Exploring the Wellbeing of Residents In Redcliffs in the Aftermath of the Canterbury Earthquake Sequence

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Executive Summary

Introduction

Following the Canterbury Earthquakes Sequence of 2010 and 2011, the population of Christchurch have suffered a great deal of loss to both lives and infrastructure. One of the hardest hit suburbs during these earthquakes was the area of Redcliffs in the South east of Christchurch city. Although Christchurch is on the road to repair, much uncertainty exists at all levels of society. In particular residents and those trying to help local communities have a lack of information of what is happening in their communities and information on the current state of the area. Through quantitative and qualitative research methods, our report has been conducted to provide data sets and information obtained from the Redcliffs stakeholders to assist future decisions and policies for an improved recovery rate in the community.

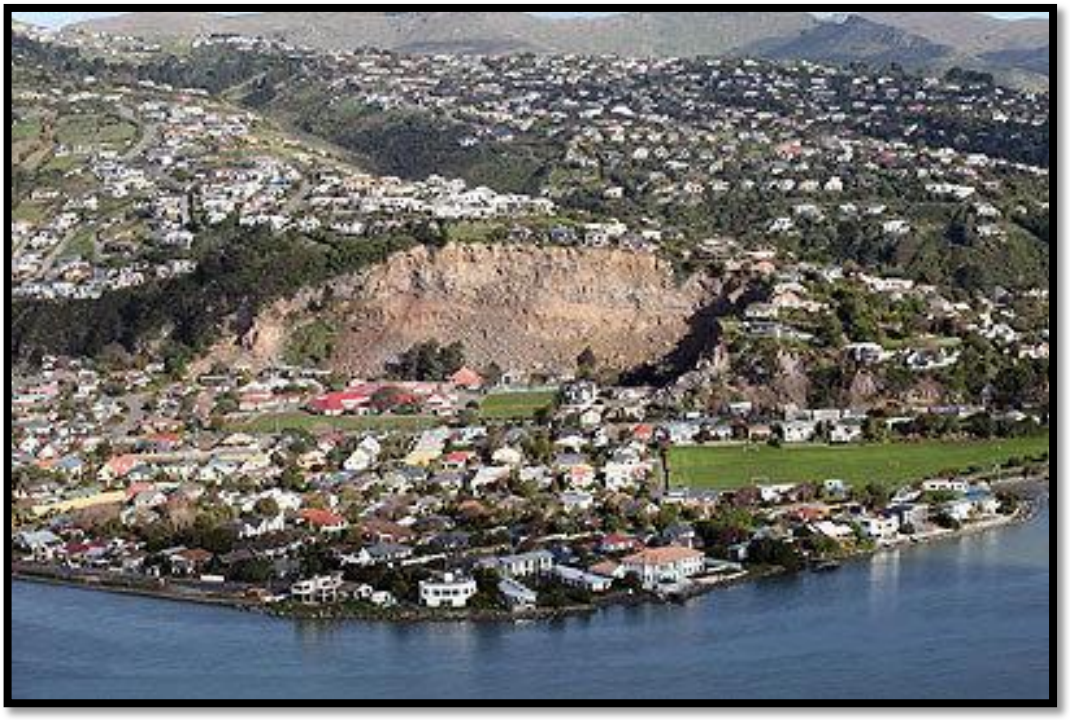

Figure 1: Redcliffs community after the Canterbury Earthquake Sequence

Impacts and Context

Significant loss of life, wellbeing, business and residential properties ensued following the 2010/2011 Canterbury Earthquake Sequence. The residents of Redcliffs went without water, sewerage and electricity for numerous weeks. Close proximity to the Port Hills fault has created ongoing seismic disturbances, difficulties and impacts on a personal and community scale.

Community Impacts

Research by Wilson (2012) has shown the impacts that a disaster may have on a community, and the corresponding resilience trajectories which may ensue. Following a disaster, three trajectories can be conceptualised. These being: (a) rapid readjustment and recovery, (b) slow readjustment and recovery and, (c) inadequate readjustment and recovery (Figure 1).

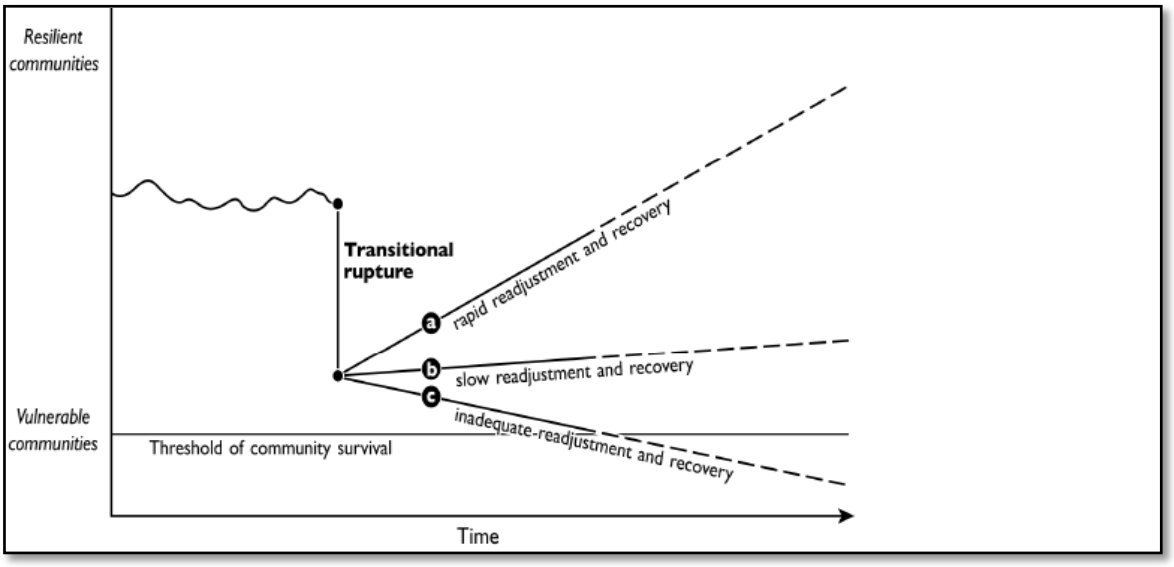

Figure 2: Resilience trajectories following a disaster (Wilson 2012).

Closure and Relocation

The closure of the Redcliffs Primary School, and temporary relocation to Van Asch School, Sumner occurred following the 22nd February 6.3 Magnitude Earthquake. This relocation has caused significant disruption within the local community. Instead of being within walking distance to Primary School, every morning these students have to commute to Sumner. The Kidsfirst Kindergarten and Redcliffs Library have also been closed and temporarily relocated following the 22nd February 6.3 Magnitude Earthquake. These facilities have been temporarily relocated, until a suitable permanent location can be built. These temporary locations are proving fruitful within the community.

Business Impacts

Many businesses have been disrupted following the Canterbury Earthquake Sequence. The Redcliffs New World has become permanently closed until further notice. This has resulted in the local residents of Redcliffs having to commute out of the area to obtain vegetables, groceries and other amenities. Fortunately the local diary has increased the range of groceries and food items available for the Redcliffs community. However, this is only seen as a short-term fix for a service which is sorely missed within the community.

Housing and Services Impact

Severe damage to housing has occurred within Redcliffs. Many houses immediately under the cliffs have become decimated by rock fall, resulting in significant loss of life and residential property. Most of the houses on top of the ridgeline have also become uninhabitable due to the imposing danger of the cliff face.

The road and footpath within Redcliffs has become very uneven following the Canterbury Earthquake Sequence. This has resulted in many parts of the road and footpath becoming unstable and unsafe.

Research Aims and Objectives

Our research aims to explore:

"To what effect have the Christchurch Earthquakes had on the Redcliffs community and local facilities, with particular reference to the local library and kindergarten, and to what effect can this be quantified?"

Previous research by Kimhi and Shamai, (2004) has analysed the resistance, recovery and creativity within a community following a disaster, with specific focal points on post disaster resilience. This research has given us an insight into the way communities respond and function following a disaster and will enable us to gain valuable insights for the Sumner Bays Union Trust (SBUT). Our research focuses on two primary objectives:

1) To quantify the change in overall population that has occurred following the Canterbury Earthquake Sequence, and the changes within this population.

2) To see how the use and views of key community assets has changed.

Methods

This section discusses the application of our chosen methodology for our Redcliffs community research project. Within this section we will outline the four different techniques that were used within this research. We will explain the key purpose of each method in relation to the mode of data we obtained. This data will be of assistance to the Redcliffs community, in aiding a successful recovery. The selection of our methods were established with a particular reference to our research objectives , which were alluded to above.

Our objectives were chosen based on what aspects of the Redcliffs community have felt severest impacts of the Canterbury Earthquakes Sequence. Some key areas of social uncertainty that were recommending to us by the Sumner Bays Union Trust: the lack of demographic statistics and the rehabilitation of community buildings: the three key buildings that we focused on was the Redcliffs public library, the Kids First Kindergarten and Redcliffs New World, all of which had been severely damaged from the Christchurch Earthquake. Both of these aspects were of a high importance to Redcliffs community as a collective, hence these two objectives became the primary rationale of our methodology.

To accomplish the objectives of our research we considered different modes of data collection when designing our methodology. In order to gather data sets that would successfully reflect our key objectives, we decided upon four methods to collect both quantitative and qualitative data. Each method would aim to collect different information and the prominent use of surveys would increase the reliability of our results (Spronken-Smith, 2005).

Our research group chose four different methods: A) a Census, B) local library survey, C) local business survey D) GIS Projection of Redcliffs Area.

A) Census

The Census was the primary method used within this research project. The mini census was set out in a quantitative format. This method considered the key objective of population shift within the Redcliffs area. In the aftermath of the Christchurch Earthquakes, we can infer that the Redcliffs population has declined, due to resident vacating the community. In order to define the geographic boundaries of our mini census sample area, we divided the Redcliffs community into 20 meshblocks: each of these contained the areas from which we collected our data, (Appendix A). The mini census has distributed manually, door to door by the five members of our research group. The mini census content focused on the number and age of

residents, employment status, the use of the three key community facilities (the library, the Kindergarten and the New World) and health and safety of the participant, (Appendix B).

B) Local Library Survey

The local Library survey was our research group's first qualitative data collection source. This method was an assessment of the usage rate of the Redcliffs local library, which has been relocated to a temporary premises, and thereby analysis whether it is necessary asset to the Redcliffs community. The survey was completed by 50 random citizens present at the annual monster book sale. The survey contained questions pertaining to the preserved value of the library to community and whether they wish to see it return to Redcliffs in the future, (Appendix C).

C) Local Business Survey

The local business Survey was our research group's second qualitative data collection source. This methods objective is to assess how the local businesses within the Redcliffs community have managed to continue operating in the economic climate after the earthquake. Our research group surveyed every business within the Redcliffs community, posing questions about the extent to which they had been affected by the Christchurch Earthquake, and why they view market confidence of Redcliffs businesses in the future (Appendix D).

D) GIS Projection of Redcliffs Area

Geographic information systems (GIS) is very commonly used within modern geography. This software can be used to digitally model urban and environmental landscapes. From the information that we gathered from our census, as well resident information from statistics NZ, we were able to create a series of digital maps, to depict trends within our the data as the data was spatially joined. The use of GIS projection of the Redcliffs area allowed the visuallisation and conceptualisation of our data in a far more effective and well presented format.

Results and Discussion

Census

In response to our primary objective to quantify the change in population we compared our Census results to data collected in the 2006 Census to serve as a pre-earthquake estimate. Of the 1004 homes in the Redcliffs area, as indicated by 2006 Census data, we successfully collected records for 765 homes (Appendix E). This included 230 uninhabited homes, and 508 full responses. Full responses (participants) could not be gathered from all respondents due to time constraints or an unwillingness to participate, in which case the recording of the population was prioritised. Of the 230 uninhabited homes discovered throughout our surveys; the results of earthquake damage, demolition, construction and fear for safety, only 124 were 'Red Zoned' (Appendix F). This inconsistency indicates that the impact of the Canterbury Earthquakes on Redcliffs has been much greater than the 'Red Zone' indicates. While the fear for safety in Redcliffs homes is likely the main driver for home abandonment, the state of some houses does indicate that some residents left by choice. The generally higher socioeconomic demographic that makes up Redcliffs would support this, with many residents having the economic option to leave their 'safe' homes.

The primary aim of our Census was a quantitative analysis of the Redcliffs population in its current state following the Canterbury Earthquakes. From the accumulation of our surveys we confirmed the Redcliffs population at 1325 residents, with 76.2% of homes surveyed. Using the number of homes unsuccessfully covered in our survey (239), and the averages of our current age/sex data of the community we estimated the population contained within those homes to create our total population figure of 1739. In comparison to the 2006 Census figures, covering the same households as we surveyed, the population has reduced by an estimated 631 residents between 2006 and 2012 (Appendix G). 239 unsurveyed homes does leave signficant uncertainty in our estimates and the nature of our estimation assumes some amount of homogeny within the community.

An examination of the demographic distribution of the Redcliffs population shows that the age composition has not significantly changed following the earthquakes. The ageing population concentrates in the older age groups in both the 30-64 and 65+ ages as it did in 2006 (appendix H). All of the age groups show relatively similar drops, except for the 14-19 age group which appears to have risen. The population structure remains the same as the 2006 population with relatively uniform changes occurring across Redcliffs, indicating that the ability to move is not limited by age group.

The employment status of participants very much reflected our population demographic findings, with a predominance of full-time workers (55%) and one third of residents being

retirees. Only a small (4%) student population exists in Redcliffs emphasizing the ageing population.

The self assessment of health in our Census found 4% of residents think of themselves in poor health following the earthquakes, and a further 20% rate their health as fair (Appendix I). Two years on from the earthquakes heath is still a considerable issue for those living in Redcliffs. Safety or more importantly the apparent safety of residents in Redcliffs is still of concern to many residents. 38 residents (7% of participants) feel unsafe living in Redcliffs for fear of further earthquakes or rockfall. While only a minority there still remains a population in Redcliffs that feel unsafe in their homes. The wellbeing of remaining residents indicates some lingering issues that at this later stage indicate ongoing issues, rather than a lack of accessible healthcare.

In accordance with our second research objective we quantified and qualified the use of community facilities in our Census, Library survey and business survey. Of the Census participants, 222 households showed use of Volunteer Library to some extent (Appendix J). From these results, an approximate 44% of the Redcliffs population utilize this local facility and have demand for it. With the New World supermarket committing to a future return to Redcliffs our survey received a near unanimous response in support of this reopening. 98% of respondents wanted to see the New World return, and only 9 participants replied with 'no' or were unconcerned with its return. From these results it would seem that local facilities are very important to the community, where accessibility seems to be the dominant concept. It was apparent that the general community enjoyed the convenience of local facilities, and such accessibility was a necessessity for those physically restricted such as the elderly or disabled.

Library Survey

The Volunteer Library survey was completed using a sample of fifty volunteers, 25 library members and 25 non-members, composed of members of the local community and passersby. Of the members surveyed only 3 report no use in the past year, indicating that the library still receives significant use among members. Upon inquiry, a mixture of responses were received in regards to post-earthquake use. While few stated a reduction in use, the majority maintained consistent use and even increases in use associated with the isolation felt in the Redcliffs community. 96% of participants thought of the Volunteer Library as a community asset and think that it should remain open. A further 90% of respondents supported the idea of the Christchurch City Council helping to rebuild a permanent facility (Appendix K). 6 respondents suggested a joint rebuild to amalgamate the Sumner library under the Christchurch City Council Library system and form an improved library to service both areas. These results in addition to those from our Census, indicate a demand for this library. With its long heritage and use, particularly by the elderly it would seem that some effort is needed to replace it as a permanent

community fixture even if a Christchurch City Council partnership is required, sacrificing their independance.

Business Survey

15 local businesses responded to our survey, including the BP, the Redcliffs Dairy and The Spur Cafe, key assets of the community following the Earthquakes, all of which report some level of disruption following the earthquakes. 100% of these businesses also report increased levels of stress and anxiety (Appendix L) and one third of respondents attribute job losses to the impact of the earthquakes. A reduction in foot traffic was noticed by 87% of businesses with 6 observing a major drop (Appendix M). We received a mixed response with satisfaction over communication with both the Christchurch City Council and CERA (Appendix N). 60% of respondents were unhappy with this governmental consultation while one third were satisfied with the current quality of communication. 100% of participants believe that business will recover and continue to grow in the future, while 87% of these see the return of the local New World as a key factor in the return of business to the region.

Previous research by Wilson (2012) how the resilience of people can vary in the face of disaster. The community of Redcliffs appear to be recovering well and are of a resilient nature, in the face of adversity. Research by Smith et al. (2011) studied the impacts of flooding on farm communities within the Manawatu, New Zealand. This research shows that when confronted with adversity, the farmers looked to broader community support for aid in recovery. This appears to be the case within Redcliffs, with increased community support and communications aiding community resilience.

Previous research by Mulligan & Nadarajah (2011) focused on the ability for short-term relief to long-term recovery following the 2004 Indian Ocean Boxing Day tsunami. This research showed that a period of shock, grief and trauma followed the initial event, followed by a ‘departure’ or ‘stay’ recovery response. We have found significant similarities for the residents of Redcliffs. A large proportion of the residents surveyed had lasted out the initial, ongoing effects of the Canterbury Earthquake Sequence and have stayed within the community.

Limitations

Census

With our Census of Redcliffs the primary limitation was in the sheer scale of the study, with an approximate 1004 homes to be covered. With a completion rate of 76.2%, error in the precision of our data exists as the remaining population was estimated from the number of remaining homes and the averages of our gathered data (Abbot 2007). While this created our best estimate of the population, without further data collection the potential for error in our estimates is quite high. Additionally the population drop recorded may not be entirely attributed to the earthquake, but without Census-like figures closer to the start of the Earthquake Sequence, this cannot be quantified.

The recording of both Red Zone and uninhabited homes was also limited as our research occurred two years on from the initial Earthquake and the status of homes is often no longer clear. The majority of land zoning 'stickers' have been removed from properties and such zoning can be ambiguous in some cases as many properties that appear heavily damaged are still habitable and vice versa. In addition a number of houses have been demolished following earthquake damage and further attributes to ambiguity. Our assessment of uninhabited homes was based upon a lack of response, significant damage, an absence of belongings and local knowledge.

Intersubjectivity had relatively little impact on our Census as all questions were very simple, and contained minimal ambiguity. The health and safety questions contained the highest intersubjectivity, where these concepts had a fairly obvious meaning to our research, community members may have interpreted 'health' or 'safety' in a different light (Gillespie & Cornish 2009).

In keeping our surveys to a minimum duration we only recorded the employment details of the person answering the survey. While creating a strong bias to older respondents, both more likely to be present and the ones to answer the survey. While this created inaccurate data, uncomparable to the previous Census data, it did not directly relate to our research and as such was considered less important than other questions.

The selection of our six age ranges was another product of the concise presentation of our census. We opted to use groups that gained information on specific age ranges of interest to the impacts suffered by Redcliffs, such as residents of kindergarten, or primary school age or retirees. While our analysis would have benefited the identification of residents in five year age brackets, identically to the Census, the increased space and time required would likely have reduced our response rate to the survey.

Positionality did influence our Census results as the perceptions of our research group and the research itself influenced the responses we received, specifically with the health and safety related questions (Moore 2012). Due to the personal nature of responses to such questions, responses would be appropriately tailored to a level that the participants would be comfortable with, which may not necessarily be the truth. In such an instance the results of our Census do not accurately reflect reality (Moore 2012).

Library

The library survey was limited by two main factors, the selection of participants and the role of intersubjectivity. With only 50 participants only a limited sample of opinions were recorded. The use of the Library book sale limited this sample to those attending this public event over a very limited time period. The open nature of this sampling meant that the data was biased towards members of the library but also included people with no connection to the library or the Redcliffs Community. While a fair and even sample was recorded, an event associated with the Library but within the Redcliffs community would have resulted in opinions more useful for our research.

Intersubjectivity was a significant influence on our results as the concept of each question was interpreted differently by each participant, and were affected by explanations of each question (Gillespie & Cornish 2009). These explanations relating to the status of the Library, its role as a community library and the current situation with the Christchurch City Council would all have influenced the answers given, by modifying their understandings. Additionally these questions, as supplied by the Volunteer Library were worded in a way that answers were more likely to be more socially conscious.

Business

The business survey aimed to establish the viability of the Redcliffs Central Business District after the devastation to infrastructure and population shifts. The questionnaire was designed to provide qualitative information on impacts, changes and future aspirations each business had experienced. Questions created a bias towards positive responses towards survival, being part and parcel of business nature. Positionality of businesses as key locations may have enhanced the positive responses within the survey as a definite optimistic response was obvious from all businesses surveyed. The question on whether the New World should return gained a 100% favourable response rate. Although our community response on the New World was also positive, the reasoning for the two respondent sets answers was directly different. Business bias only saw the New World return as increased traffic flow and turn-over while the wider community saw the return as a community asset of key social importance.

Online Kidsfirst Kindergarten survey

This survey proved difficult to conduct and provided an understanding of complexities that can arise during community research. Our initial brief included Redcliffs Kidsfirst kindergarten as part of our study which had been initiated by a parent of the kindergarten contacting the university. However, as Beryl McCombes Redcliffs Kidsfirst kindergarten is a private business, no consultation was conducted with management on behalf of the research subject in the first stages. Discussions were made by us with head office including the Managing Director and it became clear that due to differing strategic and diplomatic reasonings that the online survey should not be conducted. We maintained a professional relationship with Kidsfirst staff and management and gained an understanding of different objectives and outcomes stakeholders have in community outcomes.

Conclusion

Redcliffs has incurred a negative population shift since the recent Christchurch earthquake events of 2010 and 2011. This change has had a direct impact on the community for long term post disaster recovery. Quantitative and qualitative research findings presented in this report are important factors in the effective delivery of services in the post- disaster environment and can improve the recovery trajectory for Redcliffs.

Acknowledgments

We wish to thank the following people for their input and assistance with this report.

Redcliffs Community Associates
Eddie Hayes - Sumner Bays Union Trust, Community Development Worker and liaison
Theresa Murphy - Redcliffs Residents' Association,Editor of the Community Newsletter
Jan McLauchlan- President of Redcliffs Public Library Inc
Rose Phillips - Redcliffs Public Library Inc
Fletcher Stanton - Member of Redcliffs Residents' Association
Hon Ruth Dyson - Labour MP for Port Hills

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Dr. Simon Kingham, Course Co-ordinator (GEOG309)
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References

Abbot, O. (2007). 2011 Census Coverage Assessment and Adjustment Strategy. *Population Trends*, 127, 7-14

Gillespie, A. and Cornish, F. (2009). Intersubjectivity: Towards a Dialogical Analysis. *Journal for the Theory of Social Behaviour*, 40 (1), 19-46.

Kimhi, S., and Shamai, M. (2004). Community resilience and the impact of stress: adult response to Israel's withdrawal from Lebanon. *Journal of Community Psychology*, 32(4), 439-451.

Lindell, M. K., Prater, C. S. (2003). Assessing Community Impacts of Natural Disasters. *Natural Hazards Review*, 4(4), 176-185.

Moore, J. (2012). A personal insight into researcher positionality. *Nurse Researcher*, 19(4), 11-14.

Mulligan, M., & Nadarajah, Y. (2012). Rebuilding community in the wake of disaster: Lessons from the recovery from the 2004 tsunami in Sri Lanka and India. *Community Development Journal*, 47(3), 353-368.

Smith, W., Davies-Colley. C., Mackay, A., & Bankoff, G., (2011). Social impact of the 2004 Manawatu floods and the 'hollowing out' of rural New Zealand. *Disasters*, 35(3). 540−553.

Spronken-Smith, R. (2005). Implementing a Problem-Based Learning Approach for Teaching Research Methods in Geography. *Journal Of Geography In Higher Education*, 29(2), 203-221.

Wilson, G.,A. (2012). Community resilience and environment transitions London: Routledge.

Appendix

Appendix A: Meshblock Codes Used to Define Redcliffs in our Research

2702502
2702300
2701506
2701800
2701501
2701300
2701400
2701200
2701900
2701507
2701600
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2702100
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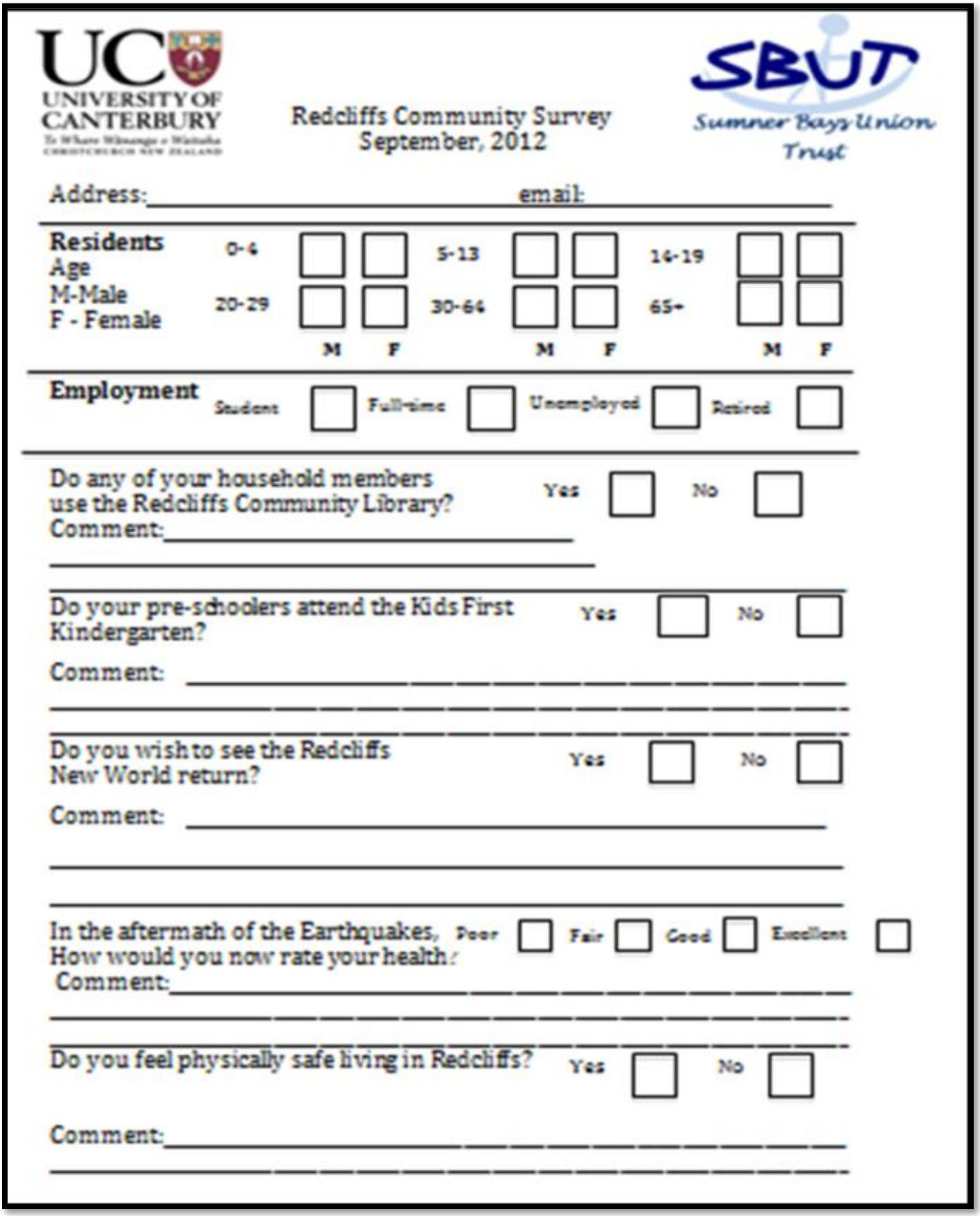
2701504

Appendix B: Census Form



UNIVERSITY OF CANTERBURY

Redcliffs Community Survey
September, 2012

SBUT
Summer Bays Union Trust

Address:_____ email:_____

Residents
Age
M-Male
F - Female

		M	F		M	F		M	F
0-4				5-13			16-19		
20-29				30-64			65+		

Employment Student ☐ Full-time ☐ Unemployed ☐ Retired ☐

Do any of your household members use the Redcliffs Community Library? Yes ☐ No ☐
Comment:_____

Do your pre-schoolers attend the Kids First Kindergarten? Yes ☐ No ☐
Comment: _____

Do you wish to see the Redcliffs New World return? Yes ☐ No ☐
Comment: _____

In the aftermath of the Earthquakes, How would you now rate your health? Poor ☐ Fair ☐ Good ☐ Excellent ☐
Comment:_____

Do you feel physically safe living in Redcliffs? Yes ☐ No ☐
Comment:_____

Appendix C: Library Survey Form

Redcliffs Public Library Survey

9 September, 2012

Redcliffs Library has been run by volunteers for 98 years.
Membership is free but the library is dependent on rental charges for income
Winter hours 10 - 4pm Monday – Friday, and Saturday 10.30-12.30
Library Contact Person: Jan – 384-2014 or
redcliffspubliclibraryinc@gmail.com

Question 1:

Are you a member of the Redcliffs Public Library?

Question 2:

Have you used the Redcliffs Library in the past year?

Question 3:

Do you view the Redcliffs Library as a community asset?

Question 4:

Do you want to keep the Redcliffs library open?

Question 5:

Should the Christchurch City Council help rebuild the library as a permanent Redcliffs facility (at the old site)?

Comments:

Do you have any comments about the Redcliffs Library?

Would you like to help the Redcliffs community library (volunteer, library assistant, Building Advisor, Project Manager, Cash donation)?

Appendix D: Business Survey

Business Questionnaire

Redcliffs Business Community

Business name: _____ **Contact:** _____

Email: _____

1/ Have the impacts of the 2010 and 2011 earthquakes directly effected your business?

No **Minor** **Some** **Major**

Comment:

2/ Have you experienced increased stress and anxiety since the earthquakes?

No **Minor** **Some** **Major**

Comment: _____

3/ Has the earthquake impacts resulted in job losses within your business?

No **Yes**

Comment: _____

4/ Have you found communication from local government (CCC, Cera) satisfactory?

No **Yes**

Comment: _____

5/ Have you noticed a considerable reduction in foot-traffic business in Redcliffs?

No **Minor** **Some** **Major**

Comment: _____

6/ Do you think the return of the Redcliffs New World would benefit your business?

No **Yes**

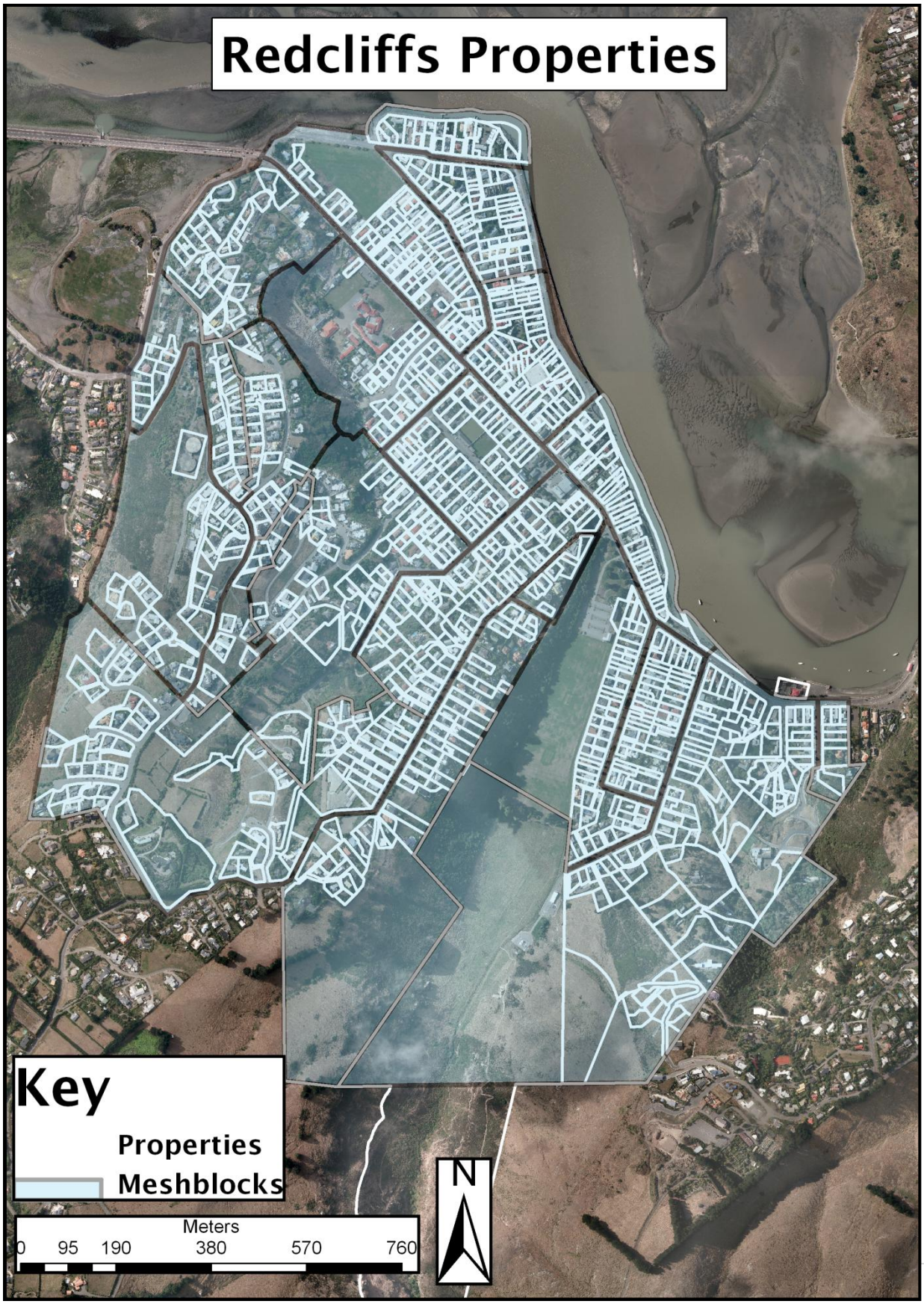
Comment: _____

7/ Are you confident Redcliffs will recover and grow your business in the future?

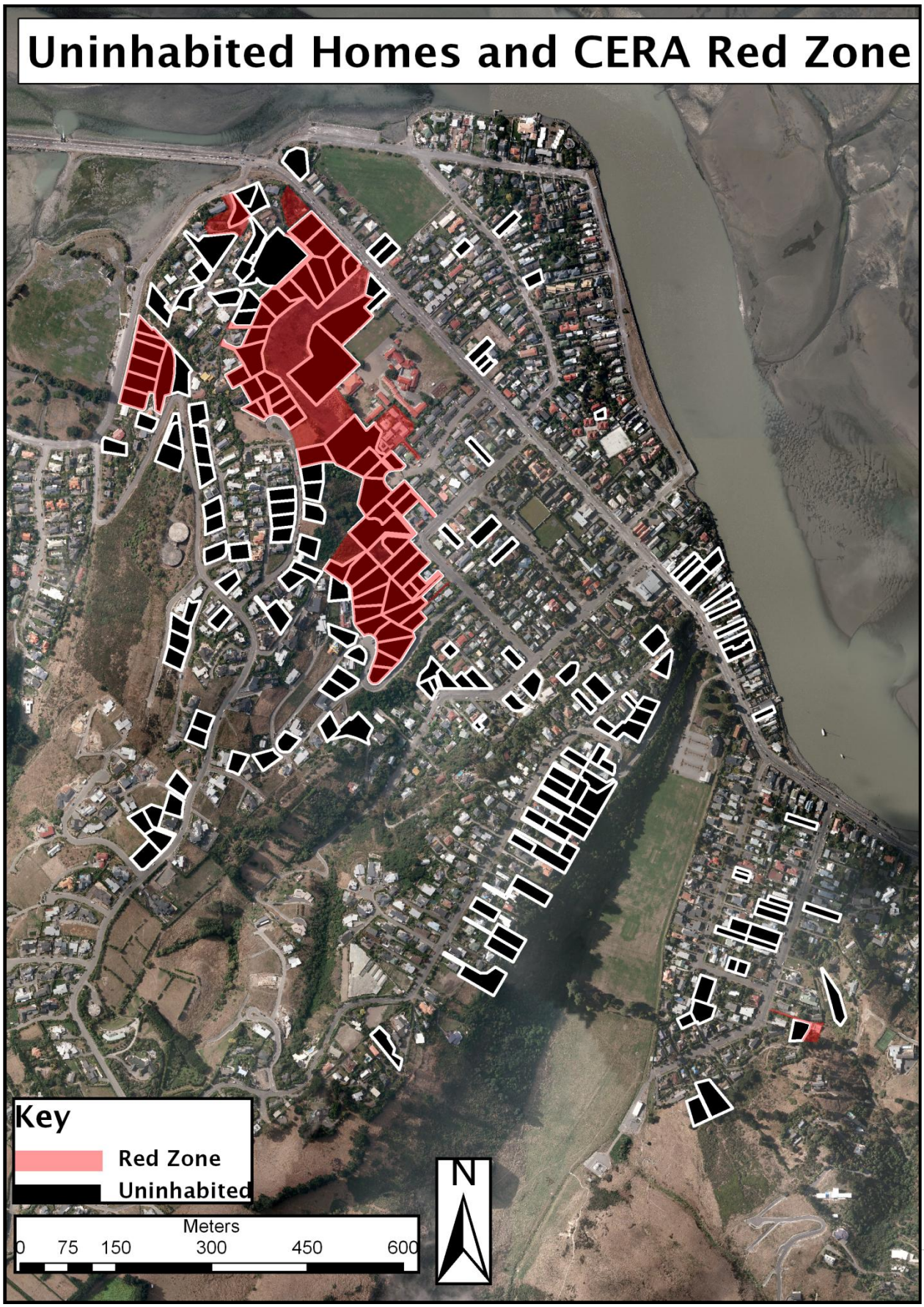
No **Yes**

Comment: _____

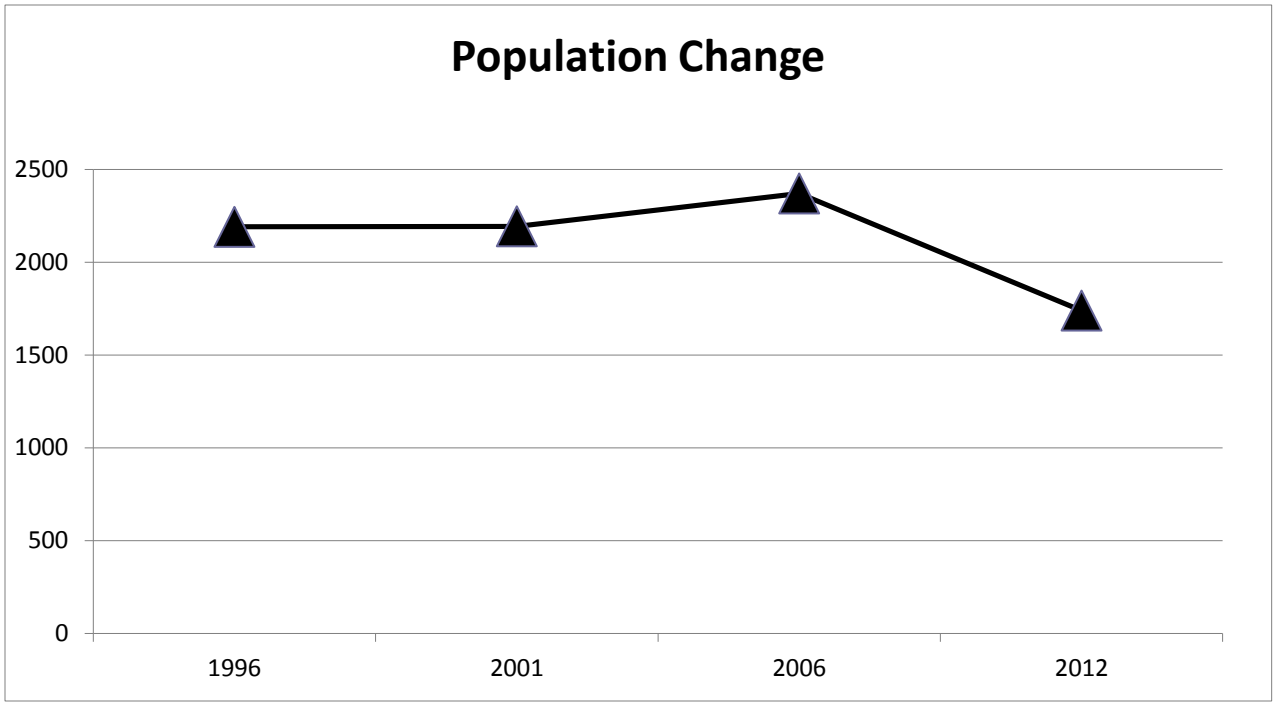
Appendix E: GIS Map of Redcliffs Properties and Overlay of Meshblocks



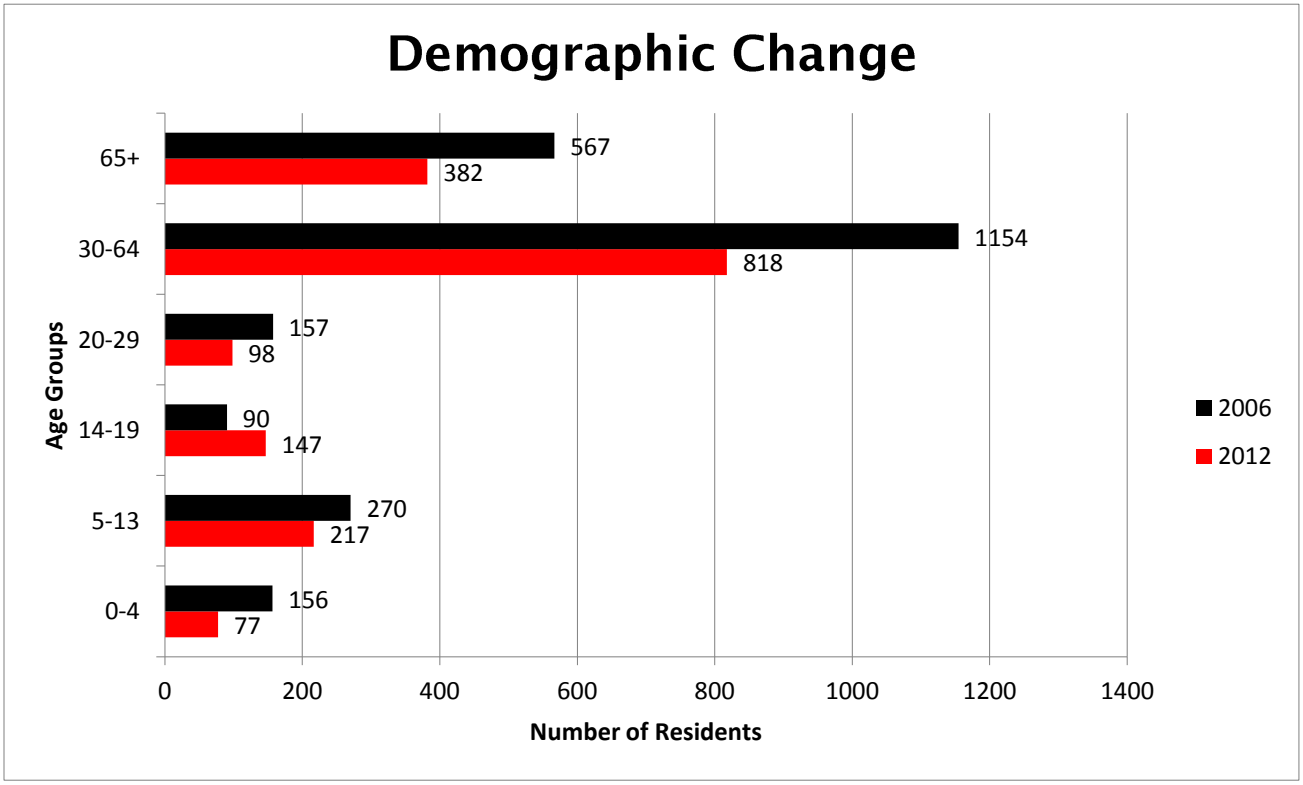
Appendix F: GIS Map of the CERA Red Zone and Uninhabited Homes in Redcliffs



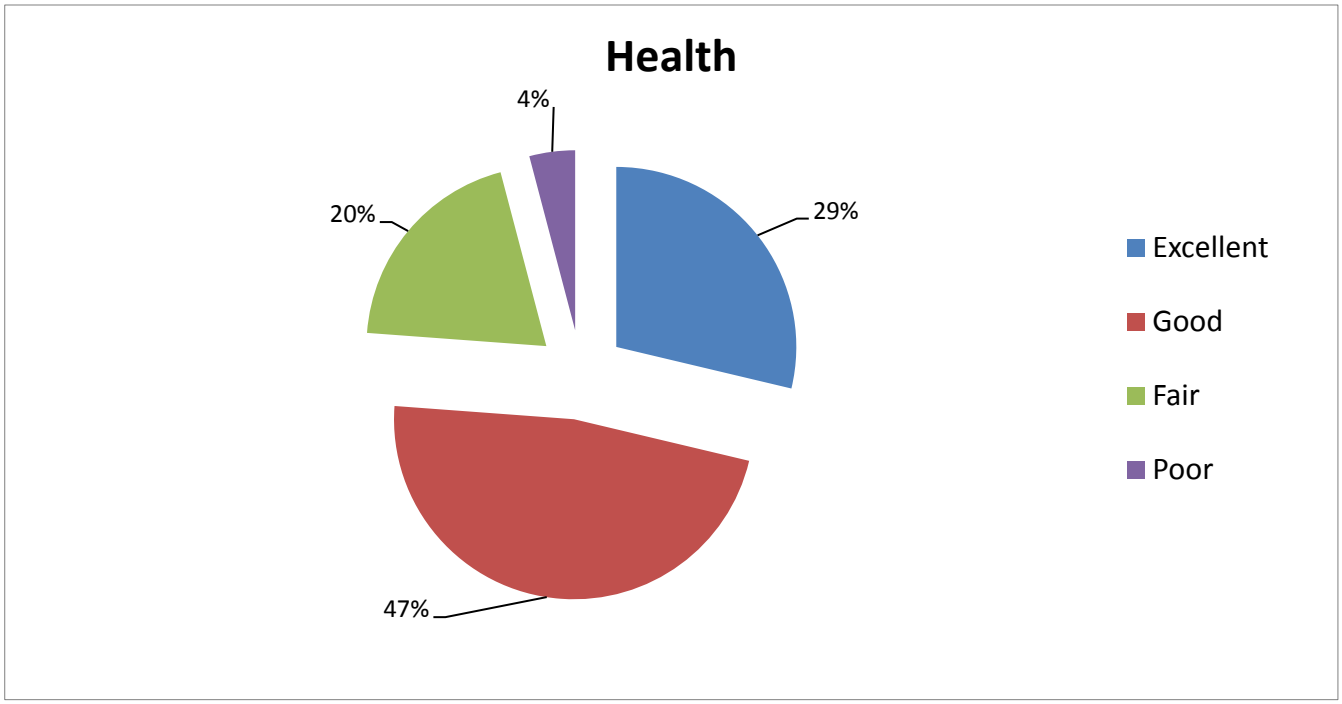
Appendix G: Population Change Graph



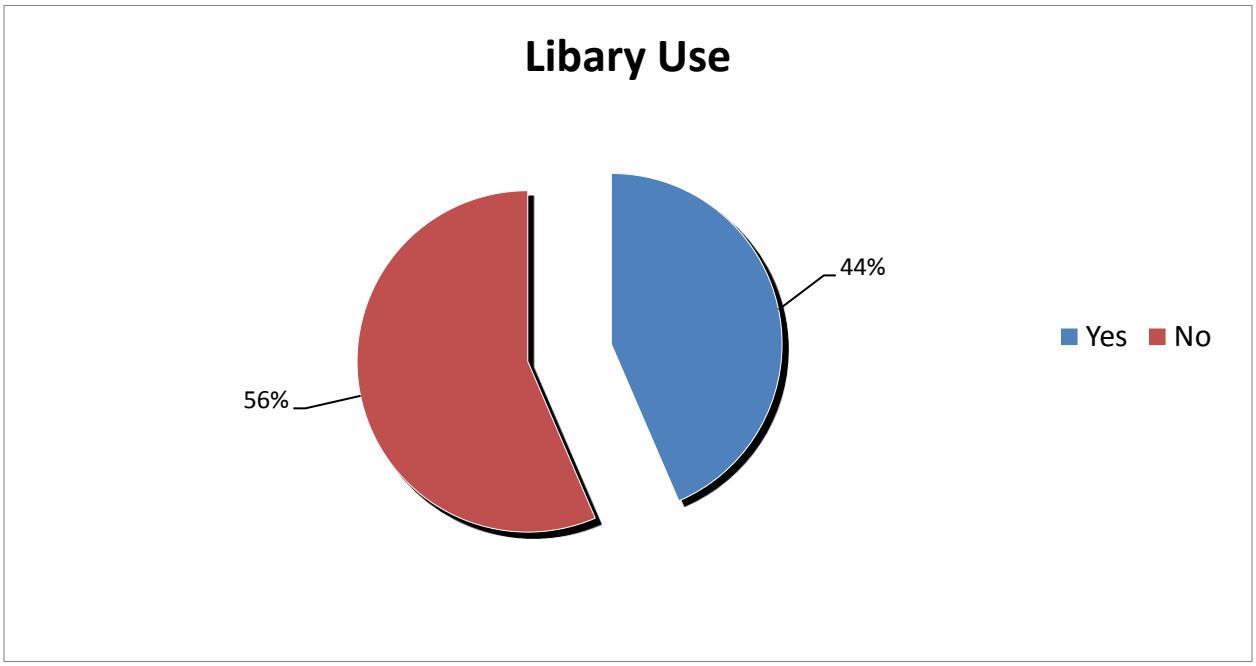
Appendix H: Population Demographic Change Between 2006 and 2012



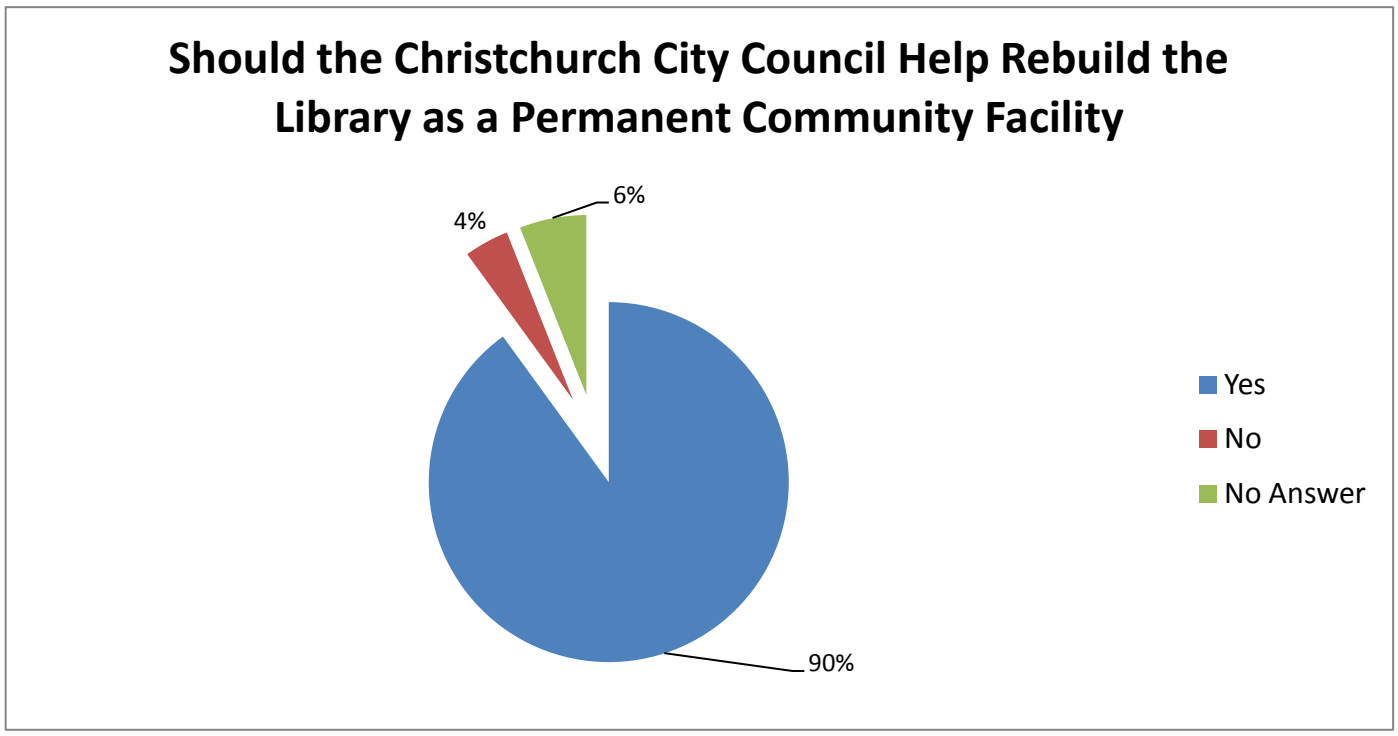
Appendix I: Self Assesed Health of Census Participants



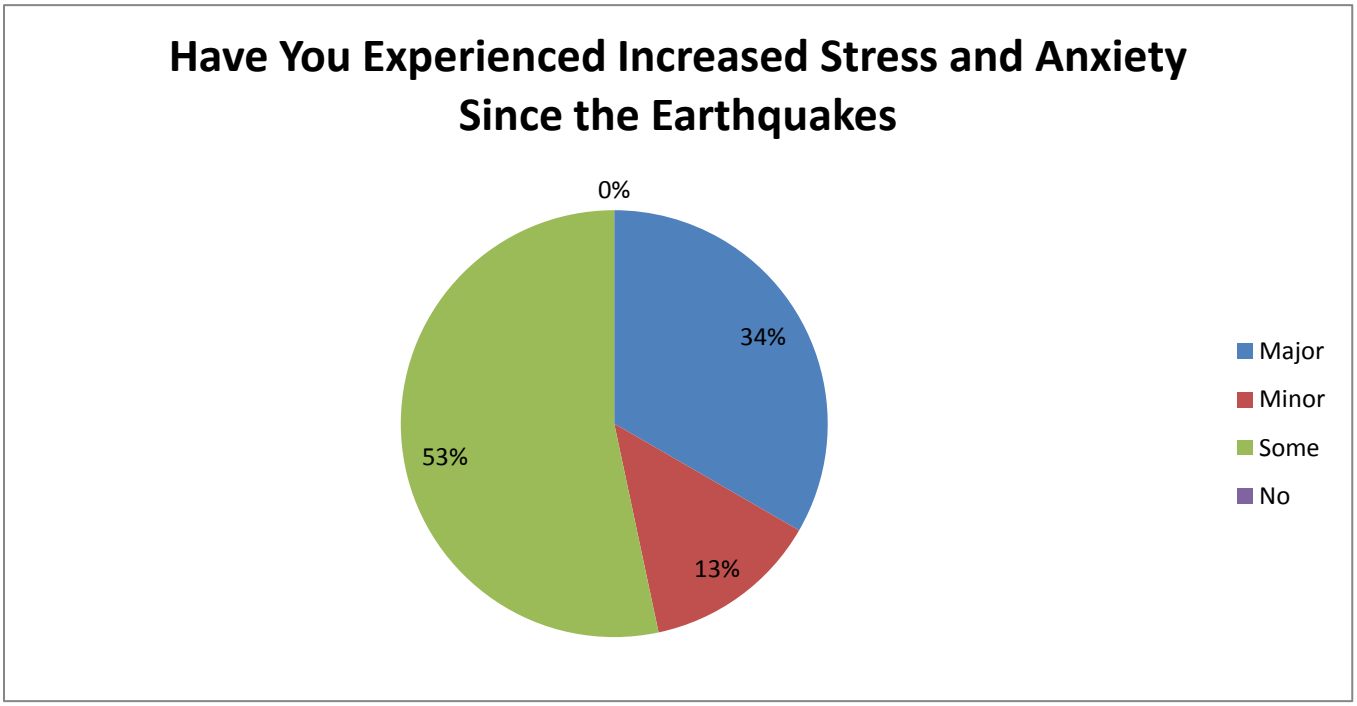
Appendix J: Library Users Within Redcliffs



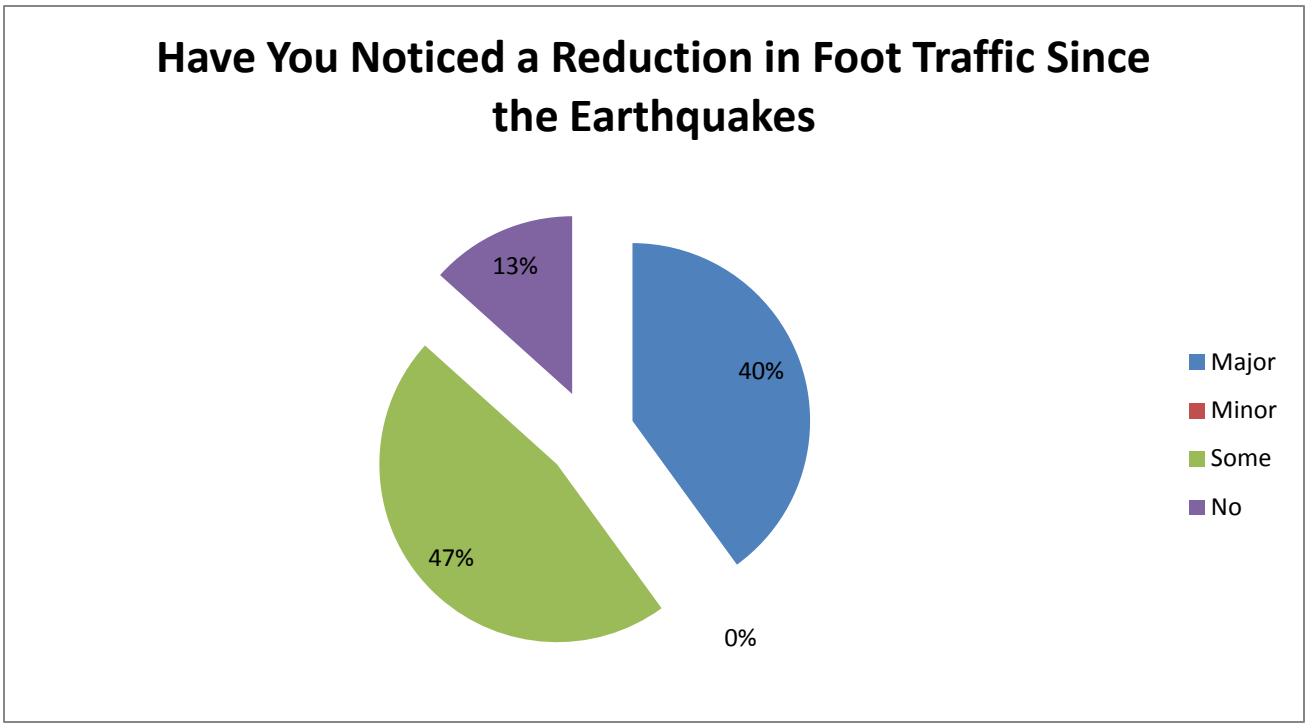
Appendix K: Response to a CCC Rebuild of Volunteer Library



Appendix L: Increases in Stress and Anxiety by Businesses



Appendix M: Reduction in Foot Traffic Observations



Appendix N: Response of Businesses to Satisfaction with Administrative Departments