

Mapping Memories in the Residential Red Zone



GEOG 402 Resilient Cities: Group Research Project

Laura Quaid, Khiem Nguyen, Talia Ellison, Xolile Ncube

Department of Geography, University of Canterbury

Executive Summary

The objective of this research is to understand how we can best capture and present collective and individual memories of the Residential Red Zone (RRZ). RRZ refers to the area in the East of Christchurch, categorised by significant land damage as a result of the 2010 and 2011 Christchurch Earthquakes, which deemed the land unsuitable for residential use for a prolonged period. The results were informed by a study of literature into the sense of place, social memory, archiving, and GIS. We used qualitative semi-structured interviews to collect stories that capture the sense of place of living in this area and secondly, to understand the importance of preserving the memories of the red zone. This study also focused on how to best capture, document and share memories based on the desired outcomes from the perspective of the community.

We used snowball and purposive sampling for the selection of participants of former residents of the Residential Red Zone. A total of eight (8) people were interviewed. Some in their individual capacity, others on behalf of the community and some were interviewed as individuals and they also represented the community. The community members interviewed expressed a keen desire to preserve and archive the memories of the RRZ. Participants expressed a desire for the memories to reflect the sense of place prior to the earthquakes and the way the community strengthened following the disaster, and the lessons that could be shared about the process of recovery. It was indicated that the format should be location based and should incorporate the aspects of nature. There was also a desire to include images and videos. It was important to have the memories shared with the wider community. The stories gathered during the interviews were used to populate a survey on Maptionnaire, which is a participatory geospatial tool. The stories and photographs collected during the interviews were linked to spatial locations on Maptionnaire and the link to the survey can now be shared on social media for further population.

Table of Contents

1. Introduction.....	4
2. Background.....	6
3. Methods.....	7
3.1 Research Approach.....	7
3.2 Sampling Method.....	7
3.3 Ethics.....	8
3.4 Maptionnaire & Community Stories.....	8
4. Results.....	9
4.1 Characteristics of the Participants.....	9
4.2 Archiving the Memories of the Residential Red Zone.....	10
4.3 Creating Stories.....	13
4.4 Sense of place and Community.....	14
4.5 Earthquakes Strengthened Community.....	15
5. Discussion.....	15
6. Further Development of the Research.....	17
7. Limitations.....	17
8. Conclusions.....	17
Acknowledgements.....	19
References.....	20
Appendix.....	22

1. Introduction

Following the series of earthquakes and aftershocks that struck the greater Christchurch area, the Earthquake Commission gathered a significant amount of geotechnical information about the magnitude of the damage that had occurred to the land in the East of Christchurch. The government released this information to help insurers and property owners come to terms with the effects of these earthquakes, and to determine the viability of repairing the land, infrastructure and housing on the 'East side'. Residents in the worst affected areas faced lengthy negotiations with insurers while still living on unstable land, many in damaged housing with little or no access to power, water and sewerage. The decision to 'Red Zone' the land was made based on the state of the land and the length of time it would take to address the various issues within this area (Regenerate Christchurch, 2016). According to a report written by the Human Rights Commission, approximately 5,314 residential properties were 'red zoned' (Human Rights Commission, 2016). Over 7000 households were displaced as a result of the earthquakes (Statistics NZ, 2014), in an area that was previously home to a series of suburbs and a number of communities that followed the Avon River from Avonside to New Brighton.

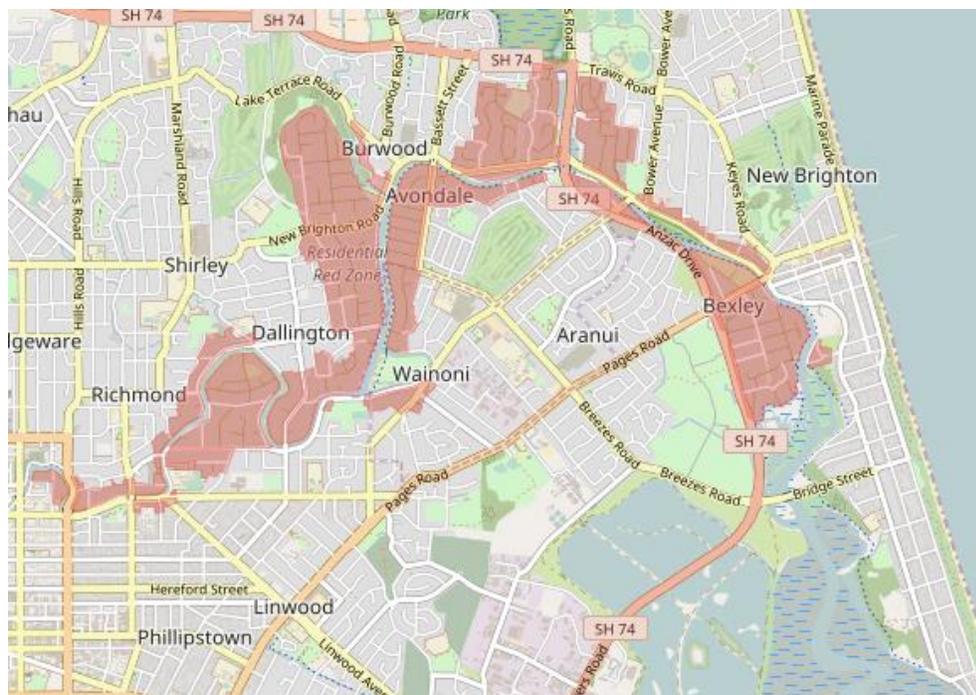
Following the earthquakes, the demography of Christchurch city changed significantly. While the population within central Christchurch decreased, the population in Selwyn and Waimakariri increased (Statistics NZ, 2013). In addition, there were 36.6 percent fewer occupied dwellings in central Christchurch in comparison to 2006 and two-thirds of the population in the damaged areas of Christchurch relocated to other areas within the greater Christchurch area (CERA, 2016). It is clear from these statistics that the earthquakes caused significant and ongoing disruption to the livelihoods of those residents from the most affected areas.

In order to enhance community resilience, it was decided that the land would no longer be suitable for residential use. Entire communities were displaced and caused significant disruption to individual and collective place attachments. The experience of disaster strengthened the sense of community across this area, and many ex-residents still engage through community events and by contributing to the future of the RRZ. A number of residents have expressed their desire for the memories of the RRZ to be recorded and presented in a meaningful way. Ideally, this could be a way of maintaining the sense of community that existed prior to the earthquakes and as a

way to share experiences of living in the RRZ both during the earthquakes as well as after, and to give residents the opportunity to share their desires for the future of the RRZ.

The aim of this report is to understand the best way to capture and present the memories of the RRZ in a format that can be further populated and shared with the wider public. This report was compiled in response to the request from members of the Avon-Ōtākaro Network to develop a map that portrays the memories of the RRZ. It is hoped that this resource will be a place in which stories, videos, and photos can be uploaded and geotagged to a specific geographical location on a map.

The research group performed a literature review with a focus on ethnographic research, sense of place, archiving and social memory. The primary objective of this research is to portray the lived experiences and narratives of individuals and communities who were displaced from the RRZ after the 2010 and 2011 earthquakes. This involves combining primary and secondary information to capture the social and environmental landscape of these communities and, to develop an interactive resource for the wider community that stores and encourages the sharing of memories within this spatial area.



Map 1: The Avon-Ōtākaro Interactive Map (Avon-Otakaro Network, 2014)

2. Background

Sense of place refers to the ways in which an individual perceives their surroundings (Kudryavtsev, Krasny, & Stedman, 2012). Adams (2013, p. 49) summarises sense of place as “the lens through which people experience and make meaning of their experiences in and with place”. This is shaped by an individual's experience in a place, within its natural and built elements and through that individual's social and personal connections (Scannell & Gifford, 2010). Sense of place is crucial in fulfilling fundamental human needs; therefore, places are important in shaping identity, behaviour and wellbeing (Brown & Perkins, 1992). However, a disruption to an individual's connection to place and a disorientation away from previous infrastructure, community connections and resources can threaten livelihoods and identity (Cox & Perry, 2011). Cohen, Meek, & Liebeman (2010) stated that the memories of a previous sense of place can be used to maintain an emotional connection to place and a sense of community. Memories are usually shared through stories and photographs, which contain important experiences that have accumulated for several generations. Some stories have value in general (Colten & Sumpter, 2009), while others are more specific because of their cultural and social foundation (Cohen et al., 2010).

If information is not preserved, the wider community will not understand the social memories of an area that no longer exists in its previous state. Archiving, the process that involves documenting and preserving historical data, is important in capturing and preserving the social memory, through imagined and actual lived experience (Blouin, Rosenberg, & ebrary, 2010). Information such as digital photographs, locations, voice and video clips and stories can be collected through Geographic Information Systems (GIS). The information captured in a GIS can be utilised to convey meanings, feelings, memories and emotions (Kwan, 2007), and to represent the past, present and future (Elwood, Goodchild, & Sui, 2012). Maptionnaire is a Public Participatory GIS, which can be utilised to create map-based questionnaires, collect and store interview data as well as other materials. Maptionnaire can also be used to analyse data, produce reports and provides a platform to share the results promoting discussion and learning. Maptionnaire is compatible with mobile phones and tablets (Kahila & Broberg, 2017). It is against this background of literature study that the capturing of memories of the RRZ using a

geospatial technology (Maptionnaire) is possible and has the potential to deliver the desired results for the project.

3. Methods

3.1 Research Approach

For the project, we utilised the qualitative research method, to answer the question “How can we best capture and present the memories of the RRZ?”. Semi-structured interviews were conducted with members of the RRZ. The interviews were casual, they were more of a discussion where we used open ended questions to prompt participants to talk about their experiences before, during and after the earthquakes. The aim of the interviews was to:

- Collect and capture descriptive information about the lives of participants while they lived in the RRZ
- Gain an understanding of the importance of documenting and preserving the memories of the red zone
- Understand how former RRZ residents would prefer their memories captured and shared
- Gain an understanding of the desired outcome of documenting and sharing their stories

The information our interviews captured was mainly shaped by our literature review of the concepts of ‘lived experience’, ‘sense of place’ and ‘archiving’. Initial discussions with our community partner and our first two interviews further guided the structure of the interviews. It is with this background information that we decided it was important to capture the sense of place prior to the earthquake, how this changed through the experience of disaster, and to capture the vision of the future of the red zone.

3.2 Sampling Method

The sampling method used for this project was two pronged, we used purposive and snowball sampling. For the purposive sampling method, we obtained key names from our community partner, a resident and member of the Ōtākaro Avon Network. We also utilised the snowball sampling method, where we asked residents and community networks to share information on our research project with their networks, this brought forward suitable participants willing to share their stories. Through this methodology we gained 8 participants that could speak as

individuals and also represent the community. This was an appropriate number to gain a range of perspectives from the community, and to build a foundation for sharing of stories in the future.

3.3 Ethics

As this research project was completed as a requirement for the course ‘Geog 402 research project’ blanket ethics approval was granted. Participants were asked to sign informed consent forms and agreed to have their story used in the project. Participants were told that it is desired that the final output of the stories would be shared online, and possibly used in the presentation. As participants had already agreed to participate in, and support this research project, most were already willing to share their stories and to have them used online. As the project did not provide confidentiality, the stories would be linked to their name, this meant only people willing to provide this were participating. People were given the choice for their transcript to be used only for analysis in the report, and to remain confidential, if they were not comfortable with having their story linked to their name. Participants would be given the option to view their story before having it used in the final product.

3.4 Maptionnaire & Community Stories

In-depth stories were produced from the transcriptions of the semi-structured interviews, we were able to utilise the stories to produce a booklet that could be distributed back to the community and to become a tool for others to know about, and participate in our project. The interviews also helped us answer the question “How can we best capture and present memories of the RRZ?”. Respondents were asked to indicate how they would like their stories archived and shared, why they think this it is important to do so, and the desired outcome of preserving the memories of the RRZ. This information helped us to form conclusions on the desired outcome. The stories themselves helped to reveal the common aspects that should be preserved within stories of the Red Zone. These aspects formed a series of questions that would be used to form the Maptionnaire interface, for others to add their stories to the database. Data from interview transcripts was used to fill out a separate questionnaire for each participant. On Maptionnaire we could link each story with the location of the household in the RRZ and we could also upload photographs for each story (Output displayed in Figure 2). The link to the questionnaire will be shared with our community partner who can also share it on social media and with his networks so that those interested in the project can go on to also share their stories on the platform.

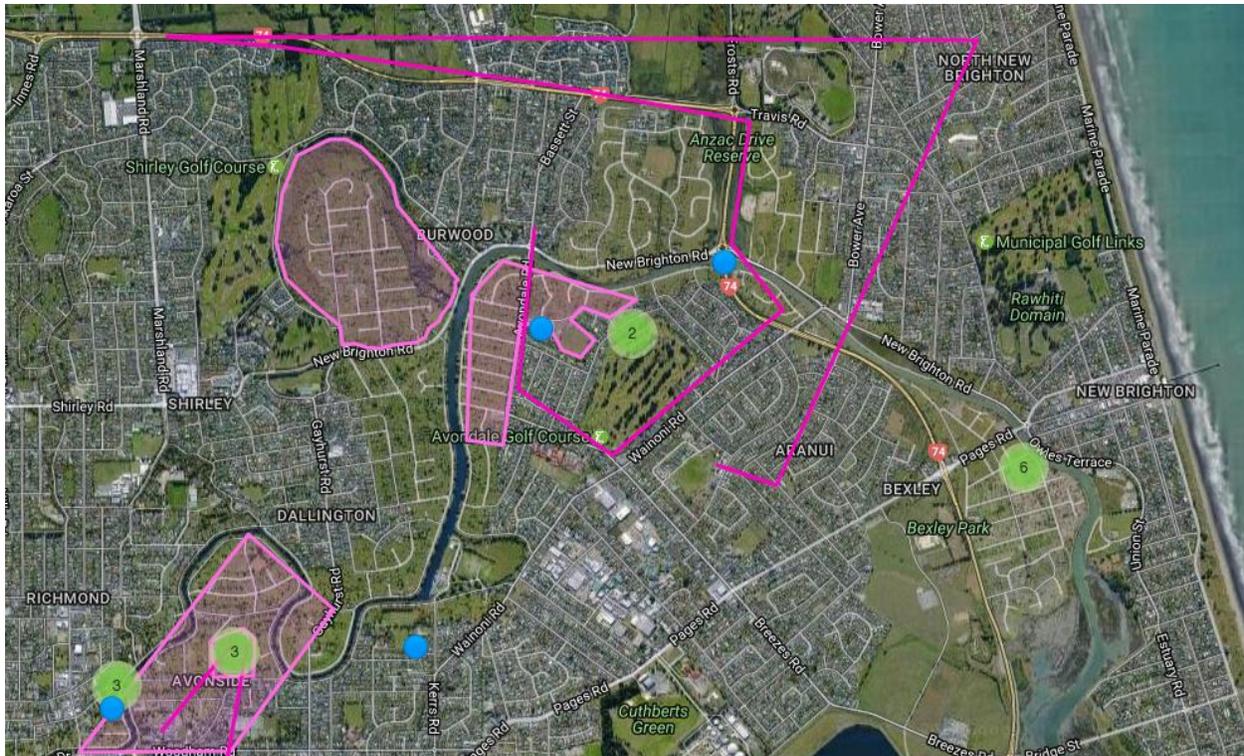


Figure 2; Maptionnaire Database Displaying Stories of the Red Zone

4. Results

4.1 Characteristics of the Participants

Interview respondents included 8 participants who identified with living in the area now defined as the ‘Residential Red Zone’. Participants were asked to speak on behalf of their community, or on an individual sense, or both. This produced 13 stories that can be geographically linked to a residential location, aspect of the environment, or community. Participants were not asked to identify their demographics, due to the qualitative nature of the study. However, all of the residents reported living in the Red Zone for over 8 years, with a large proportion living in the East of Christchurch for a majority of their life. A number of participants were older, living in the area with families until the Earthquakes. A majority of our participants were suggested by our community partner Evan Smith, from Avon-Ōtākaro Network, who was involved with these residents over his time living in the community, and the community groups formed following the earthquakes. A number of the respondents were a part of various residents associations, the group CanCern, and other informal community groups. Some of our participants offered different cultural perspectives, others were able to reflect on their childhood in the community,

and therefore the stories were varied and also revealed commonalities. Through the process of interviewing individuals and community representatives, important aspects of recording memories, the parts of the process that people wanted to be shared with future generations, and how best these memories can be displayed were revealed.

4.2 Archiving the Memories of the Residential Red Zone

The first objective of the semi-structured interviews was to understand the community members' perspectives on the topic of 'archiving' and 'social memory'. The group sought to understand the importance of documenting and sharing memories, how this could best be done and the desired outcome. Some quotes from participants that effectively answer the following questions have been analysed.

We asked the question:

“Do you think it is important to document and share the stories of the red zone? Why?”

Quote	Theme
“There’s history there, there are some people in my community that just know a lot”	History, archiving, maintaining a sense of community
“We should capture how the community came together, and overcome the disaster.”	Community strengthening after a disaster, recovery processes
“Sharing my story gives me a chance to celebrate when you are faced by this empty piece of land. This has brought back a lot of memories.”	Celebrate the memories of the area

When interviewing participants on a community sense, commonalities about the importance of documenting and sharing the memories was revealed. Participants revealed that it would be important to some community members more than others. Some residents are still involved in the area significantly more than others, for some the recovery process meant moving on from the area, therefore, documenting stories would not be as important to some members of the community.

A common response in most of the stories was about maintaining the sense of community of the area. The main importance of documenting the memories was to capture how the community came together through the recovery process. This process was thought to be valuable to the learnings of other communities and would increase resilience.

Some participants who were interviewed on an individual sense, focused the answers around the idea of preserving the identity of the area. Individuals expressed that it was important to them that the wider community knew about what their suburb was like prior to the earthquakes. Many residents spoke about the misconceptions that the wider Christchurch had about the eastern suburbs. Individuals felt that by documenting and sharing their story they could spread and preserve the true identity of the area. It was important in capturing the history of the area and the sense of place. Individuals also felt that it would be important to them on a personal level, it would help them to preserve their land by tying their stories to locations of meaning.

How do you think the memories of the red zone should be recorded?

Quote	Theme
“We want to get a plaque made for our Totara tree on our property that says ‘Campbell Family’”	Use nature to preserve memories, maintain a sense of the location
“We would use the idea of an online interactive map to document the stories, it would be lovely”	Interactive
“Soon after I read a book called shock doctrine, reading that and the documentation of disasters, Katrina and tsunami that was helpful for me realising that we are in a process that we have to work through to recover.”	Books, documenting process of recovery
“More books, pictures... visualizing the memory. I would love the memories to be preserved. They can use them to show the next generation how beautiful it was in the Red Zone, and also lessons from earthquake.”	Books, preserve memories, show others what the red zone was like

“Need to document about stress in disaster and how this affects people long term”	Stress, process of recovery
“I think I would like it presented as a warm loving community that was very productive and always thinking ahead. We were always thinking what was the next project we were going to take on”	Capture the sense of community
“A database of community stories”	Database, stories

Participants revealed a number of interesting ideas about how the memories of the red zone should be collected and archived. It was important for the stories to be visual, incorporating, videos, images and stories of the red zone. It was also thought an interactive resource would be beneficial, as this would allow other people to add their stories, and share the stories with a wider community. A location aspect was mentioned, with spaces being important to the sense of community, these locations are no longer recognisable therefore could be recorded within an interactive resource. Individuals who spoke about their role in community organisations expressed that the way these organisations were formed and operated through disaster should be documented and the knowledge could be applied to other communities.

Other ideas about expressing the sense of place were revealed by the community, firstly, an app which could be used when walking around the red zone. A bus tour around the red zone was said to be important for increasing knowledge about the area. Information boards, that talked about the history of the area, trees could also have plaques that state the family who planted the tree and lived on the property. Nature was very important within the memories. Participants indicated that by reading books about disaster recovery and community strength they learnt about the process of recovery. Therefore, using books to express the stories of community is also one of the suggestions from community. When we discussed the potential of using GIS software such as Maptionnaire, people responded positively, saying this could be used and would effectively capture and share the memories.

What would be the desired outcome of documenting and sharing the memories of the Red Zone?

Quote	Theme
Hopefully it will help other people work through it and know what happened.”	Share knowledge of disaster recovery
“The way the community came together in disaster could be useful in improving community connectedness in everyday life”	Apply ideas of community recovery to everyday life
“Sharing what the community was like, Bexley was not a suburb it was a home”	Increase awareness about what the area was like
“We want people to know what the Red Zone was like”	Increase awareness about what the area was like
“How many people are maintaining a connection to the area and found that helped with their recovery”	Recovery processes
“To keep the identity of the area”	Share the identity

The desired outcome of preserving and sharing the memories of the Red Zone was to maintain an identity of the area. People felt a huge sense of affection for the area and it was hoped that a GIS resource would help to preserve the stories and lived experience within the area. It was also hoped that by preserving the experience of disaster, and the process of recovery, the memories would increase the resilience of other communities.

4.3 Creating Stories

The second objective of the semi-structured interviews was to understand the important values to the community through the process of creating a story from a few key community members. We asked residents about their experience of living in the East of Christchurch, their sense of place, the process of disaster, and ideas about the future of the red zone. The objective of this was to

firstly, gain initial stories that could later form an interactive resource that can be added to, and secondly, to gain an understanding of the important values of the community, which would later shape the format of future stories (Questions displayed in figure 3 & 4) Generalities were revealed from the stories, including the sense of place, and the lessons that could be shared through disaster recovery.

4.4 Sense of place and Community

“Everybody knew everybody”
“The river was a real asset to the community”
“Quite a few of the residents lived there for over 50 years”
Describes it as a “small village”, community members knew each other well

It was important for residents to mostly focus on their lives in their Eastern community. Residents enjoyed retelling their history, with a majority of residents speaking of their experience of living for about 30 years in one home or suburb. This meant people had a strong connection to the environment, their homes, gardens and the surrounding community. Nature was a significant part of the stories. Many residents said their main motivation for living in the area was the proximity to the river, and the abundance of wildlife and green space. The proximity to amenities was also an important factor in these stories. For many, interview respondents they raised families in this area, therefore it was crucial for the stories to reflect on positive family lives in this area. This focus may have been different if residents had only lived in the area for a short time. It was desired to focus on these memories when sharing their stories as this was

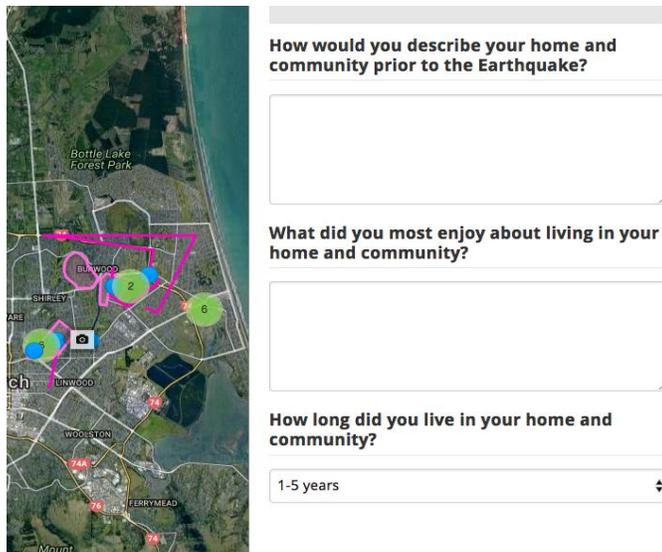


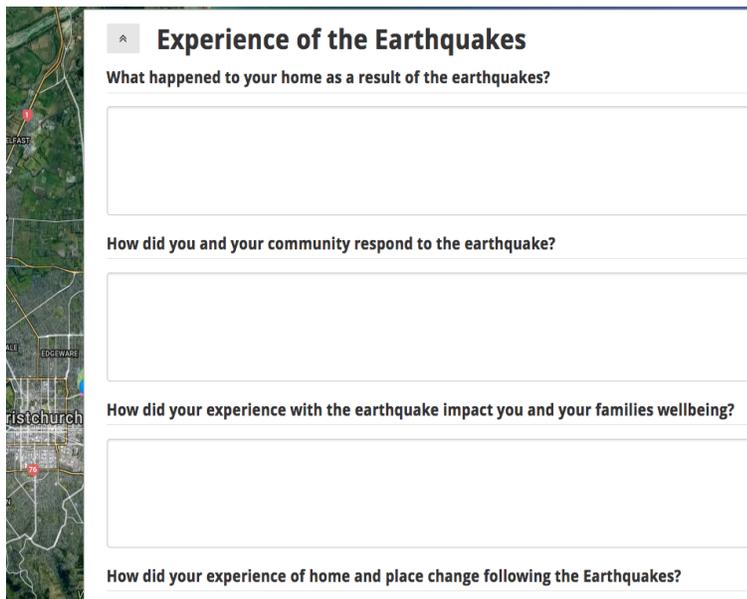
Figure 3; Maptionnaire Questions: Sense of Place and Community

positive and provided insight into the community prior to red zoning. It was believed that this would also provide a learning experience for others.

4.5 The earthquakes strengthened the community

“You do more for people you know”
“The community shared whatever they had”
“The community was well connected and immediately began gathering to discuss the future”

When speaking about the earthquakes the focus was mostly on how the earthquake strengthened the sense of community and support, or created a new sense of community, through formation of community networks and support. Residents spoke about getting to know their neighbours more after the earthquake as they immediately checked on each other, shared food, resources and bonded over a shared experience. One participants said, “The community shared whatever they had” and another stated “The community was well connected and immediately began gathering to discuss the future”. The sense of community was crucial in the long-term process of recovery.



Experience of the Earthquakes

What happened to your home as a result of the earthquakes?

How did you and your community respond to the earthquake?

How did your experience with the earthquake impact you and your families wellbeing?

How did your experience of home and place change following the Earthquakes?

Figure 4; Maptionnaire Questions; Response to Earthquakes

5. Discussion

Our group found that semi-structured interviews were valuable in understanding and capturing the memories of residents in the RRZ. The personal interviewing style allowed for informal conversations to take place. The questions were shaped by the participant and interviewers' conversation. These conversations revealed the aspects of memories that were most important to this group to preserve and share with the wider public. The initial focus of the interviews was to reveal resident's perspective on the process and output of archiving the memories of their prior community.

Even though our sample size was small the information obtained, helped us to understand how residents from the area would like their memories archived and shared, why this is important to them and the desired outcome of creating an archive of memories would be. People stated that they would prefer an interactive visual resource such as Maptionnaire, as location and the natural environment were revealed as important aspect of their memories. Other ideas expressed by the residents, showed the significant desire for the community to be involved in the future planning of the red zone, in a way that preserves the identity of its prior state.

Residents found the process of reflecting on their memories valuable for their own wellbeing. The focus was no longer about the devastation of the earthquakes, but rather about the lessons that can be learnt from their experiences, and capturing the identity of communities that have and will be altered significantly. Initially, there was an option to utilise Maptionnaire to gather the stories, through a questionnaire format. However, in reflection this would not have allowed such an understanding of how the community would like their stories to be preserved, and would not have resulted in the production of such rich and insightful stories.

These initial interviews also allowed us to understand the format that these stories should follow, including a focus on the 'sense of place' prior to the earthquakes as this was an important part of resident's social memory that could be lost due to the changing environment. Residents were able to reveal what the environment was like prior to settlement, and the sense of the community. Residents chose to recall their memories of the earthquakes in a way that could be utilised as a learning experience for others. Residents fondly spoke about how the community strengthened following the disaster. The increased support of the community assisted the recovery process. Therefore, residents hoped that this information would help the recovery of other communities.

Maptionnaire, can be an effective tool for this project going forward in reaching a wider community to share their stories. The values expressed by participants in the stories helped us to shape a range of questions in the Maptionnaire application. As these ideas were developed with the community in mind, it is hoped that these will generate valuable stories. The initial stories are hoped to act as encouragement for the wider community to be involved in the process of archiving and sharing memories.

6. Further Development of the Research

This project aims to provide the research behind the best way to capture and present the memories of the RRZ. We advise that there are several factors to consider, in the continuation of this project.

Firstly, it would be beneficial to get feedback on the initial stories produced and the output of Maptionnaire as the basis for gathering future stories. Community consultation could involve an event to share the initial stories gathered, and the opportunity for others to add their stories to the database. This would reveal the perspectives of the wider community on the process. It would be interesting to see if other community members reveal similar values in their stories. It is possible that our initial stories have a bias towards a particular experience of disaster due to the high proportion of participants being involved in the community for a long-period of time. When preserving the memories, it could be possible that future respondents may wish to focus more on the process of disaster. However, it was our intention (shaped by our previous interviews) to focus on sense of place prior to the earthquake.

Secondly, existing projects that have attempted to record the memories of the red zone should be consulted and possibly included within the database.

7. Limitations

This section includes a brief overview of the main limitations of our research project including the process of capturing and preserving memories;

- Recruitment of Participants - The participants involved in this research project are not necessarily a demographically representative sample for a number of reasons, including the scope of the project, time constraints and the spatial dispersal that occurred as a result of the earthquake. Our primary method of recruitment was through the networks of our community partner and as such is likely to produce a bias towards a certain experience of disaster.
- Similar Projects - There are a number of similar projects that also aim to archive memories of the RRZ. We acknowledged their contribution to the broader archiving of the memories of this area and as a result chose to focus on aspects that they excluded to allow collaboration in the future.
- Individual vs. Community Capacity - A number of our participants were also community leaders and as such it was difficult to separate personal experiences and community experiences due to the fact that these community leaders who were, and some still are, heavily involved in their communities.
- Privacy - Concerns around privacy raised further limitations. During the data collection process we realised that while some participants might be open to sharing their stories with us, this does not necessarily mean that they are comfortable sharing their stories with a broader group or the public. As such, this is an area that will require consideration in future, especially given the fact that Maptionnaire uses geotags to attach responses, narratives, photos and other forms of media.
- Maptionnaire - An expansion of this project requires greater capacity and GIS capability to further develop Maptionnaire as a means of archiving and preserving memories. It is important that any expansion of this project is done in a way that ensures that Maptionnaire is very user friendly.

8. Conclusions

This report was compiled as a way of undertaking analysis of the data collected throughout the Mapping Memories group project. There were a number of key themes that emerged from the interviews that were conducted with individuals and community representatives who were affected by the ‘red zoning’ on the East of Christchurch.

Overall, participants expressed a keen desire for the memories of the RRZ to be preserved and archived in meaningful ways. In particular, participants felt that it was important for these memories to reflect both the sense of place prior to the earthquakes, as well as the ways in which community cohesion was strengthened as a result of the earthquakes. Participants also highlighted the importance of ensuring that the lessons learnt throughout this process could be used to inform future recovery responses.

With regards to how the memories should be ‘mapped’, participants indicated the need to ensure that the format used to map these memories is location based and celebrates the natural environment of the RRZ. In addition, participants felt that media such as images and videos would be an invaluable way to collect, capture and celebrate these memories. While the semi-structured interviews produced rich and insightful narratives, the use of Maptionnaire could be an invaluable tool to efficiently and effectively increase more widespread community participation and engagement in this project.

9. Acknowledgements

We as a group would like to acknowledge the support and guidance of the following individuals. The process of engaging with a community was valuable and provided us with an insight into the livelihoods of residents of the East of Christchurch.

- Evan Smith- Our community partner
- The Department of Geography, especially Prof. Eric Pawson and Prof. Simon Kingham
- Rita Dionisio- Our supervisor throughout the project
- All of the interviewees for sharing your stories with us and allowing us to use them to create a story focused archive

References

- Adams, J. (2013). Theorizing a Sense of Place in a Transnational Community. *Children, Youth and Environments*, 23(3), 43-65. doi:10.7721/chilyoutenvi.23.3.0043
- Avon-Otakaro Network. (2014). The Avon Interactive Map. *Avon Otakaor Network*. Retrieved from <http://www.avonotakaronetwork.co.nz/resources/maps.html>
- Blouin, F. X., Rosenberg, W. G., & ebrary, I. (2010). *Archives, documentation, and institutions of social memory: essays from the Sawyer Seminar*. Ann Arbor: University of Michigan Press.
- Brown, B. B., & Perkins, D. D. (1992). Disruptions in Place Attachment. In I. Altman & S. M. Low (Eds.), *Place Attachment* (pp. 279-304). Boston, MA: Springer US.
- CERA. (2016). *Residential Red Zone Survey*. Retrieved from <http://www.dpmc.govt.nz/sites/all/files/publications/cera-rrz-surveyreport-feb2016.pdf>:
- Cohen, H. L., Meek, K., & Lieberman, M. (2010). Memory and Resilience. *Journal of Human Behavior in the Social Environment*, 20(4), 525-541. doi:10.1080/10911350903275309
- Colten, C. E., & Sumpter, A. R. (2009). Social memory and resilience in New Orleans. *Natural Hazards*, 48(3), 355-364. doi:10.1007/s11069-008-9267-x
- Cox, R., & Perry, K. (2011). Like a fish out of water: Reconsidering disaster recovery and the role of place and social capital in community disaster resilience. *American Journal of Community Psychology*, 48(3-4), 395-411.
- Elwood, S., Goodchild, M. F., & Sui, D. Z. (2012). Researching Volunteered Geographic Information: Spatial Data, Geographic Research, and New Social Practice. *Annals of the Association of American Geographers*, 102(3), 571-590. doi:10.1080/00045608.2011.595657
- Human Rights Commission. (2016). *Staying in the Red Zones; Monitoring human rights in the Canterbury Earthquake Recovery*. Retrieved from https://www.hrc.co.nz/files/9914/7804/9551/Red_Zone_Report_FINAL_-_201016.pdf:
- Kahila, M., & Broberg, A. (2017). Making Cities Wiser; Crowdsourcing for Better Decisions. Retrieved from https://www.fig.net/resources/monthly_articles/2017/kahila_etal_may_2017.asp
- Kudryavtsev, A., Krasny, M. E., & Stedman, R. C. (2012). The impact of environmental education on sense of place among urban youth. *Ecosphere*, 3(4), 29. doi:<http://dx.doi.org/10.1890/ES11-00318.1>
- Kwan, M. P. (2007). Affecting Geospatial Technologies: Towards a Feminist Politics of Emotion. *The Professional Geographer*, 59(1), 22-34.
- Regenerate Christchurch. (2016). Residential Red Zone. *Regenerate Christchurch*. Retrieved from <http://www.regeneratechristchurch.nz/residential-red-zone/>
- Scannell, L., & Gifford, R. (2010). Defining place attachment: A tripartite organizing framework. *Journal of Environmental Psychology*, 30(1), 1 - 10. doi:<http://dx.doi.org/10.1016/j.jenvp.2009.09.006>
- Statistics NZ. (2013). Census offers post-quake snapshot of greater Christchurch. *Census 2013*.
- Statistics NZ. (2014). 2013 Census QuickStats about greater Christchurch. Retrieved from <http://www.stats.govt.nz/Census/2013-census/profile-and-summary-reports/quickstats-about-greater-chch/population-change.aspx>

Appendix 1: Community stories gathered through interviews

These interviews were presented in a booklet format

No	Author	Title	Story
1	Helen and Allan Campbell	Bexley was "Christchurch's Best Kept Secret"	<p>48 years at 48 Orari Street! Helen and Allan loved living in Bexley because of the location and convenience, it was close to the sea, and they could enjoy the buzz of Saturday shopping in New Brighton. It was described as the perfect family home being close to local schools. Everything was handy, they liked being able to walk most places and make use of the nearby bus route. A daily walk to the New Brighton community library was Allan's form of exercise. The house was purchased for \$7000, the land had been described as a "baby farm". The home had lovely gardens and was over the road from the Avon River, they were able to build onto it over the years.</p> <p>Allan was actively involved in the Bexley resident's association, writing for the newsletter. There was a real sense of community for the family, which was enhanced by the facilities in the area. The couple states "everybody knew everybody". The area grew in popularity over the years an increase of renters changed the sense of community. People use to be surprised by their garden and</p>

			<p>home stating, “it was unusual to see professional people in Bexley”. Allan thinks this made the area a “best kept secret”.</p> <p>The February earthquake was described as “traumatic” and “horrendous”. Looking over at the home they saw glass and tiles coming down and liquefaction was rising up to their knees. The sense of community was critical to the wellbeing of the Campbell’s. Neighbours gathered together following the earthquake, to get updates and check on others well-being. Helen realises now if you are able to help somebody else, sometimes you feel a bit more in control.</p> <p>They were unable to stay in their home, it was difficult to access and was badly cracked. After staying with family, and temporary rentals the couple now lives in a brand new home, in the recently developed subdivision of Wigram Skies. They miss the convenience of everything in Bexley, and have had to get use to using the car to get around now. There is still a sense of community here, with a lot of the new residents, similarly displaced from the earthquakes. When speaking of the future for the red zone they think the land should be used for recreation, and as a way of increasing the amount of trees in the city. A café and an information centre as well as walking and cycling tracks are said to make the city unique.</p>
2	Brian Parker	Community Story Avondale	<p>The river was a real asset to the community, Brian from the community speaks about being able to walk up and down the river every day. The area was pretty quiet, and Brian states he was well connected with his immediate neighbours.</p>

			<p>Many people in the area were said to have the same motivations for choosing this river side suburb, easy access to shopping, recreation and close enough to town.</p> <p>Avondale experienced significant damage during the 2010 and 2011 earthquakes. The land and buildings were severely altered. The area was later declared a part of the residential red zone. Immediately following disaster people responded by connecting with their community. With a disruption to normal routine, due to no power, and time off work, people would spend their time helping others. Brian speaks about the expansion of 'we' following disaster. "The way people react after disaster, it's a common response, people just drop everything to help others. You have to become a part of people's lives, in a disaster your instinct to live, forces 'we' without realizing".</p> <p>Many people responded to disaster and helplessness by coming together to be a part of the solution. By joining the Canterbury Communities' Earthquake Recovery Network, Brian was able to connect with major insurers, council, and local bodies to bring them information from the community. The long term process of recovery was tough for this community but being able to help others assisted in recovery. "You have to have faith that people will cope and support and do the right thing at the right time".</p> <p>Brian speaks about his preference for the future of the Red Zone as being a community decision, with the majority agreeing on it. In times of disaster, people</p>
--	--	--	---

			<p>make very human decisions to cope with change and you have to have faith in the process.</p>
3	Glenda Burt	Community Story- Horseshoe Lake	<p>The community that nestled in the horseshoe of the surrounding lake had around 750 homes pre quake. It was a very stable community with many working families, singles and retired folk with quite a few of the residents having lived there for over 50 years. The Horseshoe Lake area was in the 10 minute commute zone – 10 minutes to the City, 10 minutes to the beach, 10 minutes to Marshland Road and great vegetables, 10 minutes to the road north and 5 minutes to Mall, Council services and the Library! Families were lucky to have choice in education for their children. There was also plenty of recreation opportunities with Burwood park, the lake, river and beach nearby. We were blessed to live in such a well-resourced pocket of the City.</p> <p>The Residents Association supported the interests of the community and still maintains a connection between residents. They worked with the Burwood Pegasus Community Board on planting days and enhancements for the Lake area, they were one of the first groups to host Carols in the Community and also combined with local groups to host the very successful Burwood Community Fair.</p> <p>After 2010 most of the area was red zoned with a small pocket of housing remaining. There were mixed feelings about this decision but that was all taken</p>

			<p>care of by the following earthquake in February 2011. It was clear to most that this area was badly damaged and that the ground was not suitable for housing. It was upsetting seeing the hastily loaded trailers leaving the streets each day. Some houses were relocated in the dead of night. Our residents group decided that our role was to help people move on to a new life. We encouraged them to take with them into their new communities the actions that had made Horseshoe Lake such a community minded area.</p> <p>The option most favoured by the residents group is the East Lake proposal. To us this seems a wonderful opportunity to turn a disaster into a positive experience – maybe not for us personally but for the future generations. A watersports facility so close to the centre of the City would surely be beneficial to many. We would sincerely hope that this land is not designated for residential use ever again.</p>
4	Tom McBrearty	A Lifetime of Memories by the River	<p>Tom has a strong connection to Christchurch, in particular the East, he lived most of his life in this area. He always knew he would return to Christchurch, bringing with him experience and knowledge. After moving several times, his family moved to a home overlooking the river, they lived here for 30 years. Tom understands the area so well that he could describe all the neighbors between Banks Avenue and Medway street such as one of the neighbors with three generations in the house because they love the area so much, another neighbor who lived there for 50 years, and the newest neighbor was there nine years, etc.</p>

			<p>Tom's house was built in 1896 on the corner of Banks Avenue, Dallington Terrace, and River Road. He believes that the people were very connected to the area so well that they know the birds would arrive on water in certain seasons, and the last leaves dropped into the river it was six weeks to spring. The house is not only the house, but it is also a memory place where his kids grew up, a massive cabbage tree and an old magnolia tree are. Most of the properties along the river didn't have a front fence so you could look out the river or catch up with your neighbors. He described that is a social network, but it was a non-demanding social network.</p> <p>Following the earthquakes, the land was significantly altered. A creek behind his property ended up above his property, and the Avon River was below his property, before the earthquake they were virtually level. The house, which had recently been strengthened twisted on its foundations. They struggled to get out of the house. It was important for Tom to check on neighbours, friends and family.</p> <p>Tom believes the red zone should be the ultimate corridor between the central city and new Brighton. He believes the river should be the focal point. There should be a combination of recreation and commercial activity. The area would attract tourists and locals with cycling and walking tracks through unique gardens. A gardener in residence, would enable cultural and temporal events in the red zone.</p>
--	--	--	--

5	Tom McBrearty	Community Story- River Road	<p>Tom McBrearty lived most of his life in the East of Christchurch. He has a strong connection to the land described as the “Sandilands”. This area between Christchurch and New Brighton was once characterised by a series of low sand hills. The dunes, river and forests were an ultimate adventure playground during his childhood. The area was eventually developed and became Vancouver Crescent, Wainoni.</p> <p>Driving through the mostly vacant area near the Avon river, Tom points out the sections that were once home to neighbours, friends and family. Living in the area for over 30 years, meant that he knew everybody on his street level. People living near the river, appeared to stay in their homes much longer than average. Tom’s street all had long tenure “our neighbour lived there for 40 years, Colin was there 35 years then 18 years and then 9 years, Di was there 50 years”. Residents were attracted to the natural wildlife, the river, the proximity to recreation, employment and shopping centres.</p> <p>Many of the houses alongside the river didn’t have a front fence, allowing people to look out and observe the changing natural landscape. The birds are said to arrive in certain seasons, the birdlife would change through the year, and when the last leaves dropped into the river you could tell it would be six weeks to spring. The river was definitely the focal point for the community. The kids would jump off a local weir, people would boat up and down and there was a local rowing club. The local shopping centre, The Palms, was developed through</p>
---	------------------	--------------------------------	--

			<p>community consultation and reflected the vision of the surrounding residents. Tom describes a community that was very involved and passionate about their area.</p> <p>The earthquakes altered this riverside community significantly, McBratneys road rose up a meter and river road went down by half a meter. There were large cracks running through the roads and properties. Following the earthquakes the community strengthened through increasing connectedness. Community organisations emerged.</p>
6	Tom McBrearty	Community Group- CanCern	<p>Following the earthquakes, a common community reaction was checking on neighbours. Tom McBrearty of Dallington did door to door checks making sure everybody was safe. There was a sense of anguish over losing property amongst the community. He could tell the immediate community was going to be okay, but they knew we had to look wider. The community was well connected and immediately began gathering to discuss the future. Some members from the community decided to set themselves up as an informal group to help the community. The group met every week in a local community space to focus on the needs of the community. Along the road, there was a real mix of people from different socioeconomic backgrounds. There were various levels of needs within the community.</p>

			<p>Tom knew they required processes and systems to record where assistance was most needed. From here, CanCern started with a group of community minded individuals each with different skills and networks. Over the next few weeks, Tom spoke to thousands of households throughout the community, they began setting up mini groupings to increase communication between neighbours. For every 8 houses 1 person was responsible. A system was set up where the group communicated with the one in eight, coming together every week to report on what was happening in the area. They were able to rank people based on their need knew who lacked food or water and who needed help. They knew they could provide Civil Defence and local government with knowledge that they didn't have.</p> <p>Lessons could be learned from the way that this Eastern Community responded to disaster, including how connecting individuals together allows for a sharing of skills and ways of doing things. Rather than pushing for immediate action, it was important that the group was able to discuss and think of the long term future of their red zone. This 8 in 1 theory could be used to improve community connectedness in everyday life. The system has since been applied to the small rural community of Oxford to increase connectedness amongst socially isolated older people. A scheme of urban gardening allowed for young people to be connected to older people to share skills, ideas and increase connectedness. The</p>
--	--	--	--

			DHB has said this extended the lives and livelihoods of older people in the community.
7		Community Spaces - Avebury House	<p>Avebury House is in the midst of Avebury Park on Couzins Avenue, Richmond, and was built in 1885. The house has been refurbished by the City Council and was recently established as a community facility. Following the earthquakes, this became a space for people to gather and discuss future possibilities.</p> <p>One community member discusses meeting neighbours in the park for fish and chips to check up on the wellbeing of others.</p>
8	Aileen Trist	Return Bexley Back to Nature	<p>“Mother nature giveth and taketh”, Aileen says as she talks about the earthquake that led to the red zoning of the suburb she called home for ten years. Aileen and her family resided at 21 Velsheda Street in Bexley Suburb and owned a home that overlooked the river and wetlands. The area where Aileen and her husband Toni built their home was previously a dairy farm. The house had great “indoor-outdoor living” for her and her family. Friends were initially worried when Aileen and her family decided to move to Bexley as the area had a bad reputation. They were however astonished by the tranquility and beauty of the area. The earthquake did not cause any damage to the family home, however the red zoning of the area left them no choice but to evacuate and build a new home in Parklands</p>

			<p>Suburb. Although they have settled in the new house which also allows for an “indoor-outdoor” lifestyle, it’s just not Bexley.</p> <p>Aileen recalls how on the night of the 2012 earthquake, her husband Tony woke her from deep sleep and told her that they were experiencing an earthquake. She recounts how the community rose into action and checked up on each other, how people made tea and gave a hand to those who needed it. The police patrolled the area and made sure everyone was safe. She also narrates how her son’s home which she describes as “his pride and joy” was also red zoned. They had planted a pine tree on the property which they watched grow to full maturity and Aileen fondly talks about how the wind would always blow off the top of the tree. It is on this tree that the family plans to place a placard with the family name to preserve the history of the land.</p> <p>She strongly feels that Bexley should not be rebuilt for residential purposes but should be “returned to nature”, keeping the name of ‘Bexley’ rather than the ‘red zone’. She suggests that it should be used for walking tracks that allow people to take in and enjoy the beauty of the natural landscape. Bexley “<i>was not just a suburb, it was home, it was a community home. It was not just brick and mortar but also sweat and tears</i>”.</p>
--	--	--	--

9	Melissa Kirby	Celebrate the area, celebrate nature, focus on the good	<p>Mella is an artist who grew up at 8B Halley Place in Avonside and resided there since the age of six months until her late twenties. The house remained in the family, being rented out. During the earthquake the house was severely damaged and had to be demolished. Mella’s dad, had a stroke in 2014 and passed on, Mella has no doubt that the earthquake, the stress related to insurance claims and building a new home contributed to his death. Neighbours who also lost their homes are faced with deteriorating health.</p> <p>What Mella enjoyed most about Avonside was the river and walking neighbours dogs. She has fond memories of walking with friends along the river, catching small fish, falling into the river and meeting ‘boys’ at the river. She misses the river environment and the community. Walking through the red zone where her family’s flat had been located Mella points out each vacant lot and names the people who lived there, all the neighbours knew each other well. She points out the famous “Green Box” (a big old CCC electrical unit), where she and her friends would hide to have a smoke and of course meet ‘boys’. Mella walks through what used to be her driveway and is towered by the tallest pine trees which she says were planted by her mother.</p> <p>Mella often walks around the red zone and takes photographs of flowers for her painting inspiration for her “Focus on the good” project. She suggests that the land be used for different activities including as a nature reserve, for rollerblading, mountain biking and coffee vans. She feels that she would be fine with the land</p>
---	---------------	---	---

			<p>being used for residential purposes as long as there is a guarantee of the safety of residents and homes. Mella tells of how her mother would like a park at their old house and suggests that there could be plaques or small sculptures (a sculpture park) relaying a story.</p>
10	Di Madgins	Community Story - Avonside	<p>Di Madgins is an avid gardener and columnist for a gardening magazine, which is evident by just looking into her garden at her new home. She eloquently gives a detailed account of the history of Christchurch and of her home at 373 River Zone, she draws a sketch as she tells of her neighbourhood. Di first moved to Avonside in 1970 and lived there for 30 years. The community was defined by the river, Di describes it as a “small village”. She recalls how she moved there with her first husband and two young children a neighbour knocked at her door and introduced herself to Di. Neighbour asked her what she could do to help her and gave her a list of names of all the neighbours. Right then Di felt a strong sense of community, knowing each other by name gave her a sense of belonging and wellbeing. Di states “You do more for people you know”. Di led the residents association and they had a database of community members and knew if individuals in the community had needs.</p> <p>Di remembers how the Avon River was used by the community for rowing and there were always dogs swimming in the river. She tells of how community members used to gather at the river, “by the bridge” Bill interjects. During</p>

			<p>whitebait seasons there would always be people camped around the river and Di says it was always the same people and laughs at how they would look older every year.</p> <p>After the earthquake, the community came together and looked out for one another. The street was closed after the earthquake and for the first few days they had no toilets, water or electricity. The community shared whatever they had, those who had artesian wells in their gardens shared water, food was cooked over barbeques and tea was also made for everyone who needed it. They have had reunions from time to time but people are getting older and more settled in their new neighbourhoods and the community connection they had is not as strong.</p>
11	Di Madgins	<p>Strong connections to the river</p> <p>Strong connections to the land and water</p>	<p>Di and her first husband bought a home at 373 River Zone in 1976, this was a working class area, their home was at the edge of the river and was badly damaged and they had to be evacuated after the earthquake. She and her husband Bill had and still have strong connections to the land and the river, she says of her relationship with the land “I didn’t mind losing the house but the land”. For Di the earthquake brought about a number of losses including the loss of her mother who passed after the first earthquake. Her husband also suffered from a stroke and she says the dynamics of their relationship have changed as she has become his caregiver. Some of the things which she depended on Bill to do, she has had to</p>

			<p>learn how to do for the both of them. “Big things happened and we had to come to terms with it”.</p> <p>Immediately after the earthquake Di and her husband moved to Hei Hei for eight months and moved back to their home which they fixed up (patched up), where they lived for a year and a half. After settling with their insurance suburb Di and Bill moved to Heathcote Valley. Bill and Di both feel that the land should not be used for housing and they would be very disappointed if it was. She would prefer the land be allocated to people to grow fruit trees and vegetables. She would like the land to have people come from all over the world to learn about new ways of recreating a city and respecting land.</p>
12	Evan Smith	Community Story - Evan Smith	<p>Evan Smith has a background in social housing and as such became a key member of the Avon Ōtākaro Network. Evan became actively involved in his community following the first earthquake and worked alongside others to address the concerns of residents in the Richmond area.</p> <p>During this time Aubrey House became a focal point for the community to discuss the future of the Residential Red Zone and ensure that the voices of those who were most affected by the earthquake were heard. Evan alongside Lianne Dalziel, Peter Buck and a number of activists were brought together by Brendon Burns a Christchurch MP and from this Evan developed the basis of a charter for</p>

			<p>community engagement. <i>“People came together because of the earthquake, resulting in lifelong friendships.”</i></p> <p>Due to the disruption to infrastructure following the earthquake, Evan and other community leaders relied on innovative ways to continue to address their concerns including telephone trees and the use of cellphones instead of computers because they were easier to charge and lasted longer. As a result of this Evan was contracted to work for the Avon Ōtākaro Network, where he currently still works.</p> <p>Evan is passionate about ensuring that the memories of the Residential Red Zone are recorded in a way that both honours the past and makes the Residential Red Zone a welcoming place. Evan also suggested the potential to create an app that allows people visiting the RRZ to see the memories of those who lived in the RRZ as they walk around.</p> <p>Evan said that the Residential Red Zone should tell a story of recovery, the history of the area and the effects of the Earthquake. He also thinks that there is a need to make it authentic, diverse and relevant.</p> <p><i>“It will be important for young people who were affected by the Earthquake to be able to reconnect with the Residential Red Zone and reconcile with the Earthquake in the future.”</i></p>
--	--	--	---

