websites that discuss disaster management, though many of the other organisations that do this might not be considered as influential as Te Papa. The videos feature training exercises carried out by the National Park Service and discuss components that are vital to a 'good' and 'successful' disaster management plan.<sup>223</sup> The videos consider a 'good plan' to be comprehensive, flexible, up to date, adaptable to different situations and easy to understand and use. Although many aspects of what a good plan should entail are given, there are no physical examples or detailed information of a format this kind of plan might follow. Te Papa frames these videos as 'Other useful resources', as on their own these videos would not be sufficient in shaping the disaster management of a cultural organisation.<sup>224</sup>

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<sup>220</sup> Matthews, G., Smith, Y. and Knowles, G. (2009). *Disaster management in archives, libraries, and museums*. 1st ed. Farnham: Ashgate, pp.60-65

<sup>221</sup> *Emergency Preparedness for Museum Collections*. (2007). Northeast Museum Services Center. [online] Available at: <https://www.youtube.com/playlist?list=PLFB5E3A6B21EBA8BE> [Accessed 30 July 2016].

<sup>222</sup> *ibid.*

<sup>223</sup> *ibid.*

<sup>224</sup> Museum of New Zealand Te Papa Tongarewa (2017). *Disaster planning and recovery Te whakarite i tō whare taonga mō te parekura me te whakaora anō*. [online] Available at: <https://www.tepapa.govt.nz/disaster-planning-and-recovery> [Accessed 11 Aug. 2017].

Under the subtitle 'Earthquakes', there is an extremely brief survey on the severity of the risk, but with no external links on how best to plan or manage following such an event. Even though earthquakes can be considered very important in disaster management planning in New Zealand, there is a lack of information provided on them throughout Te Papa's NSTP web pages. In the same section Te Papa states, 'Since the devastating earthquakes in Canterbury in 2010 and 2011, New Zealand institutions have been more aware than ever of how important it is to prepare for such events'.<sup>225</sup> Despite this acknowledgement, the amount of museum and art museum-specific information provided is very limited. In these disaster planning and recovery guides, only the 'Emergency Procedures' guide mentions earthquakes, and again they are only referred to very briefly.<sup>226</sup> There are a few short bullet points on collection items in earthquakes, stating not to move the object if it is safe where it is and to follow the instructions of a conservator, as well as a few tips on how to minimise damage to collections. Under the same subtitle, NSTP provides the link to *NZ Civil Defence: Get Thru*. This website gives general information that is not specific to any business or organisation. In consideration of recent experience and likely risk in New Zealand, there needs to be more information provided by the NSTP on post-earthquake management.

On the same webpage, under the title of 'Collection Recovery', Te Papa provides a link to the Canterbury Disaster Salvage Team, which is useful to those based in the Canterbury region and also offers information to those outside the area.<sup>227</sup> The website contains a disaster management template of its own, and links to other organisations and institutions' templates and plans. The Canterbury Disaster Salvage Team website covers material that Te Papa does not. For example, the Canterbury Disaster Salvage Team provides

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<sup>225</sup> Museum of New Zealand Te Papa Tongarewa. (2016). *Collection management*. [online].

<sup>226</sup> Museum of New Zealand Te Papa Tongarewa. (2001). *Emergency Procedures*. [online].

<sup>227</sup> Canterbury Disaster Salvage Team. (2007). *Welcome*. [online] Available at: <http://www.disalteam.co.nz/index.htm> [Accessed 20 Jul. 2016].

a list of actions to follow to prevent further damage in the event of an earthquake or tsunami, while Te Papa's earthquake bullet points are focused on preparing collections in case of an event. This demonstrates the need to research and look beyond initial sources when museums plan for disasters. Another resource Te Papa provides is a table produced by the Western Association for Art Conservation, which sets recovery priorities and methods of conservation for a wide range of media.<sup>228</sup> The chart is helpful but was created twenty years ago, in 1997. Since then methods of conservation, technology, and best practices have grown and changed, and again, Te Papa – as the national service provider – needs to ensure that the information it is providing is current and relevant. The chart is also very brief and there is a need for further specificity,<sup>229</sup> but a chart such as this cannot reasonably be that specific when it is to be used in relation to a whole range of different objects.

There are many discrepancies in the documents and publications surrounding disaster management in New Zealand. There needs to be a more coherent approach from New Zealand organisations so that there is clarity about best practices. One of the areas that specifically needs clarity is how the Treaty of Waitangi, and New Zealand's biculturalism, should influence disaster management. Because Māori culture is unique to New Zealand, the policies adopted from other countries cannot be assumed to sensitively accommodate indigenous knowledge, meanings, protocols or tikanga, so there might be a need for some procedures for managing material heritage in disasters to be approached differently. The acknowledgement of the Treaty of Waitangi is only discussed in one document assessed by this thesis, and New Zealand's status as a bicultural nation is only discussed in two reports designed to provide best practice to cultural organisations. Despite being New Zealand's

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<sup>228</sup> Western Association for Art Conservation. (1997). *Salvage at a Glance*. [online] Available at: <http://cool.conservation-us.org/waac/wn/wn19/wn19-2/wn19-207.html> [Accessed 24 Jun. 2016].

<sup>229</sup> *ibid.*



national museum, Te Papa and its National Services (NSTP) did not mention the Treaty of Waitangi or biculturalism in its disaster management guides. This is problematic, as these need to represent Māori interests and offer specific procedures to protect the cultural heritage of tāngata whenua.

There are some consistent policies and recommendations across the various sources examined by this thesis, which can be established as current best practice. Education and training are considered essential to disaster management in the cultural sector, as these help ensure that professionals are equipped to deal with a disaster as efficiently and effectively as possible should it occur. International organisations suggest that the education of the public is useful, as educating communities can help ensure that culture and heritage is seen as important.

Communication and the sharing of information are also highlighted by many protocols and publications as essential to disaster management, and COSTEP and ICBS emphasise these in their best practice policies. Communication between cultural organisations, emergency services, and governmental and non-governmental organisations are crucial for efficiency and best management during a disaster, as it can mean that limited resources are shared effectively. Recommendations for the sharing of information are not limited to during a disaster, and international organisations have proposed various platforms for the sharing of knowledge and research, including UNESCO's clearinghouse on disaster risk reduction. Most national and international organisations have some sort of web tool for the sharing of documents they regard as useful, and many resources promote the regular or at least annual reassessment of disaster management plans, placing emphasis on maintenance. Some resources recommend only amending policies after an emergency when it can be seen what

has and has not worked well, while others recommend reassessing regularly regardless of the occurrence of major events. Nearly all sources assessed recommended tailoring disaster management plans to an institution's particular risks, and all resources set out staff and visitors as being the priority in a disaster situation.

It is important to note that although many sources have similar recommendations, they do not all recommend that these practices should be carried out in the same way. One of the discrepancies identified by this thesis is where the power of decision-making should be placed in the event of a disaster. Most sources agree that it is important to have roles defined for the effective implementation of disaster management policies, but not all agree on what roles should be priorities, or which employees are most effective during an emergency. There is also disparity as to who should make plans: while some sources place the responsibility in the hands of the boards of institutions, others believe that registrars and maintenance professionals are the most knowledgeable about the institution's specific risks, and therefore should be in charge of the planning. Nearly all sources agree that the 'top level' of institutions (i.e. board members, directors and senior staff members) should be involved in the creation of disaster management plans, which must also be based on the institution's needs, budget, and risks. Policies and guides created by organisations evaluated in this thesis are made in consultation with other publications, as well as other countries' and institutions' best practices, but there are numerous additional sources that institutions might consult in the creation of their disaster management plans. Throughout this assessment of disaster management best practices, it is overwhelmingly apparent that underprepared institutions suffer the greatest consequences in disasters, leaving precious heritage at risk.

### **Section Three: The Christchurch earthquakes and disaster management in Christchurch museums**

Cultural institutions in Christchurch were one sector of many affected by the 2010 and 2011 earthquakes. This section aims to discuss the circumstances in Christchurch after the earthquakes, and give context to the conditions that not only the cultural sector met, but also the situation that was unfolding in the wider Canterbury region. Understanding the impact of the earthquakes on Canterbury is essential for grasping the adversity cultural institutions and the cultural community faced post-disaster. This section explains the methodology for choosing institutions to be looked at, and outlines the circumstances of each institution following the earthquakes. It will then discuss the disaster management principles they demonstrated and the actions they took. Lastly, this section will discuss and compare actions and plans made by the selected institutions to the best practices examined in the previous section, as well as considering reasons why each institution might have reacted differently to the same events.

### **s.1. Christchurch Earthquakes**

The two major earthquakes that rocked Christchurch caused devastation that was more than physical. Christchurch city's population declined after the earthquakes as people packed up and moved to non-affected areas.<sup>230</sup> The importance of cultural institutions became particularly evident in post-quake Christchurch. As Jenny Harper, the Director of Christchurch Art Gallery Te Puna o Waiwhetu, stated when reflecting on the events in Christchurch,

Art galleries are not 'nice to have' institutions in any city. Like libraries, they are needed to extend the visual literacy of their communities; like museums, they are needed to extend understandings of our identity and sense of place [...] Art galleries provide cultural, social, educational and economic benefits to a city [...].<sup>231</sup>

A review on the impacts of post-disaster arts and culture initiatives in Christchurch carried out by the Ministry of Heritage and Culture found that arts and culture could help preserve social memory and/or reinvent it, contributing to post-disaster resilience and urban identity.<sup>232</sup> The Olympia Protocol outlines that it is important to strengthen disaster risk management to 'prevent and reduce damage from disasters and preserve their [communities'] cultural and natural values, thus protecting an essential support for the social and economic well-being of their communities',<sup>233</sup> again supporting the notion that cultural institutions have a role to play in post-disaster circumstances. These reasons, among many others, reinforce the need to evaluate the effectiveness of disaster management implemented in cultural institutions before, during, and after the 2010-11 Christchurch earthquakes.

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<sup>230</sup> New Zealand Parliament Pāremata Aotearoa. (2014). *Social effects of the Canterbury earthquakes*. [online] Available at: <https://www.parliament.nz/en/pb/research-papers/document/00PlibC51211/social-effects-of-the-canterbury-earthquakes> [Accessed 22 Oct. 2016]

<sup>231</sup> Harper, J. (2015). *Director's Foreword*. Bulletin (179). Christchurch: Christchurch Art Gallery Te Puna o Waiwhetu. Christchurch. p.4.

<sup>232</sup> Ministry of Heritage and Culture Manatū Taonga. (2016). *Gauging the Impacts of Post-Disaster Arts and Culture Initiatives in Christchurch*. [online] Available at: [http://www.mch.govt.nz/sites/default/files/Christchurch%20Literature%20Review%20%20Main%20document%202016%20\(D-0660925\).PDF](http://www.mch.govt.nz/sites/default/files/Christchurch%20Literature%20Review%20%20Main%20document%202016%20(D-0660925).PDF) [Accessed 22 Oct. 2016].

<sup>233</sup> UNESCO World Heritage Centre. (2009). *Strengthening Disaster Risk Reduction at World Heritage Properties: the Olympia Protocol for International Cooperation*. [online] Available at: [http://www.iaa-conservation.org.il/images/files/pdf\\_docs/Olympia\\_Protocol.pdf](http://www.iaa-conservation.org.il/images/files/pdf_docs/Olympia_Protocol.pdf) [Accessed 9 May 2016].

A lack of space for artists to work and exhibit in in Christchurch was another issue faced by the cultural sector as a result of the earthquakes. Not only were the major public institutions closed, but so too were nearly all buyer-dealer galleries and smaller exhibition spaces. The Christchurch arts community responded to these difficulties with a series of new workspaces, projects and short-term galleries, including Dog Park Art Project Space, North Projects, and Room Four Art Space, to name a few.<sup>234</sup> It was of course not only art-focused institutions that were heavily affected by the loss of structures; many other small museums, such as the Lyttelton Maritime Museum and the Kaiapoi Museum, were too. These were impacted both by the loss of their buildings and damage to their collections, and required urgent assistance in salvaging and storing material heritage.<sup>235</sup>

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<sup>234</sup> Lyttelton Museum. (2017). *Our Journey*. [online] Available at: <http://www.lytteltonmuseum.co.nz/journey> [Accessed 1 Feb. 2017].

<sup>235</sup> NZ Museums. (2011). [online] *Wake-up Call For Canterbury Museum*. Available at: <http://www.nz museums.co.nz/news/wake-up-call-for-canterbury-museum/> [Accessed 21 Oct. 2016].

## **s.2. Christchurch Art Gallery Te Puna o Waiwhetu**

Since 2003 when they opened, the Christchurch Art Gallery Te Puna o Waiwhetu has been considered a landmark of the central city. The contemporary structure is set within the heritage precinct containing many Gothic revival buildings, and the Gallery became Christchurch's leading art gallery when they replaced the Robert McDougall Gallery. The Christchurch Art Gallery Te Puna o Waiwhetu houses one of New Zealand's most sizeable and significant collections, comprising over 6,300 works acquired since their foundation as the Robert McDougal Art Gallery in 1932.<sup>236</sup>

CAGTPOW was confronted with numerous challenges in the face of disaster. The Gallery was designed in response to their environment, not only in its flowing glass façade echoing the Avon River, but it was also designed to resist earthquake damage and protect the people and collections inside.<sup>237</sup> Christchurch is positioned on a minor fault line, making seismic activity a known risk before the Christchurch earthquakes.<sup>238</sup> This risk was understood from the outset, and the design brief for the Gallery demanded very high levels of seismic tolerance.<sup>239</sup> The foundation of the Gallery is designed to disperse seismic forces evenly through braced walls that have also been engineered to withstand earthquakes. During the first earthquake in September 2010, the building held true to its form and did not buckle under the force the earthquake inflicted, unlike many other structures. The resilience of the structure

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<sup>236</sup> The Arts Foundation. (2017). [online] *The Christchurch Art Gallery - Te Puna o Waiwhetu*. [online]. Available at: <http://www.thearts.co.nz/awards/the-christchurch-art-gallery-te-puna-o-waiwhetu> [Accessed 24 Oct. 2016].

<sup>237</sup> The American Surveyor. (2014). *Not Broken, But Slightly Bowed: Lifting a Landmark Art Gallery in New Zealand*. [online]. Available at: <http://www.amerisurv.com/content/view/13158/153/> [Accessed 24 Oct. 2016].

<sup>238</sup> GNS Science Te Pū Ao. (2017). *Major Faults in New Zealand*. [online]. Available at: <https://www.gns.cri.nz/Home/Learning/Science-Topics/Earthquakes/Major-Faults-in-New-Zealand> [Accessed 25 Oct. 2016].

<sup>239</sup> The American Surveyor. (2014). *Not Broken, But Slightly Bowed: Lifting a Landmark Art Gallery in New Zealand*. [online].

meant that the Civil Defence occupied this building for ten days after the quake, and the Gallery was able to reopen just a few weeks later.<sup>240</sup> The collections were not damaged, and shortly after the quake the Gallery prepared to open their first scheduled show.<sup>241</sup>

In the February 2011 quake, the collection and structure housing it unfortunately did not escape unscathed, and it would be several years before the Gallery returned to business as usual. The building itself sustained only light damage, with ceiling panels, light tracks and wall joints affected. The collection was largely unaffected by the quake also, though 22 works suffered minor damage. Although the building held together, this was not the case for the ground underneath it. As Frances Mortimer described,

The earth had liquefied and settled unevenly, eventually warping the building. The Gallery became bowed in the middle and the iconic glass façade, which originally hung like a curtain, now touched the ground.<sup>242</sup>

New Zealand Civil Defence again used the building – but this time for several months – as the Emergency Operations Centre (EOC) after the February event, as did the Canterbury Earthquake Recovery Authority (CERA).<sup>243</sup> In August 2011, emergency services left the Gallery, allowing remedial work to begin.<sup>244</sup> When the emergency services left, it became apparent that the building had sustained more damage than previously thought, and would not be opening their doors anytime soon.<sup>245</sup> The Christchurch City Council was committed to rebuilding the Gallery back to pre-earthquake standards, as well as strengthening it further

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<sup>240</sup> Christchurch Art Gallery Te Puna o Waiwhetu. (2017). *History*. [online]. Available at: <https://christchurchartgallery.org.nz/about/history> [Accessed 20 Oct. 2016].

<sup>241</sup> Harper, J. (2010). *Director's Foreword*. Bulletin (163). Christchurch: Christchurch Art Gallery Te Puna o Waiwhetu. Christchurch. p.4.

<sup>242</sup> The American Surveyor. (2014). *Not Broken, But Slightly Bowed: Lifting a Landmark Art Gallery in New Zealand*. [online].

<sup>243</sup> Harper, J. (2011). *Director's Foreword*. Bulletin (165). Christchurch: Christchurch Art Gallery Te Puna o Waiwhetu. Christchurch. p.4.

<sup>244</sup> *ibid.*

<sup>245</sup> Radio New Zealand. (2015). *Christchurch Art Gallery reopens after five years*. [online]. Available at: <http://www.radionz.co.nz/news/regional/292561/chch-art-gallery-reopens-after-five-years> [Accessed 20 Oct. 2016].

through additional earthquake reinforcing.<sup>246</sup> The Gallery building remained closed for five years, eventually reopening in December 2015.

One of the initial challenges was that the Gallery Apartments on Gloucester St were condemned for demolition. Because of the proximity of the apartments to the Gallery, their demolition meant that CAGTPOW was unable to function during this time. The consequences of this for the Gallery were varied. One was that the Gallery had to move over 6,300 collection items to alternative storage facilities, to reduce the possibility of damage caused by vibrations. Later, these collections would then of course have to be moved back in.<sup>247</sup>

Earthquake repairs carried out on the Gallery included re-levelling, installing a secondary electrical system, repairing the glass façade, and refurbishing the interior. In addition, 140 base isolators were retrofitted into the basement structure.<sup>248</sup> These effectively allow the building to float during an earthquake, significantly reducing seismic stress on the building and its contents, and therefore safeguarding both people and works of art. A backup electrical system was installed to run the Gallery's essential services – such as lighting and climate-control systems – in the event of another major earthquake. Further measures were taken to secure collections, with more picture racks installed to increase storage capacity, and locks added to sliding racks (along with other seismic restraints in storage units) to help prevent damage from earthquake-caused movement.<sup>249</sup> The Gallery now proudly proclaims

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<sup>246</sup> The American Surveyor. (2014). *Not Broken, But Slightly Bowed: Lifting a Landmark Art Gallery in New Zealand*. [online].

<sup>247</sup> Harper, J. (2011). *Director's Foreword*. Bulletin (165). p.4.

<sup>248</sup> Christchurch Art Gallery Te Puna o Waiwhetu. (2016). *The Building*. [online] Available at: <https://christchurchartgallery.org.nz/about/building> [Accessed 17 Aug. 2016].

<sup>249</sup> Harper, J. (2014). *Director's Foreword*. Bulletin (177). Christchurch: Christchurch Art Gallery Te Puna o Waiwhetu.Christchurch. p.4.



that their building is 'considered over 100% compliant with the new building code and [is] one of the safest and most earthquake-resilient art galleries in the world'.<sup>250</sup>

During their closure, CAGTPOW implemented and extended some of their existing public programmes to stay active while closed. *Outer Spaces* is one example of the many initiatives the Gallery took to continue operating, and temporary galleries and exhibition spaces were also created. On account of challenges in finding spaces to exhibit work, the Gallery had to be creative; use was made, for example, of reconfigured shipping containers and shop windows for exhibiting collection items. The Gallery also made use of their publications and outreach tools, and made information and reproductions of collection items available through its website and quarterly magazine, *The Bulletin*. They also utilised social media platforms to inform visitors and their community about the status of their building, as well as the programmes they were offering during their closure.<sup>251</sup>

Leading up to the Gallery's reopening, Christchurch City Council stated in an Activity Management Plan for Christchurch Art Gallery that 'Good risk management procedures established by Gallery staff have ensured the collections' continuous insurance cover throughout the seismic events of the last four years'.<sup>252</sup> This affirms that the Christchurch City Council considers the Gallery to have carried out good disaster management practices not only immediately after the earthquakes, but also over the period the Gallery was closed to the public as well. In December 2015, CAGTPOW reopened to the public.<sup>253</sup>

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<sup>250</sup> Christchurch Art Gallery Te Puna o Waiwhetu. (2016). *The Building*. [online].

<sup>251</sup> The Big Idea Te Aria Nui (2013). *Christchurch Art Gallery takes out Museums Aotearoa Award*. [online] Available at :<http://www.thebigidea.co.nz/news/industry-news/2013/apr/129242-christchurch-art-gallery-takes-out-museum-aotearoa-award> [Accessed 21 Aug. 2016].

<sup>252</sup> Christchurch City Council. (2014). *Christchurch Art Gallery Activity Management Plan: Long Term Plan 2015–2025*. [online].

<sup>253</sup> Christchurch Art Gallery Te Puna o Waiwhetu. (2017). *History*. [online].

Based on these experiences, CAGTPOW further developed and changed its disaster management protocol. During the Gallery's response to the September earthquake, it was realised that their protocol was focused more towards the salvage of objects rather than how to respond immediately and directly to the disaster at hand, and the pre-quake plan covered particular scenarios. CAGTPOW found it to be 'too complicated' and unusable in a disaster situation.<sup>254</sup> The Gallery ascertained that when they were dealing with a disaster they needed to know the initial steps to take after disaster had struck, and how to respond to different scales of disaster rather than particular scenarios (e.g. a fire or a flood). CAGTPOW found that having all the information regarding object salvage and individual responses to different types of disaster in one document overloaded the user with information, and has therefore aimed to keep its document focused on 'getting up and running again'.<sup>255</sup> It was not until after the February earthquake that the Gallery rewrote their plan. However, they implemented the knowledge and experience that had been gained in September 2010 in the wake of the February 2011 quake. It was through the Gallery's experiences that they understood the weaknesses of their original plan, and the pre-quake plan was 'thrown away and rewritten in a completely new model'.<sup>256</sup> CAGTPOW has continued to revise and alter their plan after the earthquakes.<sup>257</sup> The most efficient disaster management plans, according to CAGTPOW, are simple, as 'usable as possible', and based on experience.<sup>258</sup>

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<sup>254</sup> Blair Jackson, Christchurch Art Gallery Te Puna o Waiwhetu. Interview. 23 November 2016.

<sup>255</sup> *ibid.*

<sup>256</sup> *ibid.*

<sup>257</sup> *ibid.*

<sup>258</sup> *ibid.*

CAGTPOW's new disaster management plan was reworked to assess disasters based on their scale, and categorised scenarios into 'levels'.<sup>259</sup> The responses to each level are based on the impact a disaster might have on the Gallery and the surrounding area. This is different to having plans for individualised events (fire, flood, earthquake, etc.), as a significant proportion of best practice recommends.<sup>260</sup> In CAGTPOW's *Business Continuity Plan*, events are divided into three levels: level one covers a closure within an area of the Gallery, level two encompasses any emergency or incident that results in the evacuation of the Gallery site, and level three covers a 'serious emergency' where a large-scale response is required from the Gallery, and where the event has the potential to disrupt not just the operation of the Gallery, but impacts upon the city as well.<sup>261</sup> The description of these levels also includes examples of the types of scenarios they might include, and specifies the magnitudes of an earthquake that might apply to each level. The plan uses simple flowcharts for identifying what level the event is, and then describes correct procedures for each level. The plan also contains floor maps showing where switchboards, water isolation valves, gas meters, and other essential building maintenance systems are located, with photos of the systems and how to use them.<sup>262</sup> This information means that in theory, it is possible for any staff member to be able to carry out the action if required.

CAGTPOW learnt that communication becomes critical in a disaster scenario.<sup>263</sup> Communication with staff was central, as well as communication with lenders and the peoples whose cultural property the Gallery was caring for at the time. The Gallery was concerned that

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<sup>259</sup> Christchurch Art Gallery Te Puna o Waiwhetu. (2017). *Business Continuity Plan*. [online] Available at: [http://christchurchartgallery.org.nz/media/downloads/2012\\_03/Business\\_Continuity\\_Plan\\_web.pdf](http://christchurchartgallery.org.nz/media/downloads/2012_03/Business_Continuity_Plan_web.pdf) [Accessed 23 Nov. 2016].

<sup>260</sup> Museum of New Zealand Te Papa Tongarewa. (2001). *Emergency Procedures*. [online].

<sup>261</sup> *ibid.*

<sup>262</sup> *ibid.*

<sup>263</sup> Blair Jackson, Christchurch Art Gallery Te Puna o Waiwhetu. Interview. 23 November 2016.

lenders might have reservations about lending works of art in light of the 2010 and 2011 events, so in response to this they applied a well-developed communication strategy to keep in regular contact with lenders. Between the major 2010 and 2011 events, CAGTPOW had a large international exhibition, and stated in the interview conducted for this thesis that many things in regards to communication and how the building is managed that were learnt in September 2010 were applied in 2011.<sup>264</sup> This knowledge of the importance of communication in a disaster is evident in CAGTPOW's Communications Flowchart in the Gallery's *Business Continuity Plan*.<sup>265</sup> According to this flowchart, registration staff inform the director of the status of lent collections and objects, setting up the director as the single point of contact for lenders; this creates a clear flow of information.<sup>266</sup>

The Gallery's communications go beyond their staff and lenders, as they share knowledge they have learnt from the earthquakes to other institutions internationally. CAGTPOW identifies themselves as a model of best practice, and has received requests from across the globe for copies of their disaster management plan. CAGTPOW staff also give lectures and talks about the institution's approach to managing a disaster.<sup>267</sup> CAGTPOW does not have a one-sided approach to this dialogue: whenever their plan is given to another institution, they ask for a copy of the adapted plan the receiving institution has made, or information regarding any modifications they make.<sup>268</sup> This dialogue means that the Gallery can improve their plan from other institutions' experiences, and then share this information again. CAGTPOW reviews their disaster plans every six months in consultation with a range of

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<sup>264</sup> *ibid.*

<sup>265</sup> Christchurch Art Gallery Te Puna o Waiwhetu. (2017). *Business Continuity Plan*. [online].

<sup>266</sup> *ibid.*

<sup>267</sup> Blair Jackson, Christchurch Art Gallery Te Puna o Waiwhetu. Interview. 23 November 2016.

<sup>268</sup> *ibid.*

Gallery staff, and also ensures that the plan is amended if they find a problem after implementing any aspect of the plan.<sup>269</sup>

CAGTPOW came to understand that an earthquake is a long-term event, with effects lasting much longer than the initial event itself.<sup>270</sup> The Gallery saw being closed for nine days after the September earthquake as a long period, and never imagined later having to be closed for five years. The initiatives implemented in order for the Gallery to continue displaying art while the building was unusable were not planned prior to the earthquake and were not part of their contingency plans for closure, nor have these initiatives been integrated into their disaster management plans after the reopening of the Gallery.<sup>271</sup> CAGTPOW expressed that they want to keep their plan focused towards categorising disasters and events, and what the appropriate responses are, rather than reverting to the information-heavy document that they had before the quakes. CAGTPOW has not gone to the extent of considering how they might deliver operations if they had to be closed again, but has stated that their experiences have taught them how to carry out operations without a main gallery building for accepting visitors.<sup>272</sup>

One of the main challenges CAGTPOW faced after both the major earthquakes was having Civil Defence occupy their building. Having Civil Defence placed in close quarters had both positive and negative aspects for the Gallery. One positive aspect was being able to gain early access to collections to check on their condition, and having continued and regular access to their red-zoned building.<sup>273</sup> The Gallery was uncertain as to whether, had Civil Defence not occupied the space, they would have had the same access to its building and

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<sup>269</sup> Ibid.

<sup>270</sup> Ibid.

<sup>271</sup> Ibid.

<sup>272</sup> Ibid.

<sup>273</sup> Ibid.

collections. Another positive aspect of working so closely with Civil Defence was that CAGTPOW had some idea of what was happening around Christchurch City, when many other businesses, organisations and institutions were for the most part left in the dark. Following the September 2010 quake, the Gallery did not have to move artworks to accommodate Civil Defence, as the staff could lock exhibition spaces to keep the collections separate.<sup>274</sup> However, this was not the case in February 2011: there was a demand for space, and the Gallery increasingly had to empty out exhibition areas to allow these spaces to be used for administration and the Civil Defence. This was difficult for the Gallery, and as a result, various exhibition spaces became superficially damaged due to heavy use. The Gallery is firm in their view that, despite some positives aspects of having Civil Defence in their building, were there to be another event they would not like the building occupied in this way again.<sup>275</sup>

Another consequence of accommodating Civil Defence in their building was that CAGTPOW staff could access the red zone to some extent, and help other organisations. The Gallery has provided long-term support to assist other organisations that were affected by the quake. CAGTPOW assisted Toi Moroki Centre of Contemporary Art Christchurch (CoCA) in retrieving their collections from their building, which had been deemed unsafe ('red-stickered'), as well as helping many artists retrieve work from their studios.<sup>276</sup> After the 2011 quake, many artists in the red zone were unsure of how to get this back, so CAGTPOW – through their relationships with both Civil Defence and local artists – was able to facilitate processes between these parties.<sup>277</sup> The Gallery has also worked with other organisations since the earthquakes, assisting in inquiries about the display of objects and how to protect them against seismic activity. As well as helping other organisations, CAGTPOW was supported by the

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<sup>274</sup> *ibid.*

<sup>275</sup> *ibid.*

<sup>276</sup> *ibid.*

<sup>277</sup> *ibid.*

Canterbury Cultural Collections Recovery Centre (CCCRC) in storing some of their larger objects. For the most part, however, the Gallery retained the capacity to store and care for their own collections.<sup>278</sup>

Staff training and education was an important part of the Gallery's strategy when they were both operating outside of their building yet maintaining the collection that was still in there. CAGTPOW is fortunate in having members of the Canterbury Disaster Salvage Team among their employees.<sup>279</sup> Having this expertise on the staff is something that not all institutions can claim. In the Gallery's *Business Continuity Plan*, it is stated how the institution aims to annually train as many staff as are available, targeting different scenarios each year. CAGTPOW also stated that their formalised training process probably needs updating since they moved back into their building in December 2015.<sup>280</sup>

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<sup>278</sup> *ibid.*

<sup>279</sup> *ibid.*

<sup>280</sup> *ibid.*

### **s.3. Canterbury Museum**

Canterbury Museum is housed in an historic building, which is one of the oldest still standing in Christchurch following the February 2011 earthquake. It is also the oldest purpose-built museum still in use in New Zealand.<sup>281</sup> The Museum forms a prominent part of the surrounding townscape, which includes the Gothic Revival buildings of the Arts Centre and Christ's College, and the Botanic Gardens.<sup>282</sup> Opened in 1870, the main building was designed by B W Mountfort and now has various additions, with wings added to support the Museum's growing needs.<sup>283</sup> The institution was well aware of the earthquake risk that Christchurch faced, and had previously undertaken a 10-year earthquake-strengthening project that was completed in 1995.<sup>284</sup>

Immediately following the February 2011 earthquake, the Museum's building was declared structurally sound except for a few areas of loose stonework on the façade, which were secured a few days later. The Director of the Museum, Anthony Wright, commented to media that the Museum was in 'in some disarray', but that an estimated 95 per cent of the collections were fine. He also stated that there would have to be further investigations to assess the condition of the remainder of the collection.<sup>285</sup> In the Mountfort Gallery, hundreds of objects in the European Decorative Arts displays had tipped over, but only 15 had broken. Less than 1,000 objects of the 10,000-15,000 on display were lost, and there were an

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<sup>281</sup> Heritage New Zealand. (2017). *Canterbury Museum*. [online] Available at: <http://www.heritage.org.nz/the-list/details/290> [Accessed 20 Sep. 2016].

<sup>282</sup> Ibid.

<sup>283</sup> Canterbury Museum. (2017). *A Brief History*. [online] Available at: <http://www.canterburymuseum.com/about-us/a-brief-history/> [Accessed 20 Sep. 2016].

<sup>284</sup> Ibid.

<sup>285</sup> Stuff. (2011). *Gallery built to highest standard*. [online] Available at: <http://www.stuff.co.nz/national/christchurch-earthquake/4707041/Christchurch-Art-Gallery-built-to-highest-standard> [Accessed 21 Sep. 2016].



estimated 2,000 other damaged objects in the collection stores.<sup>286</sup> None of the losses were considered to be of significant importance, or of substantial fiscal value to the institution.<sup>287</sup> Wright said in relation to the event, 'despite the best-laid plans, everything is ephemeral in the end'.<sup>288</sup>

After the February 2011 earthquake, everything that was damaged was photographed, cross-referenced with insurance material, and methodically itemised in relation to each space.<sup>289</sup> A significant effort was required from staff and volunteers to carry out the necessary work. However, the Museum's director did find some positives, stating that the event gave the Museum an opportunity to reassess and review their acquisitions and filing systems.<sup>290</sup> Not only was the Museum recording information regarding their collections, but they were also documenting everything they did in relation to the earthquakes. The staff knew that in the future there would be interest from other museums around the world as to how their institution recovered from such events.<sup>291</sup> Over the course of the earthquakes, CM has put many new practices into place. Some of the measures taken include solid mounts being built for many objects, and mobile units within the collection stores being locked down at all times unless they are in use. In the office spaces, all shelves have been screwed to the walls, and filing cabinets are now locked at the end of every working day to prevent contents flying out, or moving drawers damaging other objects.<sup>292</sup>

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<sup>286</sup> NZ Museums. (2011). *Wake-up Call For Canterbury Museum*. [online].

<sup>287</sup> Ibid.

<sup>288</sup> Ibid.

<sup>289</sup> Ibid.

<sup>290</sup> Ibid.

<sup>291</sup> Ibid.

<sup>292</sup> Ibid.

Research facilities and research material availability at CM have been restricted since the February 2011 earthquake.<sup>293</sup> Immediately after it, the Museum was temporarily closed as they carried out the work needed to reopen at their target date of 1st July 2011. However, just as the Museum finished inspecting all the galleries in readiness for reopening, the 13 June 2011 aftershock (with a magnitude of 6.3) occurred. While it was not as severe as previous seismic events, this quake still managed to cause some disarray at the Museum. Wright commented about this that the Museum had 'very little breakage and only a third of the tipping over of previous quakes', but stated that 'it was terribly disheartening nonetheless'.<sup>294</sup> CM closed again briefly from April 2012 to July 2012 while engineer reports were assessed. Although the Museum was only closed for a short time, Wright mentioned that with many historic buildings and attractions in Christchurch closed or demolished, the Museum building being closed even if only for a short period was still a 'significant blow' for the Christchurch community and for CM staff.<sup>295</sup>

CM is not yet clear on when they will undergo further earthquake strengthening, and be retrofitted with base isolators.<sup>296</sup> Announced in 2013, it is estimated that the entire project will cost \$170 million, and will require CM to close for approximately three years. However,

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<sup>293</sup> Christchurch City Libraries. (2017). *Canterbury Museum*. [online] Available at: <http://my.christchurchcitylibraries.com/canterbury-museum/> [Accessed 25 Sep. 2016].

<sup>294</sup> NZ Museums. (2011). *Wake-up Call For Canterbury Museum*. [online].

<sup>295</sup> Stuff. (2012). *Museum to reopen*. [online] Available at: <http://www.stuff.co.nz/national/christchurch-earthquake/7200843/Canterbury-Museum-set-to-reopen> [Accessed 23 Sep. 2016].

<sup>296</sup> Stuff. (2013). *Canterbury museum upgrade 'not cheap'*. [online] Available at: <http://www.stuff.co.nz/national/8402841/Canterbury-museum-upgrade-not-cheap> [Accessed 23 Sep. 2016].

there is still uncertainty as to when this will take place, due to funding issues.<sup>297</sup> Before the earthquakes, the Museum had planned to expand into the Robert McDougall Gallery, which they had leased from the city council. However, this expansion has now been put on hold, as the Museum now also requires repairs and significant seismic strengthening.<sup>298</sup> In 2015 it was announced that the Ravenscar Trust will be providing \$13 million to establish the Ravenscar House Museum to house the art collection of Dr Susan and Jim Wakefield. Construction on the new addition to the Museum is due to start in 2018.<sup>299</sup> The new venture represents a kind of post-quake expansion of the Museum outside of their heritage building. Further down Rolleston Ave, the house Museum will be jointly operated by the trust and CM. The contemporary house Museum will display the trust's collections of New Zealand art, classical antiques, sculpture and designer furniture.<sup>300</sup>

CM created its disaster management plan on the premise that, if there were a major event, it would expect no external support. As a charitable trust, the Museum does not receive the same support from local and national government as other institutions. Acting as a solo entity, CM felt that they were able to make decisions and get things done quickly in their post-earthquake circumstances, and this was seen by the Museum as a distinct advantage.<sup>301</sup> However, operating as a charitable trust has also sometimes had drawbacks. For example, when the building underwent earthquake strengthening in the 1980s, money was an issue, and

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<sup>297</sup> Christchurch City Council. (2014). *Christchurch Art Gallery Activity Management Plan: Long Term Plan 2015–2025*. [online]

<sup>298</sup> Stuff. (2013). *Canterbury museum upgrade 'not cheap'*. [online].

<sup>299</sup> Stuff. (2017). *Time for the Canterbury Museum to get its hands off the Robert McDougall art gallery* [online] Available at: <https://www.stuff.co.nz/the-press/christchurch-life/art-and-stage/visual-art/94149652/Time-for-the-Canterbury-Museum-to-get-its-hands-off-the-Robert-McDougall-art-gallery> [Accessed 15 Jan 2018].

<sup>300</sup> Canterbury Museum. (2015). *New visitor attraction planned for Christchurch's Cultural Precinct* [online] Available at: <https://www.canterburymuseum.com/about-us/media-releases/new-visitor-attraction-planned-for-christchurchs-cultural-precinct/> [Accessed 15 Jan 2018].

<sup>301</sup> Kelvin Nolly, Canterbury Museum. Interview. 25 November 2016.

this meant that they could not afford to complete this process for all of the building.<sup>302</sup> After the February earthquake, the Museum found that the areas that did not receive strengthening were the areas that suffered the most. Until the earthquake-strengthening project can be realised, CM faces a number of issues because they cannot implement best practices standards. For instance, CM currently has air conditioning in approximately only 30% of the building, which is under what would typically be expected for an institution of their scale.<sup>303</sup> Because the Museum is soon to undergo major construction and does not have unlimited money to draw from, these issues will need to wait until after the construction is complete to be addressed, as some parts of the building may need to be rebuilt or demolished and it would not make financial sense to install systems twice.<sup>304</sup> CM had planned to do further earthquake strengthening work to the building before the earthquakes, but their plans were overturned in the environment court, and they were working towards a new plan when the earthquakes struck Christchurch.<sup>305</sup>

In needing to repair areas of their building again and again due to aftershocks, the Museum came to understand seismic activity as long-term events. As previously mentioned, the building is made up of many extensions, and CM found that many of the new wings acted independently of each other during earthquake shaking, which caused issues.<sup>306</sup> Most of the repairs have not been structural, but have instead been more minor repairs, such as replacing fire-retardant material. The Museum has found themselves doing reparative work over November and December 2016 again, due to additional damage sustained in the November 2016 Kaikoura earthquake.<sup>307</sup> The Museum has also felt the long-term effects of the

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<sup>302</sup> *ibid.*

<sup>303</sup> *ibid.*

<sup>304</sup> *ibid.*

<sup>305</sup> *ibid.*

<sup>306</sup> *ibid.*

<sup>307</sup> *ibid.*

earthquake in their collections management, as they are still going through collections to check them, and that will be ongoing for some time. Some of the immediate alterations the Museum made to their disaster preparation included securing objects differently, making sure that they were stored correctly, and adding extra measures to their storage to ensure their collections against seismic activity.

CM learnt during their response to the 2010 earthquake that not everyone will be available in the event of a disaster, and that – unsurprisingly – the availability of people and resources in these situations affects the ability to get tasks done. CM prioritises staff and visitor safety above all else, and this also includes employees’ mental and emotional well-being.<sup>308</sup> In a city-wide event like an earthquake, people lose homes, get injured, and have family members to attend to, and employers need to be conscious of this and accept that staff might at times have higher priorities. CM found that circumstances could prevent staff availability, particularly in the September earthquake - because the event was in the middle of the night, some employees did not get there until later the next morning. When the Museum was reviewing their disaster management plans they emphasised the importance of staff members in key response roles to be available to respond to events within reason.<sup>309</sup>

Another key challenge CM faced was getting contractors and employees in to do work on the Museum. While it was not particularly difficult to find people able to do the work, signing people into cordoned areas and making sure that they could make it through police barricades and onto the Museum sites proved complicated.<sup>310</sup> There were many regulations and protocols that the CM had to adhere to, set by local and national governments after the February

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<sup>308</sup> *ibid.*

<sup>309</sup> *ibid.*

<sup>310</sup> *ibid.*

earthquake.<sup>311</sup> Many delays occur when a large-scale disaster happens or a national emergency is declared, and this is something that can be overlooked in planning for disaster.<sup>312</sup>

Communication and relationships were two things that CM found to be essential when facing disaster. Having good relationships with contractors meant that the Museum had electricians on site within hours of the 2011 event, security teams within a matter of hours, and their contracted construction team offered services almost immediately after the quake.<sup>313</sup> This is again where CM felt they benefited from operating as a charitable trust, as they did not have to run decisions past multiple bodies before they could be made.<sup>314</sup> CM's relationship and communication with the community have always been crucial to the institution; however, after both events, they found it particularly important during the recovery phase of their disaster management as they tried to get visitors back into their central city building. They found that people's fear was discouraging this, as the Museum is not only in the CBD, but is also a heritage building, and so many other heritage buildings around them were badly affected by the quake.<sup>315</sup> This communication with the community around the Museum about the building, its safety, and their future plans has continued to be essential, as many people's fears continue to resurface during the ongoing seismic activity – including the November 2016 Kaikoura earthquake that was felt strongly in Christchurch.

CM plans for each type of disaster, and has individualised responses planned for different possible disaster scenarios. The Museum not only had to deal with the earthquake in February 2011, but also had to deal with water damage as the result of pipes bursting from the

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<sup>311</sup> *ibid.*

<sup>312</sup> *ibid.*

<sup>313</sup> *ibid.*

<sup>314</sup> *ibid.*

<sup>315</sup> *ibid.*

movement of the building.<sup>316</sup> Water pipes and infrastructure were major issues across the city, and the CBD water supply went off after the quake and continued to be off for weeks after.<sup>317</sup> The Museum was fortunate that the water supply to the CBD was cut off as pipes in the building had ruptured. This meant that the Museum's sprinklers were not able to go off, and major electrical damage was avoided. They were also fortunate that there were no fires, as if there had been there would have been no water supply or sprinkler system to douse the flames.<sup>318</sup> There are nearly 5,000 litres of flammable liquids stored in the basement of the Museum which are used for preserving artefacts subject to decomposition, which meant that the collections would likely have been destroyed if there had been a fire.<sup>319</sup> Although fortunate not to have had more damage to the building and their collections, the Museum felt they would have been nonetheless prepared, as they planned for each scenario and knew the possibilities.<sup>320</sup>

Another important aspect of CM's disaster management planning is staff training. Staff are required to learn how to use fire extinguishers, as fire is one of the Museum's most significant perceived risks.<sup>321</sup> Staff undergo this training within six months of beginning work at the Museum. A significant number of staff are also trained to clean up chemical spills both large and small, as the Museum holds many chemicals for various purposes.<sup>322</sup> Many staff are also first-aid trained, and this greatly assisted the community during the February earthquake: although no injuries were sustained within the Museum, some of the many people who evacuated the city centre into the nearby botanic gardens did, and staff were able to assist.<sup>323</sup>

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<sup>316</sup> *ibid.*

<sup>317</sup> *ibid.*

<sup>318</sup> *ibid.*

<sup>319</sup> *ibid.*

<sup>320</sup> *ibid.*

<sup>321</sup> *ibid.*

<sup>322</sup> *ibid.*

<sup>323</sup> *ibid.*

An evacuation point was next to CM during the February earthquake, so one of the top priorities for the Museum after evacuating their building and keeping evacuees away from the building.



#### **s.4. The Air Force Museum of New Zealand and the Canterbury Cultural Collections**

##### **Recovery Centre**

On the site of a former air force base, the Air Force Museum of New Zealand (AFMNZ) contains a unique collection of 30 historic aircraft, and a wide-ranging collection of other objects from the history of New Zealand's military aviation.<sup>324</sup> Unlike many other cultural institutions, little structural damage was sustained by the Museum, so they were able to keep their doors open to the public.<sup>325</sup> However, it was not completely business as usual for the Museum. Many museums and galleries, displaced after the February 2011 earthquakes, needed resources and storage for their heritage artefacts. In particular, expert assistance was one of the key requirements of cultural organisations immediately after the earthquakes. Those who could not operate out of their own facilities sought refuge at the Canterbury Cultural Collections Recovery Centre (CCCRC), which was to be housed in a newly built hangar at AFMNZ.

Plans for an extension for the Air Force Museum have been discussed since 2004, and although much of the funding had been secured, the recession of 2008 affected the progress of the plans. The \$14.3 million, 6,200-square metre extension was originally proposed for the display of aircraft, and as a proper conservation and restoration workspace for large-scale objects,<sup>326</sup> and in November 2011, construction began.<sup>327</sup> However, the Museum director Thérèse Angelo stated that despite the Museum's own needs, the Museum's

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<sup>324</sup> Air Force Museum of New Zealand. (2017). *Air Force Museum of New Zealand*. [online] Available at: <http://www.airforcemuseum.co.nz/> [Accessed 28 Sep. 2016].

<sup>325</sup> NZ Museums. (2011). *Therese Angelo, Q and A*. [online] Available at: <http://www.nz museums.co.nz/news/therese-angelo-q-and-a/> [Accessed 26 Sep. 2016].

<sup>326</sup> NZ Museums. (2012). *Canterbury earthquake anniversary series: Thérèse Angelo, Air Force Museum*. [online] Available at: <http://www.nz museums.co.nz/news/canterbury-earthquake-anniversary-series-therese-angelo-air-force-museum/> [Accessed 22 Oct. 2016].

<sup>327</sup> *ibid.*

plans for a conservation space would be put on hold so that the CCCRC could be housed that AFMNZ.<sup>328</sup> The Museum collaborated with a number of organisations to create the CCCRC, making space available to earthquake-affected culture and heritage organisations for three years. When the extension was completed in February 2013, there was a climate-controlled space for organisations to store – and, importantly, access – their collections.<sup>329</sup> Many smaller museums, galleries, heritage groups and cultural organisations that had lost their premises lacked the resources to get storage for their collections, and even when storage was available to them, they might not have been accessible on a regular basis. Through the CCCRC, the AFMNZ offered a venue where they could bring their collections, and conservation assistance was also provided at no charge to those inhabiting the space. The CCCRC secured grants and sponsorship to gain necessities such as IT, tables, shelving, boxes and archival materials, and cleaning and conservation products.<sup>330</sup>

The CCCRC highlighted many issues and successes in post-quake Canterbury such as; a lack of storage space, the wealth of material held by smaller organisations, and the perseverance and resilience of these organisations after the earthquakes. Museum director Angelo emphasised how the new collaboration had been fantastic for the Museum; she considered the creation of the CCCRC as beneficial for the reputation of the Museum and the development of professional practice within them.<sup>331</sup> The director found the biggest benefits of the CCCRC to be to the city's heritage sector, and to AFMNZ's staff.<sup>332</sup> The recovery centre also drew attention to how fortunate Christchurch was to have a large Museum site with stable

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<sup>328</sup> NZ Museums. (2013). *Diary of the Canterbury Cultural Collections Recovery Centre intern – month 1*. [online] Available at: <http://www.nz museums.co.nz/news/diary-of-the-canterbury-cultural-collections-recovery-centre-intern-month-1/> [Accessed 23 Oct. 2016].

<sup>329</sup> NZ Museums. (2012). *Canterbury earthquake anniversary series: Thérèse Angelo, Air Force Museum*. [online]

<sup>330</sup> *ibid.*

<sup>331</sup> *ibid.*

<sup>332</sup> *ibid.*

land, space available, and staff with particular sets of skills.<sup>333</sup> The New Zealand Defence Force (NZDF) care for the Museum buildings, and as such, when structural assessments post-earthquake are needed, they are carried out with the rest of the NZDF properties, and in a very timely manner.<sup>334</sup> For the many other cities without this kind of facility, the results for their valuable heritage might not have been the same.

The disaster management plan at AFMNZ is based on possible events, and how to deal with the collections if an event was to occur.<sup>335</sup> The Museum reassessed but did not change their disaster management plan after either the 2010 or 2011 earthquakes, but rather implemented more practical measures to address the safety of people and collections. The largest changes AFMNZ made were in storage spaces, such as bracing shelving and ensuring that they were not overloaded.<sup>336</sup> The military Museum had a couple of engines move that were mounted on wheels, and these have now stabilised them so they cannot shift during seismic activity. AFMNZ experienced some spills in storage areas, but again there was no significant damage as shelving was bolted to the floor (however, in an offsite store, one shelving rack completely fell over). Staff training and education is very important to AFMNZ, and the Museum sends staff members to Canterbury Disaster Salvage Team workshops, and is committed to ongoing training within the institution.<sup>337</sup>

AFMNZ was extremely fortunate in the Christchurch earthquake: based outside the city centre and on stable land, they incurred very little to no damage to both their building and

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<sup>333</sup> Ceismic. (2015). *A Look at the CCCRC and its Taonga*. [online] Available at: <http://www.ceismic.org.nz/news/a-look-at-the-ccrc-and-its-taonga> [Accessed 25 Oct. 2016].

<sup>334</sup> Moya Sherriff, Air Force Museum of New Zealand. Interview. 14 December 2016.

<sup>335</sup> Ceismic. (2015). *A Look at the CCCRC and its Taonga*. [online].

<sup>336</sup> *ibid.*

<sup>337</sup> *ibid.*

collections.<sup>338</sup> While CCCRC was created as a response to the earthquakes, it was not in any way prearranged in any disaster management plans of the AFMNZ.<sup>339</sup> The Museum worked with a number of organisations after the earthquakes, which led to the establishment of the CCCRC. In the beginning, it was not cultural institutions seeking operational space, but organisations like the IRD and the Family Courts – organisations that needed to keep operating to keep the community going.<sup>340</sup> It was not until a few months after the 2011 event that many organisations could get into their buildings to assess damage, and after this calls started to flow into the Museum asking for support.<sup>341</sup> Lyttelton Maritime Museum was one of the first to call as their building was 'red stickered' or considered structurally unsound, and AFMNZ staff helped the Museum salvage their items and made space within their stores to care for the maritime Museum's collections.<sup>342</sup> AFMNZ kept making room within their collection stores for other organisations seeking support while the new hangar was being built. When completed, the Museum moved all the collections they had already housed within their own stores across to the new space, and then had additional room for other organisations' collections, under the title of the Canterbury Collections Recovery Centre.<sup>343</sup> Organisations that benefited from the CCCRC included; Kaiapoi Museum, the Nurses' Memorial Chapel, the Canterbury Rugby Football Union Historic Trust, Order of St John, CAGTPOW, CM, Kaitiaki Rehua Marae Archives and many others. The new initiative was brought about with help and funding from a number of organisations, including Museums Aotearoa and the Ministry of Heritage and Culture among others.<sup>344</sup>

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<sup>338</sup> Moya Sherriff, Air Force Museum of New Zealand. Interview. 14 December 2016.

<sup>339</sup> *ibid.*

<sup>340</sup> *ibid.*

<sup>341</sup> *ibid.*

<sup>342</sup> *ibid.*

<sup>343</sup> *ibid.*

<sup>344</sup> *ibid.*

One of the ways AFMNZ and CCCRC shared their post-quake experience was through a blog series called 'Diary of the Canterbury Cultural Collections Recovery Centre intern', and 'Update from the Canterbury Cultural Collections Recovery Centre'.<sup>345</sup> The blog was posted monthly on the NZ Museum's website and was written from the perspective of the recovery centres intern and administrator Moya Sherriff. The blog contained perspectives and challenges from the inhabitants of the recovery centre, as well as an insight into operations and challenges CCCRC faced. Not only was the blog a running record of CCCRC, but they also shared valuable collection care advice and best practice. For example, in the blog 'Diary of the Canterbury Cultural Collections Recovery Centre intern' – month 9, Sherriff discusses a workshop run by Te Papa textile conservator Rachael Collinge on how to care for textiles. The blog provides useful information on less invasive ways to care for textile collections as well as photos documenting the workshop and the learning process that occurred at the CCCRC.<sup>346</sup> While other museums have blogs and online media not many engage with collection management in post disaster circumstances. As well as being a useful tool to communicate at the time, it is now a valuable record of a response to a disaster.

The Museum discovered some gaps in their post-disaster management through their installation and operation of the CCCRC at the AFMNZ building – one being the lack of physical space for organisations to operate out of in post-earthquake circumstances. The CCCRC filled that gap and enabled many institutions to care for their collections out of their facilities.<sup>347</sup> One of the largest benefits of the CCCRC, however, was the networking opportunities and exchanges that evolved out of having so many organisations in one

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<sup>345</sup> NZ Museums. (2013). *Diary of the Canterbury Cultural Collections Recovery Centre intern – month 1*. [online] Available at: <http://www.nz museums.co.nz/news/diary-of-the-canterbury-cultural-collections-recovery-centre-intern-month-1/> [Accessed 23 Oct. 2016].

<sup>346</sup> NZ Museums. (2014). *Diary of the Canterbury Cultural Collections Recovery Centre intern – month 9*. [online] Available at: <http://www.nz museums.co.nz/news/diary-of-the-canterbury-cultural-collections-recovery-centre-intern-month-9/> [Accessed 23 Oct. 2016].

<sup>347</sup> Moya Sherriff, Air Force Museum of New Zealand. Interview. 14 December 2016.

space.<sup>348</sup> The CCCRC space enabled many groups to share experiences and skills, and also offered workshops on how to care for collections.<sup>349</sup> Another one of the significant gaps the CCCRC uncovered in many of the organisations they assisted was essential collections management, such as cataloguing and documentation.<sup>350</sup> Documentation in particular was found to be a general weak point in many organisations, and in a post-disaster environment, this creates substantial problems.<sup>351</sup> If there is no documentation of an object before a disaster, it can be lost, and in the disarray of disaster it can take longer for institutions to know what is missing, damaged or unsalvageable.

Without the CCCRC, many of the organisations they housed may have had to store their collections in poorer conditions, had restricted or no access to their collections, and may not have been able to salvage as much as they had. AFMNZ commented that they could not have imagined that many of the museums and organisations CCCRC helped would have had the means or finances to care for their collections in the same way.<sup>352</sup> If there had been an earthquake event that affected the AFMNZ while the CCCRC was there, the Museum did not have a contingency plan for what they would have done if they could no longer house the collections. The recovery centre was a new initiative, and had not formulated a response. The Museum stated that if an event had occurred and the building was not useable, they would perhaps have moved to a new location and started again. Without the CCCRC, there would have been an immense gap in the response of cultural institutions to the Christchurch earthquakes.

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<sup>348</sup> *ibid.*

<sup>349</sup> *ibid.*

<sup>350</sup> *ibid.*

<sup>351</sup> *ibid.*

<sup>352</sup> *ibid.*

## **s.5. Discussion**

Across three very different cultural institutions discussed in this thesis the approach to best practice disaster management was wide-ranging, yet certain similar concerns and approaches can be identified. The institutions examined in many ways, both aligned themselves with and differed from previously-recognised best practices. While adhering to best practice established in previous chapters through recommendations of international and national cultural organisations, Christchurch institutions also developed disaster management in many ways. In its most basic form, best practice suggests that institutions have a plan for disaster. All three institutions assessed in this thesis had a disaster management plan in place at the time of the major Christchurch earthquakes, and all had planned their responses in the event of a large-scale emergency.

Established best practice not only considers that an institution should have a plan, but that it should be reassessed after an event. All three institutions reassessed their plans after the earthquakes, but not all made changes to these. CM reassessed their disaster management plans after the 2010 and 2011 earthquakes and adapted their plans accordingly.<sup>353</sup> CAGTPOW did not change their protocol until it was reassessed after the 2011 earthquake, but the Gallery commented that their response to the 2011 aftershock was informed by their experience of the initial 2010 earthquake.<sup>354</sup> Indeed, the short amount of time between the two events did not leave much time for assessing disaster management plans. However, CAGTPOW was aware that their existing plans operated ineffectively, and that they would need to be changed.<sup>355</sup> After the 2011 earthquake the Gallery found time to rewrite their

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<sup>353</sup> Kelvin Nolly, Canterbury Museum. Interview. 25 November 2016.

<sup>354</sup> Blair Jackson, Christchurch Art Gallery Te Puna o Waiwhetu. Interview. 23 November 2016.

<sup>355</sup> *ibid.*

disaster management plan in a completely new form based on their knowledge of what worked well for them in the event of an emergency.<sup>356</sup> AFMNZ felt that their protocol operated efficiently, and revisited but did not change their plans.<sup>357</sup> Because of where the Museum is located in Christchurch AFMNZ did not need to implement certain aspects of their plan as they were not badly affected. The Museum had stable land to operate on, and as such, the impact on their facilities was minimal in many ways. Certainly, AFMNZ were effective in remaining flexible to the situation and demonstrated this by adapting to housing many other institutions. All three institutions strengthened or changed ways they stored or displayed artworks or objects, protecting them against seismic activity and in doing so aligning themselves with best practice planned to their specific risks and circumstances.

All institutions found the need to plan specifically to their circumstances, whether this has meant implementing more practical measures, rewriting protocol, or both. CAGTPOW felt that their disaster management did not operate effectively for the 2010 earthquake, and changed their plans dramatically from planning for each event to creating a levelling system that covers all events. Their plan still encompasses best practice principles for planning for likely scenarios, but does this in a simplified way as CAGTPOW felt that their previous plan was overcomplicated and unusable in an emergency. AFMNZ plans for each scenario i.e. fire, flood, etc, and CM plans similarly – targeting specific events. The CM felt that their protocol operated effectively in 2010, yet still reassessed their plans after both the 2010 and 2011 events. CM commented that they felt disaster management is a continuous process of reassessment and planning: ‘what is current today will no doubt change tomorrow’.<sup>358</sup> So, while each institution’s plan follows best practice, AFMNZ’s and CM’s planning can be seen as more standard disaster management plans that plan for specific events, and CAGTPOW’s,

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<sup>356</sup> *ibid.*

<sup>357</sup> Moya Sherriff, Air Force Museum of New Zealand. Interview. 14 December 2016.

<sup>358</sup> Kelvin Nolly, Canterbury Museum. Interview. 25 November 2016.



while still adhering to best practice is less standardised in its approach. Though there are many aspects of disaster management a cultural organisation needs to consider, the tailoring of a plan to an organisation's specific risks and needs is crucial. Although there are templates, where only filling in the blanks is required, or it may be easier to copy another museum's plan, it is not necessarily the best way to mitigate risks and protect collections. It cannot be considered best practice, as what one institution might prioritise may be considered an inconsequential hazard to another, and the probability of a threat should be directly correlated to the plan. When creating a site-specific plan an institution considers their collections, their own risks and their own nuances as an organisation. A template or another museum's plan may be a useful starting point but this should be developed to address the specific context of individual institutions and collections.

CAGTPOW and CM both factored earthquake risk into the planning and refurbishing of their buildings. The earthquake strengthening CM carried out on their building was perceived to hold them in good stead for the seismic events since, and the Museum commented that they found the worst affected parts of the building were those that did not receive the strengthening. CAGTPOW's design brief demanded that the structure would be earthquake resilient, and it was, even if the ground underneath it was not.<sup>359</sup> CM had proposed a plan to undergo retrofitting of base isolation pre-quakes but was overturned in the environment court in 2006. The CM is once again planning a project to earthquake strengthen their building. This again aligns CM and CAGTPOW with best practice, having specifically planned for their perceived risks. Having stable land is an asset of AFMNZ, and as such has meant that they have not had to undergo the same level of refurbishing or strengthening as CAGTPOW and

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<sup>359</sup> The American Surveyor. (2014). *Not Broken, But Slightly Bowed: Lifting a Landmark Art Gallery in New Zealand*. [online].

CM. However, AFMNZ did add to their facilities earlier than planned to support the needs of a community, and hosted the CCCRC for three years.

A common value held by the three institutions is the centrality of staff training and education – a value that is also held in best practice benchmarking, including by ICOM, AIC and the Getty Institute. All three institutions reviewed have in some way trained staff in preparedness for disaster. AFMNZ sent staff to workshops, and remains committed to continuing education within their institution.<sup>360</sup> CM holds regular staff training, ensuring that most staff have first aid training, and know how to operate fire extinguishers and clean up chemical spills. CM aims to train staff within a short period of when they start working at the Museum. CAGTPOW holds staff training for emergencies annually and changes scenarios each year.<sup>361</sup> However, this could mean that a staff member that started after the annual training may not receive any emergency response training for months. While it is agreed in much best practice that training should take place regularly or at least annually, there are no real guidelines on how often to train or how many staff to train for the event of a disaster. This is undertaken at the discretion of the organisation and some of the case study institutions assessed in this thesis recognised that this was something that needed to be worked on. Best practice also encourages institutions to make plans specific to their circumstances and for events that are likely to occur, so ongoing seismic activity in Canterbury likely means that institutions in Christchurch and wider Canterbury may have to train staff for the event of an earthquake more regularly than perhaps somewhere that experiences little seismic activity. An important piece of knowledge gained from the event in Christchurch is taking employees' mental health and circumstances into consideration in response to disaster. CM found that some staff members could not assist post-disaster because of their personal circumstances.

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<sup>360</sup> Moya Sherriff, Air Force Museum of New Zealand. Interview. 14 December 2016.

<sup>361</sup> Christchurch Art Gallery Te Puna o Waiwhetu. (2017). *Business Continuity Plan*. [online].

Staff members personal circumstances need to be considered in a disaster like an earthquake, as the impact is widespread and not just centralised within the institution like a burst pipe or a fire might be. Reviewed institutions factored this into their plans after the earthquakes. For example, CAGTPOW's *Business Continuity plan* stated 'staff that are able to assist'; although this is circumstantial it speaks to the Gallery's understanding of both the physical and mental capacities of employees post-disaster.<sup>362</sup> This is in line with established best practice, where human safety is considered to be of greatest importance. CM and CAGTPOW both emphasised that it is not only the physical circumstances of a disaster that may affect their employees, but also their emotional well-being. CM and CAGTPOW both factor this into their disaster planning, acknowledging that in large-scale, city-wide or national events, key responders from their institutions may not be available due to personal circumstances. CM also demonstrated planning around the emotional aftercare of employees, providing counselling services to those who needed them.

The sharing of information between organisations is something that has been essential in the recovery stage of disaster management for the three institutions assessed. Each institution has shared knowledge by either liaising with other organisations, or by speaking and writing publicly about their experiences and how they managed disaster most effectively. The CCCRC sharing information directly with the cultural organisations they worked with, the CM and CAGTPOW have both hosted lectures and seminars, and the CAGTPOW has circulated their newly-developed disaster management plan with other organisations. Education and dissemination of knowledge follows the best practice of a number of international and national organisations. AFMNZ shared their experiences post-quake through the blog series 'Diary of the Canterbury Cultural Collections

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<sup>362</sup> Christchurch Art Gallery Te Puna o Waiwhetu. (2017). *Business Continuity Plan*. [online].

Recovery Centre intern', an approach that was unique in many ways in the recovery stages of the cultural community, and contained information useful both to the museum and cultural sector, and which educated the wider public. CAGTPOW used their website and quarterly publication *The Bulletin* to talk about their experiences as well, but this publication was targeted more to the public as an update of their goings on while their usual exhibition spaces were closed. The Bulletin is circulated in print as well as extracts that are available online. CAGTPOW has a blog on their webpage in which, staff have reflected on the post-quake activities the Gallery carried out. Both CAGTPOW and CM used their digital platforms to update visitors and their communities on the status of their institutions, their collections and programmes each were running. Information sharing technology can be said to have been useful to all three institutions during their recovery period in communicating and sharing information. Moreover, communication between organisations and institutions are fundamental to the exchange of new developments, and thereby institutions can adjust their plans in light of new information. Christchurch institutions collaborated in a number of ways including the exchange of knowledge that was gained between themselves to be able to provide better care for each of their collections. The CCCRC was one particular organisation that exemplified this. Although under unfortunate circumstances, having a range of cultural heritage institutions and organisations under one roof proved to be a positive experience for those involved. The CCCRC was able to assist museums and galleries that required support, and in the hub expertise was shared and documented for other organisations to learn from. The willingness of organisations and institutions to share information is essential to the development of disaster management practices in the future.

The AFMNZ and the CCCRC not only assisted small organisations but also stored larger objects for institutions including CM and CAGTPOW. Some of the art salvaged with the help of the Canterbury Disaster Salvage Team and other organisations, from red-zoned

studios and condemned buildings would also seek refuge at CCCRC. A sense of fostering community and the importance of helping each other is apparent in each of the three institutions' responses to disaster, and is something that is not currently considered in best practice. This is significant, as were it not for institutions' willingness to assist each other, it is possible that many smaller institutions may have had a much more difficult experience post quake.

Some organisations such as Te Papa suggest planning for disaster with emergency services.<sup>363</sup> CM plans their disaster management with emergency services, particularly the fire services, as this is one of CM's largest perceived risks. CM plans for disaster so that if there was another large-scale event, they may not be a priority for emergency services initially. Like museums, in a large scale disaster emergency services' highest priority is the safety and wellbeing of people, so if people were not at risk in the Museum's building, emergency services may not be able to respond as expediently as they would to a disaster limited to just the building. CAGTPOW had a unique relationship with emergency responders – having had Civil Defence occupy their building. AFMNZ, outside the cordoned area and with a structurally sound building, did not interact with emergency services in the same way as the other institutions assessed. However the Museum still plans in consultation with emergency services in case their building or collections were to be affected by a disaster. The extent to which museums and galleries should coordinate and plan with emergency services is a key point that this thesis has discussed. On the one hand, too little planning could mean that emergency responders may not be able to respond to their fullest capacity, and on the other hand, the sharing of facilities has been proven to result in a strained relationship.<sup>364</sup> This was evident in

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<sup>363</sup> Museum of New Zealand Te Papa Tongarewa. (2001). *Emergency Procedures*. [online].

<sup>364</sup> Blair Jackson, Christchurch Art Gallery Te Puna o Waiwhetu. Interview. 23 November 2016.

CAGTPOW's experience in having emergency responders in their building. In some ways, a close relationship with emergency responders proved beneficial. Although, rare and not a standard response, the sharing of facilities was not recommended by an institution that experienced this first hand.<sup>365</sup> A well-balanced approach to planning with emergency responders and fire services has proven best for CM in their planning and response to disaster. Sharing floor plans with emergency services, running drills, and updating information regularly with these emergency responders are all essential elements of the Museum's disaster management planning.

Both a known hindrance and an aid of disaster management is funding. This is something that became particularly evident through the Christchurch earthquakes CM was the institution that most highlighted how best practice can be dictated by the financial ability of an institution, though financial constraints in the cultural and heritage sector are an ongoing issue. The Museum operates as a charitable trust, and as such relies on donations and grants to be able to provide numerous services, one of these services being caring for their collections. The Museum has dedicated, and will need to continue dedicating many financial resources in the future to strengthening their building to mitigate earthquake risks. AFMNZ and CCCRC found that many smaller institutions had inadequately prepared for disaster and were missing necessary collections skills. Most of these institutions operate on a volunteer basis, and if CCCRC had not been established post-quake, it is likely that these smaller organisations would not have had the expertise or financial means to store things. However, there are many free resources available to financially restricted institutions that guide disaster management such as Te Papa's 'Emergency Procedures' guide.<sup>366</sup> Even though these resources are available AMFNZ found that there was a real lack of

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<sup>365</sup> *ibid.*

<sup>366</sup> Museum of New Zealand Te Papa Tongarewa. (2001). *Emergency Procedures*. [online].

knowledge of what to do in a post-disaster situation amongst smaller institutions , and that this was perhaps disaster management planning was seen as too hard or that the organisations were not even aware of disaster management as such.<sup>367</sup> Many organisations, cultural or otherwise, may not want to set aside financial resources for something that may never happen. However, it is important that ample funding is available in the event of an emergency, as these organisations have proven.

Practicality was an aspect of disaster management that played a key role in all of the institutions' responses and their future planning for disaster in Christchurch. CAGTPOW, CM and AFMNZ all implemented practical measures to secure collections post-quake. AFMNZ acted practically to assist other institutions post-disaster, shuffling their collections to make room for other institutions collections until the CCCRC could be opened within the Museum's walls. CM has acted practically in their financial planning; choosing not to implement measures and consume resources that would cost the Museum greatly – anticipating the Museums planned renewal. The Museum not only acted practically in its storage facilities and displays, but also in its offices as filing cabinets were a particular hazard for the Museum during the earthquakes. CM now has procedures around ensuring filing cabinets are locked when they are not being used, keeping staff safety in mind. CAGTPOW replaced their pre-quake disaster management plan in favour of what they consider a more straightforward plan. The Gallery created a plan that responds to the scale of events, instead of planning for individual events. This kind of planning breaks down categories of human-made and natural and focuses on the amount of impact an event may have on the institution. The decision to change their planning and disaster management style to such an extent was made after facing a large-scale disaster. Important developments such as these cannot be overlooked moving forward in the disaster management and conservation field.

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<sup>367</sup> Moya Sherriff, Air Force Museum of New Zealand. Interview. 14 December 2016.

When it comes to researching best practice for disaster management, CM, CAGTPOW and AFMNZ said that they look internationally for examples. AFMNZ being a military museum has very different collections to most other cultural institutions within NZ. The Museum seeks best practice in institutions like the Getty Institute and the Smithsonian that house broad collections, as well as modelling itself on other aircraft museums like the RAF Museum in London. CAGTPOW also stated that they correspond regularly with the Getty institute about their disaster management practices. Without naming institutions specifically, CM stated that they operate within a network of museums internationally, both gaining and supplying knowledge, and that they are always open to new ideas.<sup>368</sup> However, none of the three organisations pinpointed a New Zealand institution or organisation as having been a key influence on their disaster management planning.<sup>369</sup>

The representatives interviewed from CAGTPOW, AFMNZ and CM were all in agreement that New Zealand needs to plan for disaster differently to other nations, taking into account both geographical factors and the nation's unique heritage.<sup>370</sup> The representative from CAGTPOW in particular felt that New Zealand needed to plan differently because of the cultural needs of the objects that New Zealand institutions care for, and the rights of the communities that own or relate to these objects.<sup>371</sup> Tikanga or Māori customs are not specifically elaborated upon in disaster management best practice guidelines within New Zealand, and indeed while CM, AFMNZ and CAGTPOW all acknowledge the importance of upholding the Treaty of Waitangi principles in the care of their collections, currently these

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<sup>368</sup> Kelvin Nolly, Canterbury Museum. Interview. 25 November 2016.

<sup>369</sup> Blair Jackson, Christchurch Art Gallery Te Puna o Waiwhetu. Interview. 23 November 2016.; Kelvin Nolly, Canterbury Museum. Interview. 25 November 2016.; Moya Sherriff, Air Force Museum of New Zealand. Interview. 14 December 2016.

<sup>370</sup> *ibid.*

<sup>371</sup> Blair Jackson, Christchurch Art Gallery Te Puna o Waiwhetu. Interview. 23 November 2016.



principles do not directly inform their disaster management planning.<sup>372</sup> Organisations such as Te Papa, CNZ and the Ministry of Culture and Heritage recommend that the best way to care for taonga is to be guided by whanau, hapu or iwi, and the conditions under which the taonga is lent to the museum.<sup>373</sup> Consulting with the relevant groups is considered an excellent way to approach objects and to ensure that appropriate care is taken. It ensures that organisations have considered the communities concerned, and that they are actively involving these communities in making sure only culturally appropriate action is taken. This approach also considers Treaty responsibilities and the care of taonga. New Zealand's bicultural status should guide cultural institutions' disaster planning more, to further ensure that New Zealand's unique cultural heritage is appropriately cared for and protected in a disaster. There is an urgent need for further research into ways to incorporate bicultural principles into disaster management planning in New Zealand.

Something that all three institutions assessed by this thesis unmasked in various ways is that earthquakes are long-term events. The initial impact is the most obvious pinpoint of disaster, however the continuing seismic activity and the repairing of structures also has a long-term impact as CM and CAGTPOW found. CAGTPOW had to operate outside of their building long-term and had not planned for this; it was a response to their circumstances. However, this kind of spontaneity can be beneficial to disaster management planning as it means museums and galleries may act in ways that they may otherwise have not, and may

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<sup>372</sup> Blair Jackson, Christchurch Art Gallery Te Puna o Waiwhetu. Interview. 23 November 2016.; Kelvin Nolly, Canterbury Museum. Interview. 25 November 2016.; Moya Sherriff, Air Force Museum of New Zealand. Interview. 14 December 2016.

<sup>373</sup> Museum of New Zealand Te Papa Tongarewa. *A Guide to Guardians of Iwi Treasures He Tohu ki ngā Kaitiaki o ngā Taonga-ā-iwi*. (2001). 1st ed. [ebook] Wellington: Museum of New Zealand Te Papa Tongarewa. Available at: [https://www.tepapa.govt.nz/sites/default/files/8-a-guide-to-guardians-of-iwi-treasures\\_0.pdf](https://www.tepapa.govt.nz/sites/default/files/8-a-guide-to-guardians-of-iwi-treasures_0.pdf) [Accessed 20 Feb. 2017].; Creative NZ Arts Council of New Zealand Toi Aotearoa. (2014). *Risk Management Toolkit: A resource for arts organisations*. [online]. p.6.; *Policy for Government Departments' Management of Historic Heritage*. (2004). Wellington: New Zealand Government Printing Office. [online].

gain new knowledge in doing so. Having a plan for how an institution might operate, or maintain continuity in their community if they were to close is another important consideration, however this long-term thinking is often not addressed in disaster management planning. Having planned and researched the ways that other cultural institutions have dealt with long-term closures could serve disaster-affected institutions well if they have to operate outside of their buildings long term. Through the constant repairs their building needs, CM, for example, found that an earthquake is not one singular event but many. Six years on they are still reviewing the condition of their collections post-quake, and this process is likely to continue for quite some time.<sup>374</sup>

In line with established best practice, human safety was considered to be of greatest importance for all institutions reviewed, with visitors and staff the priority in the event of a disaster. CM and CAGTPOW both emphasised that it is not only the physical circumstances of a disaster that may affect their employees, but also their emotional well-being. CM and CAGTPOW both factor this into their disaster planning, acknowledging that in large-scale, city-wide or national events, key responders from their institutions may not be available due to personal circumstances. CM also demonstrated planning around the emotional aftercare of employees, providing counselling services to those who needed them.

It is clear that all institutions assessed further developed their disaster management practices in the wake of the Christchurch earthquakes, and that they have valuable knowledge to contribute to the wider cultural sector. In many ways, these institutions exemplified or exceeded best practice, creating new initiatives, plans, and procedures. Valuable experience was gained in collection care, and the importance was recognised of staff training,

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<sup>374</sup> *ibid.*

communication, sharing knowledge, planning specifically to perceived risks, reassessing plans, and employee well-being. Something that is not regularly acknowledged is the role that museums and galleries play in the community during and following a disaster. CAGTPOW housed emergency operations twice, AFMNZ shared their space with other organisations, and all three case-study institutions helped other parties to retrieve and salvage precious and valuable heritage. The role that these organisations have played in the community go far beyond expected practice in disaster circumstances, and perhaps exceed expectations of their roles as museological institutions. Furthermore, it should be emphasised how funding restrictions limit the capacity of institutions to achieve best practice. The better an institution is funded, the more they can prepare for disaster, making it less likely that valuable heritage will be harmed.



[Figure 5. A Christchurch street covered in liquifaction caused by the 2011 Earthquake.]



[Figure 6. Emergency services and resurers at the Pyne Gould building after it collapsed in the 2011 Earthquake. This was one of many devastating scenes in Chirstchurch immediately after the quake. This image exemplifies the type of distruction a disaster can cause.]





[Figure 7. A woman assessing the damage to her home near the epicenter of the September 2010 Christchurch Earthquake.]



[Figure 8. The exterior Lyttleton Maritime Museum after the catastrophic impact of the 2011 February Earthquake.]





[Figure 9. Two firemen helping retrieve the Lyttleton Museum's collection from its red-stickered building for it to be transported to the Canterbury Cultural Collections Recovery Centre.]



[Figure 10. Firemen and Air Force Museum staff members removing part of the Lyttleton Museum's Collections from its condemned building so that it can be moved to a safe location.]





[Figure 11. Emergency services in Christchurch Art Galleries forecourt after the February 2011 Earthquake.]



Figure 12. This image shows the massive strengthening and restoration Christchurch Art Gallery had to undergo after the February 2011 Earthquake and the obvious disruption to its services this must have caused].





[Figure 13. Canterbury Museum's Director Anthony Wright in the Museum after the February 2011 Earthquake pointing to stable and undamaged ceramics in their cases.]



[Figure 14. The main area of the Canterbury Cultural Collections Recovery Centre. There are a range of objects visible from the diverse range of inhabitants].





[Figure 15. The CCCRC's intern Moya Shefriff and unidentified woman covering the Nurses Memorial Chapel's Carpet Runner with Tyvek in preparation for storage.]

## **Conclusion**

The field of disaster management has grown significantly over the past few decades. The cultural sector is consistently looking for ways to improve how we take care of our heritage and plan for the future. Media, technology, international organisations and instances of disaster have all played a role in the advocacy of conservation and disaster management through contributing and sharing information. Disaster management planning can be seen as making provision for something that may never happen, however when we review and reflect on major events like the Christchurch earthquakes and the devastation that disaster can cause, it becomes all too apparent just how important it is to properly prepare ourselves for the risks posed by these kinds of unpredictable events.

This thesis has examined the disaster management planning and response of three Christchurch cultural institutions during and after the 2010 and 2011 Christchurch earthquakes, considering their responses in the context of international disaster management best practice. The three institutions assessed were all selected for being major public institutions with large and significant collections. Drawing on oral history interviews conducted with representatives from each of the three selected Christchurch institutions, this thesis has assessed the knowledge gained and lessons learnt from the experience of the 2010 and 2011 earthquakes. The Christchurch earthquakes had a substantial impact on the cultural heritage sector in many ways, making it important to conduct a study such as this. Through this research some important points and cause for further research have been brought to focus and are outlined in the following paragraphs.

In addition to damage incurred from objects falling over, and an array of leaks and building cracks, the closures of museums and galleries had a real and visible impact on the cultural sector. The

closures in both the public and private sectors meant that many artists were left without galleries to display their work and the structural damage meant that many smaller museums and galleries were left without the capacity to care for their collections. Christchurch cultural organisations collaborated in many ways to assist each other, and in this, developed new disaster management practices. Significantly, institutions throughout Canterbury assisted each other and the wider cultural community in working to salvage collection items and protect them from further risk.

Climate change and the increase in the frequency of catastrophic disasters occurring – both human-made and natural – have created a pressing need for research around the protection of cultural heritage. Cultural heritage is constantly at risk from conflict, climate change, and disasters. The wanton destruction of world heritage sites like Palmyra in Syria and the devastating effects of natural disasters like Hurricane Katrina have been launched on to television screens world wide creating greater concern for the safety of cultural heritage. Research such as this thesis is important as it seeks the best methods to mitigate damage to valuable cultural heritage.

There is an urgent need for further research into ways to incorporate biculturalism in disaster management planning in New Zealand. All three institutions assessed by this thesis stated that biculturalism did not directly inform their current disaster management. However, all organisations assessed also agreed that New Zealand cultural and heritage institutions need to plan differently for disaster. They considered the nation's geographical factors and the unique heritage museums and galleries are tasked with caring for in their assessment of this. This thesis has highlighted the need for New Zealand's bicultural status to guide cultural institutions' disaster planning more. It is important to further ensure that New Zealand's unique cultural heritage is appropriately cared for and protected in a disaster.

Technology has been a key factor in the recent development in disaster management practices. The use of technology post-disaster in Christchurch was evident in museums and galleries. Websites and social media proved a useful platform for communicating with their visitors through blogging and updates. The use of such accessible technologies may seem simple but could prove beneficial to disaster affected communities in the future. It warrants the need for further research as to how technologies may benefit cultural organisations before, during and after disaster.

Building on the research undertaken in this thesis, further work might usefully be undertaken to understand the experiences and responses of smaller cultural organisations in Christchurch over this period. In this thesis, it was overwhelmingly apparent that many smaller institutions and organisations were not equipped to manage a large-scale disaster such as this and that without the CCCRC and other large cultural organisations much valuable heritage may have been lost. In order to develop a broader picture of disaster management planning in Christchurch's cultural sector further research around how these smaller organisations prepared for disaster and how the earthquake affected them is needed.

Known successes and challenges within the cultural sector over the period of the Christchurch earthquakes can benefit many other cultural institutions in their planning for risks. Disaster management in the cultural sector is more than a scale of good to bad: there are a number of factors that contribute to it and that shape the way that institutions plan for disaster. Disaster management is about the sharing of information and skills, education, gaining knowledge from events and most importantly future proofing irreplaceable heritage. Christchurch institutions have highlighted essential elements of disaster management planning and shared aspects of their planning practices that they have developed in light of their experiences. It is incumbent upon institutions to plan effectively for disaster, and as Christchurch institutions and countless others

have proven, unprepared institutions suffer the greatest consequences, leaving precious heritage at risk.

## Image Index

Figure 1.

Mannual Litran, Available at: <http://www.gettyimages.co.nz/detail/news-photo/florence-november-1966-the-night-of-3-to-4-november-1966-a-news-photo/154902471#florence-november-1966-the-night-of-3-to-4-november-1966-a-flood-of-picture-id154902471> [Accessed 22 Feb. 2017].

Figure 2.

Available at: <http://edition.cnn.com/2017/01/20/middleeast/palmyra-isis-theater/> [Accessed 23 Apr. 2017].

Figure 3.

Daniel Tobin, Available at: <http://www.stuff.co.nz/the-press/news/4094979/Huge-earthquake-rocks-Christchurch> [Accessed: 24 Nov. 2016]

Figure 4.

[http://www.fondazionezegna.org/en/news\\_fondazione/great-east-japan-earthquake-reconstruction-and-satisfaction-of-primary-needs/](http://www.fondazionezegna.org/en/news_fondazione/great-east-japan-earthquake-reconstruction-and-satisfaction-of-primary-needs/) [Accessed 29 Sep. 2017]

Figure 5.

Asher Trafford, Available at: <https://keithwoodford.wordpress.com/2011/02/27/understanding-the-christchurch-earthquake-building-damage/> [Accessed: 10 Feb. 2017]

Figure 6.

Carys Monteath, Available at: <http://www.stuff.co.nz/national/4688231/65-dead-in-devastating-Christchurch-quake> [Accessed 24 Nov. 2016]

Figure 7.

Greg Bowker, Available at: <https://www.britannica.com/event/Christchurch-earthquakes-of-2010-2011> [Accessed 25 Nov. 2016]

Figure 8.

Lyttelton Museum Collection, Available at: <http://www.lytteltonmuseum.co.nz/journey/> [Accessed 25 Nov. 2016]

Figure 9.

Canterbury Cultural Collections Recovery Centre, Available at: <http://www.ceismic.org.nz/news/a-look-at-the-ccrc-and-its-taonga> [Accessed 2 Dec. 2016]

Figure 10.

Air Force Museum, Available at: <https://christchurchartgallery.org.nz/events/therese-angelo-canterbury-cultural-collections-rec> [Accessed 2 Dec. 2016]

Figure 11.

stuff, Available at: <http://www.stuff.co.nz/the-press/news/5128665/Art-Gallery-will-not-open-this-year> [Accessed Dec. 2 2016]

Figure 12.

John Collie, Available at: <https://christchurchartgallery.org.nz/bulletin/182/the-last-five-years> [Accessed 2 Dec. 2016]

Figure 13.

Canterbury Museum, Available at: <http://www.nz museums.co.nz/news/wake-up-call-for-canterbury-museum/> [Accessed 5 Jan. 2017]

Figure 14.

Canterbury Cultural Collections Recovery Centre, Available at: <http://www.nz museums.co.nz/news/diary-of-the-canterbury-cultural-collections-recovery-centre-intern-month-1/> [Accessed 5 Jan. 2017]

Figure 15.

Canterbury Cultural Collections Recovery Centre, Available at: <http://www.nz museums.co.nz/news/diary-of-the-canterbury-cultural-collections-recovery-centre-intern-month-11/> [Accessed 5 Jan. 2017]

## **Bibliography**

### **Books**

Balfour, A. (2012), *Solomon's Temple: Myth, Conflict, and Faith*, 1st edn, Wiley-Blackwell, Chichester, West Sussex.

Clavir, M. (2002). *Preserving what is valued*. 1st ed. Vancouver: UBC Press, p.15.

Coppola, D. (2016). *Introduction to international disaster management*. Boston: Elsevier Butterworth Heinemann.

Doig, J. (n.d.). *Disaster recovery for archives, libraries and records management systems in Australia and New Zealand*. 12th ed. NSW: Centre for Information Studies, Charles Sturt University.

Haddow, G., Bullock, J. and Coppola, D. (2011). *Introduction to emergency management*. 4th ed. Burlington: Butterworth Heinemann,

Hooper-Greenhill, E. (1999). *The educational role of the museum*. 2nd ed. London: Routledge.

International Council of Museums & International Committee on Museum Security . (1993), *Guidelines for disaster preparedness in museums*, ICOM, Paris.

Kahn, M. (2012). *Disaster response and planning for libraries*. Chicago: American Library Association.

Kaplan, F. (1996). *Museums and the making of 'ourselves'*. 1st ed. London: Leicester University Press.

Lumley, R. (1988). *The Museum time-machine*. 1st ed. London: Routledge.

Macdonald, S. (2006). *A companion to museum studies*. 12th ed. Malden, MA: Blackwell Pub.

Matthews, G. and Feather, J. (2003). *Disaster management for libraries and archives*. 1st ed. Aldershot, Hampshire, England: Ashgate Pub.

Matthews, G., Smith, Y. and Knowles, G. (2009). *Disaster management in archives, libraries, and museums*. 1st ed. Farnham: Ashgate.

Merritt, J. and Reilly, J. (2010). *Preventive conservation for historic house museums*. 1st ed. Lanham, Md.: AltaMira Press.

Moore, C. & Fairfax Media (Firm). (2011). *Earthquake: Christchurch, New Zealand 22 February 2011*, Random House, Auckland, N.Z.

Nafziger, J., Paterson, R. and Renteln, A. (2010). *Cultural Law: International, Comparative, and Indigenous*. 1st ed. Cambridge: Cambridge University Press.

Panofsky, E. (1970). *Meaning in the Visual Arts*. 1st ed. Harmondsworth: Penguin.



Steedman, M. (2012). *Gallery as Community: Art, Education, Politics*. London: Whitechapel Gallery Ventures Ltd.

Turner, B. and Pidgeon, N. (1997). *Man-made disasters*. 1st ed. Boston: Butterworth-Heinemann.

Upton, M. and Pearson, C. (1978). *Disaster planning and emergency treatments in museums, art galleries, libraries, archives, and allied institutions*. 1st ed. Canberra: Institute for the Conservation of Cultural Material.

Wellheiser, J., Scott, J. and Barton, J. (2002). *An ounce of prevention*. 2nd ed. Lanham (Md.): Scarecrow Press.

### **Journal Articles**

Brooks, T. (2013). The Real Challenge of Climate Change. *PS: Political Science & Politics*, 46(01), pp.34-36.

Burningham, K., Fielding, J. and Thrush, D. (2007). 'It'll never happen to me': understanding public awareness of local flood risk. *Disasters*, 32(2), pp.216-238.

Devine, S.W. 2005, "The Florence flood of 1966: A report on the current state of preservation at the libraries and archives of Florence", *The Paper Conservator*, vol. 29, no. 1, pp. 15-24.

Drazewska, B. (2015) 'The Human Dimension of the Protection of the Cultural Heritage from Destruction during Armed Conflicts', *International Journal of Cultural Property*, 22(2-3), pp. 205–228.

Earle, W. (2013) "Cultural education: Redefining the role of museums in the 21st century", *Sociology Compass*, vol. 7, no. 7, pp. 533-546.

Frost, G. and Silverman, R. (2005) 'Disaster recovery in the artefact fields - Mississippi after Hurricane Katrina', *International Preservation News* 37, pp.35-47.

Ghobarah, A. (2001). Performance-based design in earthquake engineering: state of development. *Engineering Structures*, 23(8), pp.878-884.

Hunter, E. and Rowles, G. (2005). Leaving a legacy: Toward a typology. *Journal of Aging Studies*, 19(3), pp.327-347.

Jive'n, G. and Larkham, P. (2003). Sense of Place, Authenticity and Character: A Commentary. *Journal of Urban Design*, 8(1), pp.67-81.

Kavanagh, G. (1988). The first world war and its implications for education in British museums. *History of Education*, 17(2), pp.163-129.

Kearl, M. and Bauman, Z. (1993). Morality, Immortality, and Other Life Strategies. *Contemporary Sociology*, 22(5), p.711.

Knight, B. (2003). Why Conservation is Important. *Vital Speeches of the Day*, 70(3), p.78.

- MacFarlane, J. (2014). Museums as Community Centres. *Museum International*, 66(1-4), pp.31-34.
- Matero, F. (2006). Loss, Compensation and Authenticity in Architectural Conservation. *Journal of Architectural Conservation*, 12(1), p.71.
- McDonald, F. Gallery as Community: Art, Education, Politics. (2014). *Curator The Museum Journal*, 57(2), pp.269–273.
- McLean, F. (1998). Museums and the construction of national identity: A review. *International Journal of Heritage Studies*, 3(4), pp.244-252.
- Okamura, K., Fujisawa, A., Kondo, Y., Fujimoto, Y., Uozu, T., Ogawa, Y., Kaner, S. & Mizoguchi, K. (2013), "The Great East Japan Earthquake and cultural heritage: Towards an archaeology of disaster", *Antiquity*, vol. 87, no. 335, pp. 258-269.
- Paulson, S., Deterring Destroyers: International Prohibitions and Punishments Against the Destruction of Cultural Property. *Gonzaga Journal of International Law*. [online] Available at: <https://www.law.gonzaga.edu/gjil/2017/05/deterring-destroyers-international-prohibitions-and-punishments-against-the-destruction-of-cultural-property/> [Accessed 14 Jun. 2017].
- Parisi, F., Augenti, N. (2013), "Earthquake damages to cultural heritage constructions and simplified assessment of artworks", *Engineering Failure Analysis*, vol. 34, p. 735.
- Scott, D.A. (2015), "Conservation and authenticity: Interactions and enquiries", *Studies in Conservation*, vol. 60, no. 5, pp. 291-305.
- Smith, B. and Zeder, M. (2013). "The onset of the Anthropocene". *Anthropocene*, 4, pp.8-13.
- Stolow, N. (1977). "Recent developments in exhibition conservation: Policies and directions", *Museum International*, vol. 29, no. 4, pp. 192-206.
- Sugio, K. (2015). Large-scale Disasters on World Heritage and Cultural Heritage in Japan: Significant Impacts and Sustainable Management Cases. *Landscape Research*, 40(6), pp.748-758.
- Togiya, N. (2013), "Trends in digital cultural heritage in Japan, 1980-2012", *Art Libraries Journal*, vol. 38, no. 2, pp. 11-16.
- Yamamura, M. (2013), "The saveMLAK project: the Great East Japan Earthquake and new developments in museum-library-archive collaboration", *Art Libraries Journal*, vol. 38, no. 2, pp. 40-44.
- Zhang, F. and Weng, Y. (2015). Predicting Hurricane Intensity and Associated Hazards: A Five-Year Real-Time Forecast Experiment with Assimilation of Airborne Doppler Radar Observations. *Bulletin of the American Meteorological Society*, 96(1), pp.25-33.

## Other

Matthews, G. and Eden, P. (1996). *Disaster Management in British Libraries: Report and Guidelines*. Library and Information Research Report. London: The British Library, p.4.

### **Dissertations**

Chisholm, V. (2015). *Preventative Conservation and Disaster Management Planning in Cultural Institutions*. Masters. Brunswick Rutgers The State University of New Jersey.

Searle, C. (2010). *Collecting for New Zealand: Examining what the Museum of New Zealand Te Papa Tongarewa should collect*. Masters. Victoria University of Wellington.

### **Websites**

Air Force Museum of New Zealand. (2016). *Air Force Museum of New Zealand*. [online] Available at: <http://www.airforcemuseum.co.nz/> [Accessed 28 Sep. 2016].

American Alliance of Museums (2012). *Developing a Disaster Preparedness/ Emergency Response Plan*. [online] Available at: <http://www.aam-us.org/docs/continuum/developing-a-disaster-plan-final.pdf> [Accessed 30 Aug. 2017].

American Institute for Conservation of Historic and Artistic Works. (2017). *Conservation*. [online] Available at: [http://www.conservation-wiki.com/wiki/Main\\_Page](http://www.conservation-wiki.com/wiki/Main_Page) [Accessed 25 Feb. 2017].

American Institute for Conservation of Historic and Artistic Works (2017). *ERS App*. [online] Available at: <https://www.conservation-us.org/emergencies/ers-app#.WaYAVdOGNE4> [Accessed 20 Mar. 2017].

Avrami, E. and Mason, R. (2000). *Values and Heritage Conservation*. [online] Available at: [http://www.getty.edu/conservation/publication/pdf\\_publication/valuesrpt.pdf](http://www.getty.edu/conservation/publication/pdf_publication/valuesrpt.pdf) [Accessed 24 May 2016].

Blanco, L, et Al. (2007) *Mitigating disaster: a strategic guide to risk management in heritage collections* [online] (updated 2007) <[http://webworld.unesco.org/mitigating\\_disaster/](http://webworld.unesco.org/mitigating_disaster/)>, [Accessed 24 May 2016].

Blue Shield International (2017). *Who we are & what we do*. [online] Ancbs.org. Available at: <http://www.ancbs.org/cms/en/about-us/what-we-do> [Accessed 11 Aug. 2017].

Cambridge Dictionary. (2016). *Best practice Meaning in the Cambridge English Dictionary*. [online] Available at: <http://dictionary.cambridge.org/dictionary/english/best-practice> [Accessed 7 Jun. 2016].

Canadian Association for Conservation of Cultural Property. (2000). *Code of Ethics and Guidance for Practice of the Canadian Association for Conservation of Cultural Property and of the Canadian Association of Professional Conservators*. [online] Available at: <https://www.cac-accr.ca/files/pdf/ecode.pdf> [Accessed 4 Apr. 2016].

Canterbury Disaster Salvage Team. (2007). *Welcome*. [online] Available at: <http://www.disalteam.co.nz/index.htm> [Accessed 20 Jul. 2016].

Canterbury Museum. (2016). *A Brief History*. [online] Available at: <http://www.canterburymuseum.com/about-us/a-brief-history/> [Accessed 20 Sep. 2016].

Canterbury Museum. (2015). *New visitor attraction planned for Christchurch's Cultural Precinct* [online] Available at: <https://www.canterburymuseum.com/about-us/media-releases/new-visitor-attraction-planned-for-christchurchs-cultural-precinct/> [Accessed 15 Jan 2018].

Ceismic. (2015). *A Look at the CCCRC and its Taonga*. [online] Available at: <http://www.ceismic.org.nz/news/a-look-at-the-ccrc-and-its-taonga> [Accessed 25 Oct. 2016].

Christchurch Art Gallery Te Puna o Waiwhetu. (2016). *Business Continuity Plan*. [online] Available at: [http://christchurchartgallery.org.nz/media/downloads/2012\\_03/Business\\_Continuity\\_Plan\\_web.pdf](http://christchurchartgallery.org.nz/media/downloads/2012_03/Business_Continuity_Plan_web.pdf) [Accessed 23 Nov. 2016].

Christchurch Art Gallery Te Puna o Waiwhetu. (2016). *History*. [online] Available at: <https://christchurchartgallery.org.nz/about/history> [Accessed 20 Oct. 2016].

Christchurch Art Gallery Te Puna o Waiwhetu. (2016). *The Building*. [online] Available at: <https://christchurchartgallery.org.nz/about/building> [Accessed 17 Aug. 2016].

Christchurch City Council. (2014). *Christchurch Art Gallery Activity Management Plan: Long Term Plan 2015–2025*. [online] Available at: <https://www.ccc.govt.nz/assets/Documents/The-Council/Plans-Strategies-Policies-Bylaws/Plans/Long-Term-Plan/ActivityManagementPlanChristchurchArtGallery.pdf> [Accessed 24 Oct. 2016].

Christchurch City Libraries. (2016). *Canterbury Museum*. [online] Available at: <http://my.christchurchcitylibraries.com/canterbury-museum/> [Accessed 25 Sep. 2016].

CNN. (2017). *Reports: ISIS destroys facade of Roman theater in Syrian city of Palmyra*. [online] Available at: <http://edition.cnn.com/2017/01/20/middleeast/palmyra-isis-theater/> [Accessed 24 Feb. 2017].

Creative NZ Arts Council of New Zealand Toi Aotearoa. (2016). *What we do*. [online] Available at: <http://www.creativenz.govt.nz/about-creative-new-zealand/what-we-do> [Accessed 14 Jul. 2016].

Encyclopedia Britannica. (2016). *Japan earthquake and tsunami of 2011*. [online] Available at: <https://www.britannica.com/event/Japan-earthquake-and-tsunami-of-2011> [Accessed 25 Feb. 2017].

FEMA. (2012). *Emergency Response Action Steps*. [online] Available at: <https://www.fema.gov/office-environmental-planning-and-historic-preservation/emergency-response-action-steps> [Accessed 17 Jun. 2016].

Getty Conservation Institute. (2018). *Cullhed, Per The Linköping library fire = L'incendie de la Bibliothèque de Linköping*. [online] Available at: <http://aata.getty.edu/Record> [Accessed 23 Aug. 2018].

GNS Science Te Pū Ao. (2016). *Major Faults in New Zealand*. [online] Available at: <https://www.gns.cri.nz/Home/Learning/Science-Topics/Earthquakes/Major-Faults-in-New-Zealand> [Accessed 25 Oct. 2016].

Guggenheim bilbao (2017). *Preparing for Your Disaster It Is Not A Matter of “IF” But “WHEN”*. [online] Available at: <https://www.guggenheim->

bilbao.eus/src/uploads/2012/09/No\_SI\_sino\_CUANDO\_wilbur\_faulk2.pdf?x59940 [Accessed 30 Aug. 2017].

Heritage New Zealand. (2016). *Canterbury Museum*. [online] Available at: <http://www.heritage.org.nz/the-list/details/290> [Accessed 20 Sep. 2016].

ICOM. (2016). *ICOM Missions*. [online] Available at: <http://icom.museum/the-organisation/icom-missions/> [Accessed 20 Jun. 2016].

ICOM. (2016). *International Committee of the Blue Shield*. [online] Available at: <http://icom.museum/programmes/museums-emergency-programme/international-committee-of-the-blue-shield/> [Accessed 9 Jul. 2016].

ICOM. (2016). *Museums Emergency Programme*. [online] Available at: <http://icom.museum/programmes/museums-emergency-programme/> [Accessed 23 Jun. 2016].

Lyttelton Museum. (2017). *Our Journey*. [online] Available at: <http://www.lytteltonmuseum.co.nz/journey> [Accessed 1 Feb. 2017].

Ministry of Heritage and Culture Manatū Taonga. (2016). *Gauging the Impacts of Post-Disaster Arts and Culture Initiatives in Christchurch*. [online] Available at: [http://www.mch.govt.nz/sites/default/files/Christchurch%20Literature%20Review%20%20Main%20document%202016%20\(D-0660925\).PDF](http://www.mch.govt.nz/sites/default/files/Christchurch%20Literature%20Review%20%20Main%20document%202016%20(D-0660925).PDF) [Accessed 22 Oct. 2016].

Minnesota Historical Society. (2017). *Disaster Response and Recovery*. [online] Available at: <http://www.mnhs.org/preserve/conservation/floodresponse.php> [Accessed 25 Feb. 2017].

Museum of New Zealand Te Papa Tongarewa (2017). *Disaster planning and recovery Te whakarite i tō whare taonga mō te parekura me te whakaora anō*. [online] Available at: <https://www.tepapa.govt.nz/disaster-planning-and-recovery> [Accessed 11 Aug. 2017].

Museum of New Zealand Te Papa Tongarewa. (2016). *Collection management*. [online] Available at: <https://www.tepapa.govt.nz/learn/for-museums-and-galleries/how-guides/collection-management> [Accessed 29 Jul. 2016].

New York Times. (2016). *Crowds Are Out, Crates Are In as Louvre Takes Flood Precautions*. [online] Available at: [http://www.nytimes.com/2016/06/04/world/europe/eerily-empty-louvre-what-its-like-when-floods-keep-tourists-away.html?\\_r=0](http://www.nytimes.com/2016/06/04/world/europe/eerily-empty-louvre-what-its-like-when-floods-keep-tourists-away.html?_r=0) [Accessed 11 Jul. 2016].

Northeast Document Conservation Center. (2016). *COSTEP: Coordinated Statewide Emergency Preparedness*. [online] Available at: <https://www.nedcc.org/free-resources/costep> [Accessed 12 Apr. 2016].

NZ History. (2011). *Christchurch earthquake kills 185*. [online] Available at: <https://nzhistory.govt.nz/page/christchurch-earthquake-kills-185> [Accessed 23 Nov. 2016].

NZ Museums. (2014). *Diary of the Canterbury Cultural Collections Recovery Centre intern – month 9*. [online] Available at: <http://www.nz museums.co.nz/news/diary-of-the-canterbury-cultural-collections-recovery-centre-intern-month-9/> [Accessed 23 Oct. 2016].

NZ Museums. (2013). *Diary of the Canterbury Cultural Collections Recovery Centre intern – month 1*. [online] Available at: <http://www.nz museums.co.nz/news/diary-of-the-canterbury-cultural-collections-recovery-centre-intern-month-1/> [Accessed 23 Oct. 2016].

NZ Museums. (2012). *Canterbury earthquake anniversary series: Thérèse Angelo, Air Force Museum*. [online] Available at: <http://www.nz museums.co.nz/news/canterbury-earthquake-anniversary-series-therese-angelo-air-force-museum/> [Accessed 22 Oct. 2016].

NZ Museums. (2011). *Wake-up Call For Canterbury Museum*. [online] Available at: <http://www.nz museums.co.nz/news/wake-up-call-for-canterbury-museum/> [Accessed 21 Oct. 2016].

NZ Museums. (2011). *Therese Angelo, Q and A*. [online] Available at: <http://www.nz museums.co.nz/news/therese-angelo-q-and-a/> [Accessed 26 Sep. 2016].

New Zealand Parliament Pāremata Aotearoa. (2014). *Social effects of the Canterbury earthquakes*. [online] Available at: <https://www.parliament.nz/en/pb/research-papers/document/00PlibC51211/social-effects-of-the-canterbury-earthquakes> [Accessed 22 Oct. 2016].

Office of the Auditor-General New Zealand. (2006). *Foreword*. [online] Available at: <http://www.oag.govt.nz/2006/heritage> [Accessed 29 Jun. 2016].

Oxford Dictionaries. (2016). *Definition of best practice*. [online] Available at: [https://en.oxforddictionaries.com/definition/best\\_practice](https://en.oxforddictionaries.com/definition/best_practice) [Accessed 7 Jun. 2016].

Radio New Zealand. (2015). *Christchurch Art Gallery reopens after five years*. [online] Available at: <http://www.radionz.co.nz/news/regional/292561/chch-art-gallery-reopens-after-five-years> [Accessed 20 Oct. 2016].

Smithsonian. (2016). *Fire Devastates New Delhi's National Museum of Natural History*. [online] Available at: <http://www.smithsonianmag.com/smart-news/fire-devastates-new-delhis-national-museum-natural-history-180958914/?no-ist> [Accessed 20 Jun. 2016].

Society of American Archivists (2009). *Annotated Resources*. [online] Available at: <https://www2.archivists.org/initiatives/mayday-saving-our-archives/annotated-resources> [Accessed 30 Aug. 2017].

Stuff. (2011). *Gallery built to highest standard*. [online] Available at: <http://www.stuff.co.nz/national/christchurch-earthquake/4707041/Christchurch-Art-Gallery-built-to-highest-standard> [Accessed 21 Sep. 2016].

Stuff. (2012). *Museum to reopen*. [online] Available at: <http://www.stuff.co.nz/national/christchurch-earthquake/7200843/Canterbury-Museum-set-to-reopen> [Accessed 23 Sep. 2016].

Stuff. (2013). *Canterbury museum upgrade 'not cheap'*. [online] Available at: <http://www.stuff.co.nz/national/8402841/Canterbury-museum-upgrade-not-cheap> [Accessed 23 Sep. 2016].

Stuff, (2017). *Time for the Canterbury Museum to get its hands off the Robert McDougall art gallery*

[online] Available at: <https://www.stuff.co.nz/the-press/christchurch-life/art-and-stage/visual-art/94149652/Time-for-the-Canterbury-Museum-to-get-its-hands-off-the-Robert-McDougall-art-gallery> [Accessed 15 Jan 2018].

Te Ara Encyclopedia of New Zealand. (2016). *The 2011 Christchurch earthquake and other recent earthquakes*. [online] Available at: <http://www.teara.govt.nz/en/historic-earthquakes/page-13> [Accessed 22 Nov. 2016].

Te Ara Encyclopedia of New Zealand. (2016). *The 2010 Canterbury (Darfield) earthquake*. [online] Available at: <http://www.teara.govt.nz/en/historic-earthquakes/page-12> [Accessed 22 Nov. 2016].

Te Ara Encyclopedia of New Zealand. (2016). *The 1931 Hawke's Bay earthquake*. [online] Available at: <http://www.teara.govt.nz/en/historic-earthquakes/page-6> [Accessed 22 Nov. 2016].

The American Surveyor. (2014). *Not Broken, But Slightly Bowed: Lifting a Landmark Art Gallery in New Zealand*. [online] Available at: <http://www.amerisurv.com/content/view/13158/153/> [Accessed 24 Oct. 2016].

The Big Idea Te Ara Nui. (2013). *Christchurch Art Gallery takes out Museums Aotearoa Award*. [online] Available at: <http://www.thebigidea.co.nz/news/industry-news/2013/apr/129242-christchurch-art-gallery-takes-out-museum-aotearoa-award> [Accessed 21 Aug. 2016].

The Guardian. (2016). *Fire guts Delhi's natural history museum*. [online] Available at: <https://www.theguardian.com/world/2016/apr/26/massive-fire-guts-delhis-natural-history-museum> [Accessed 20 Jun. 2016].

The Indian Express. (2016). *Museums in India: Aesthetics first, disaster management last*. [online] Available at: <http://indianexpress.com/article/india/india-news-india/museums-in-india-aesthetics-first-disaster-management-last-2776020/> [Accessed 20 Jun. 2016].

The Society of American Archivists. (2005). *Hurricane Katrina Recovery Information*. [online] Available at: <http://www.archivists.org/news/katrina.asp> [Accessed 17 May 2016].

The Times of India. (2016). *Massive fire destroys Delhi's National Museum of Natural History, parts of FICCI building also damaged*. [online] Available at: <http://timesofindia.indiatimes.com/city/delhi/Massive-fire-destroys-Delhis-National-Museum-of-Natural-History/articleshow/51988052.cms> [Accessed 20 Jun. 2016].

Twitter. (2016). *Musée du Louvre (@MuseeLouvre)*. [online] Available at: <https://twitter.com/MuseeLouvre?lang=en> [Accessed 23 Jul. 2016].

UNESCO. (2016). *Introducing UNESCO*. [online] Available at: UNESCO <http://en.unesco.org/about-us/introducing-unesco> [Accessed 30 Jun. 2016].

UNESCO. (2016). *The World Heritage Convention*. [online] Available at: <http://whc.unesco.org/en/convention/> [Accessed 27 Jul. 2016].

UNESCO. (2014). *Basic Texts: Constitution of the United Nations Educational, Scientific and Cultural Organization*. [online] Available at: <http://unesdoc.unesco.org/images/0022/002269/226924e.pdf#page=6> [Accessed 20 Jun. 2016].

UNESCO World Heritage Centre. (2009). *Strengthening Disaster Risk Reduction at World Heritage Properties: the Olympia Protocol for International Cooperation*. [online] Available at: [http://www.iaa-conservation.org.il/images/files/pdf\\_docs/Olympia\\_Protocol.pdf](http://www.iaa-conservation.org.il/images/files/pdf_docs/Olympia_Protocol.pdf) [Accessed 9 May 2016].

UNESCO. (2009). *2nd International Workshop on Disaster Risk Reduction to Cultural Heritage*. [online] Whc.unesco.org. Available at: <http://whc.unesco.org/en/events/610> [Accessed 11 Aug. 2017].

UNESCO. (2005), *Kobe report draft. Report of session 3.3, Thematic Cluster 3. Cultural Heritage Risk Management , World Conference on Disaster Reduction. 18-22 January, 2005, Kobe, Hyogo Japan*, Available at: <<http://www.unisdr.org/2005/wcdr/thematic-sessions/thematic-reports/report-session-3-3.pdf>>, [Accessed 24 May 2016].

UNESCO. (2004). *Protect cultural property in the event of armed conflict*. [online] Available at: [http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/CLT/pdf/armed\\_conflict\\_infokit\\_en.pdf](http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/CLT/pdf/armed_conflict_infokit_en.pdf) [Accessed 10 May 2016].

UNESCO. (1972). *Convention Concerning the Protection of the World Cultural and Natural Heritage*. [online] Available at: <http://whc.unesco.org/archive/convention-en.pdf> [Accessed 5 Jun. 2016].

UNISDR. (2016). *UNISDR Work Programme 2016-2019*. [online] Available at: [http://www.unisdr.org/files/51558\\_workprogramme.pdf](http://www.unisdr.org/files/51558_workprogramme.pdf) [Accessed 23 Aug. 2017]. pp8-9.

UNISDR. (2015). *Louvre Museum works to fend off floods*. [online] Available at: <https://www.unisdr.org/archive/47028> [Accessed 29 Jun. 2016].

UNISDR. (2015) *New Zealand Strong on Sendai Framework*. [online] Available at: <https://www.unisdr.org/archive/44892> [Accessed 23 May 2017].

Washington Post. (2016). *Flooding in Paris threatens the Louvre's most iconic artwork*. [online] Available at: <https://www.washingtonpost.com/news/worldviews/wp/2016/06/02/amid-historic-flood-paris-museums-begin-evacuating-art/> [Accessed 23 Jul. 2016].

Western Association for Art Conservation. (1997). *Salvage at a Glance*. [online] Available at: <http://cool.conservation-us.org/waac/wn/wn19/wn19-2/wn19-207.html> [Accessed 24 Jun. 2016].

## **Ebook and PDF**

Browne, M. (2016). *Practical Taxidermy A manual of instruction to the amateur in collecting, preserving, and setting up natural history specimens of all kinds. To which is added a chapter upon the pictorial arrangement of museums. With additional instructions in modelling and artistic taxidermy..* 2nd ed. [ebook] Project Gutenberg. Available at: <http://www.gutenberg.org/ebooks/26014> [Accessed 6 Apr. 2016].

Dorge, V., Jones, S. (1999). *Building an Emergency Plan: A Guide for Museums and Other Cultural Institutions*. Los Angeles, CA: Getty Conservation Institute. Available at: [http://hdl.handle.net/10020/gci\\_pubs/emergency\\_english](http://hdl.handle.net/10020/gci_pubs/emergency_english) [Accessed 30 Jul. 2016].



Creative NZ Arts Council of New Zealand Toi Aotearoa. (2014). *Risk Management Toolkit: A resource for arts organisations*. [online] Wellington: Creative NZ Arts Council of New Zealand Toi Aotearoa. Available at: [http://www.creativenz.govt.nz/assets/ckeditor/attachments/1022/risk\\_management\\_toolkit\\_-\\_august\\_2014.pdf?1409203287](http://www.creativenz.govt.nz/assets/ckeditor/attachments/1022/risk_management_toolkit_-_august_2014.pdf?1409203287) [Accessed 14 Jul. 2016].

Creative NZ Arts Council of New Zealand Toi Aotearoa. (2009). *Getting on Board: A governance resource guide for arts organisations*. [online] Wellington: Creative NZ Arts Council of New Zealand Toi Aotearoa. Available at: <http://www.creativenz.govt.nz/assets/paperclip/publications/files/33/original/getting-on-board.pdf?1300394226> [Accessed 19 Jul. 2016].

Galla, A. "Rethinking Emergency Preparedness for Museums", in ICOM ed. (2003). *Cultural Heritage Disaster Preparedness and Response*. Paris: International Council of Museums. Available at: [http://archives.icom.museum/disaster\\_preparedness\\_book/intro/galla.pdf](http://archives.icom.museum/disaster_preparedness_book/intro/galla.pdf) [Accessed 20 Jun. 2013] p.17.

Museum of New Zealand Te Papa Tongarewa. *A Guide to Guardians of Iwi Treasures He Tohu ki ngā Kaitiaki o ngā Taonga-ā-iwi*. (2001). 1st ed. [ebook] Wellington: Museum of New Zealand Te Papa Tongarewa. Available at: [https://www.tepapa.govt.nz/sites/default/files/8-a-guide-to-guardians-of-iwi-treasures\\_0.pdf](https://www.tepapa.govt.nz/sites/default/files/8-a-guide-to-guardians-of-iwi-treasures_0.pdf) [Accessed 20 Feb. 2017].

ICOMOS. (1996), *Tourism at World Heritage Sites: the Site Manager's Handbook*. [online] Available at: <http://www.icomos.org/publications/93touris1.pdf> [Accessed 14 Aug. 2017].

Museum of New Zealand Te Papa Tongarewa. (2001). *Emergency Procedures*. [online] Available at: <https://www.tepapa.govt.nz/sites/default/files/7-emergency-procedures.pdf> [Accessed 20 Oct. 2016].

Museum of New Zealand Te Papa Tongarewa. (2001). *Minimising Disaster He Rauemi Resource Guide*. [online]. Available at: [https://www.tepapa.govt.nz/sites/default/files/6-minimising-disaster\\_0.pdf](https://www.tepapa.govt.nz/sites/default/files/6-minimising-disaster_0.pdf) [Accessed 24 Mar. 2016].

Museum of New Zealand Te Papa Tongarewa. (2001). *Preventative Conservation He Rauemi Resource Guides*. [online] Available at: [https://www.tepapa.govt.nz/sites/default/files/5-preventative-conservation\\_1.pdf](https://www.tepapa.govt.nz/sites/default/files/5-preventative-conservation_1.pdf) [Accessed 24 Mar. 2016].

Office of the Auditor-General. (2006). *Management of heritage collections in local museums and art galleries*. [online] Wellington: Office of the Auditor-General. Available at: <http://www.oag.govt.nz/2006/heritage/docs/heritage.pdf> [Accessed 30 Jun. 2016].

Weichselgartner, J. (2001). Disaster mitigation: The concept of vulnerability revisited. *Disaster Prevention and Management*, 10(2), 85-94. [online]. Available at: <http://search.proquest.com.ezproxy.canterbury.ac.nz/docview/214378175?accountid=14499> [Accessed 1 May 2017].

UNESCO., et al. (2010). *Managing Disaster Risks for World Heritage*. Paris: United Nations Educational, Scientific and Cultural Organization. Available at: <http://whc.unesco.org/en/managing-disaster-risks/> [Accessed 30 Jul. 2016].

## **Interviews and Correspondence**

All interviews are held by the author.

Blair Jackson, Christchurch Art Gallery Te Puna o Waiwhetu. Interview. 23 November 2016.

Kelvin Nolly, Canterbury Museum. Interview. 25 November 2016.

Moya Sherriff, Air Force Museum of New Zealand. Interview. 14 December 2016.

## **Pamphlets/Magazines**

Harper, J. (2015). *Director's Foreword*. Bulletin (179). Christchurch: Christchurch Art Gallery Te Puna o Waiwhetu.Christchurch. p.4.

Harper, J. (2014). *Director's Foreword*. Bulletin (177). Christchurch: Christchurch Art Gallery Te Puna o Waiwhetu.Christchurch. p.4.

Harper, J. (2011). *Director's Foreword*. Bulletin (165). Christchurch: Christchurch Art Gallery Te Puna o Waiwhetu.Christchurch. p.4.

Harper, J. (2010). *Director's Foreword*. Bulletin (163). Christchurch: Christchurch Art Gallery Te Puna o Waiwhetu.Christchurch. p.4.

## **Government Policy**

*Policy for Government Departments' Management of Historic Heritage*. (2004). Wellington: New Zealand Government Printing Office. [online] Available at: [http://www.mch.govt.nz/sites/default/files/Policy%20Historic%20Heritage%202004%20%28D-0654735%29\\_0.PDF#overlay-context=research-publications/our-research-reports/policy-government-departments-management-historic-heritage](http://www.mch.govt.nz/sites/default/files/Policy%20Historic%20Heritage%202004%20%28D-0654735%29_0.PDF#overlay-context=research-publications/our-research-reports/policy-government-departments-management-historic-heritage) [Accessed 23 Jul. 2016].

## **Video resources**

*Emergency Preparedness for Museum Collections*. (2007). Northeast Museum Services Center. [online] Available at: <https://www.youtube.com/playlist?list=PLFB5E3A6B21EBA8BE> [Accessed 30 Jul. 2016].