

# Community Resilience within the Lyttelton Harbour Basin

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## **Executive Summary**

Resilience is an important concept to the residents of the Lyttelton Harbour Basin communities. This study is focused on the need for resilience within these communities, how it has changed following the Canterbury earthquakes and what could be done to improve community resilience. The research question: “What are the current attitudes towards resilience in the Lyttelton Harbour Basin and how would these be affected by the potential development of a Resilience Centre?” was developed with these aims in mind. Following the disturbances caused by the Canterbury earthquakes there is a perceived need to support communities to enable better recovery should events of a similar nature occur again. Our research aimed to gather data from the various communities in the Harbour Basin. This was enabled by way of primary data collection methods. These methods were surveying, focus groups and interviews. Which enabled an assessment of resilience within the community, and the reception and effect the development of a Resilience Centre could have on the Basin communities.

Our research suggests that people in the Harbour Basin generally have positive attitudes towards the concept of resilience. It also demonstrates residents have awareness and perceive a need to increase existing resilience in both social and physical capacities within the Lyttelton Harbour Basin. The responses to the proposed Resilience Centre development ranged from highly supportive to very opposed, often reflective of location and lifestyle factors. Overall findings suggest that resilience is important within the Basin. There was also a desire to increase resilience levels. Rather than focusing on the development of a Resilience Centre, there was an observed preference to further develop existing practices, as the Centre would potentially detract from existing initiatives.

## Introduction

The necessity for resilience within communities is acutely evident in a post-disaster setting, such as the Canterbury region following the 2010 and 2011 earthquakes. When a natural disaster occurs, the need for a community to actively work together as a united entity is a major determining factor in the community's ability to continue to function and withstand further disaster. Pre-disaster planning lessens the need for strategizing and planning immediately following a disturbance event. This allows more time for effective implementation of post-disaster strategies. A return to post-disaster functionality is not impossible without pre-disaster planning and preparation, however it is far less likely to work effectively and requires a much greater length of recovery time. Such planning could involve better development of community food gardens, aiding self-sufficiency, water collection and emergency planning practices which would allow the communities to quickly attend to their needs. It is important to further existing resilience within the communities, and the Basin area as a whole; this is an important mitigation technique for improved resilience against future events.

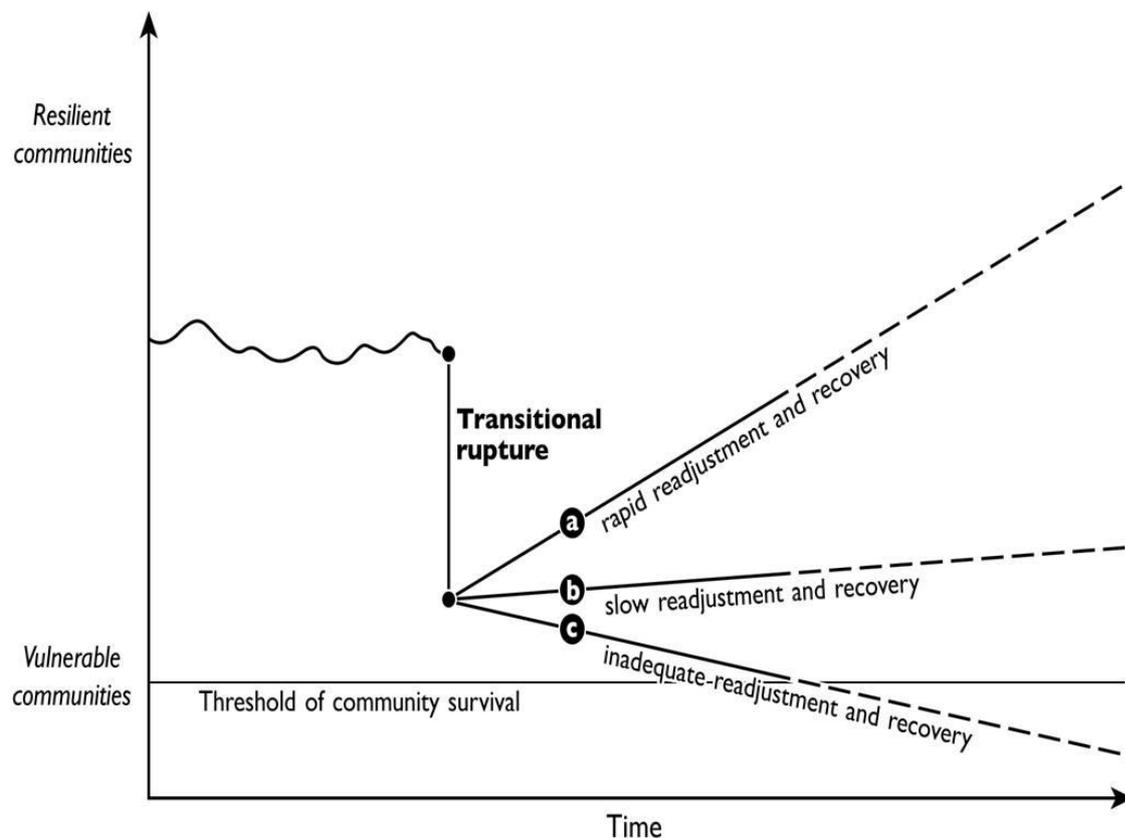
Resilience has been defined and conceptualised in a number of different ways. Pelling and Manuel-Navarrete (2011) assess the factors which make a system resilient, the factors arise as a result of a number of influences, including political and environmental change. Their research suggests that resilience allows a system to progress through periods of stability, challenge, and crisis via re-organisation. Gotham and Campanella (2011) along with Pelling and Manuel-Navarrete (2011) advocate for a systems based approach which allows vulnerable and resilient components to coincide. They suggest resilience is primarily the capacity for a system to adapt, adjust or transform when subjected to a shock or traumatic event.

Resilience is the ability for a system to return to a steady state of development following a shock or stress applied to the system. Magis suggests that resilience is:

“The existence, development, and engagement of community resources by community members to thrive in an environment characterised by change, uncertainty, unpredictability, and surprise.” (2010, p. 402)

The ability for a system to recover is conceptualised through the Wilson (2012) model of community resilience (Figure 1), where the capacity of the system determines the rate of recovery.

Our research aimed to evaluate potential factors which could decrease the period between application of stress and return to a steady state within the Lyttelton Harbour Basin.



**Figure 1:** The Wilson Model of Resilience.

Project Lyttelton has suggested the development of a Resilience Centre to increase resilience and the promotion of resilient practices in the Lyttelton Harbour Basin. The fundamentals of a resilience based centre have been trialed overseas. Notable examples include the CERES Environmental Park in Melbourne (CERES Inc. n.d) and the Centre for Alternative Technologies in Wales (Centre for Alternative Technologies Charity Limited. n.d), where sustainable food production and technologies are developed to enable more resilient lifestyles. The main functions of a Harbour-based Resilience Centre would be to educate, engage, and inspire people

about innovative solutions for more sustainable and resilient lifestyles. The Centre is intended to showcase learning and practical solutions for sustainable living.

Similar in nature to this idea of a Resilience Centre is the notion of Transition Towns. Transition Towns are existing settlements in which resilience strategies are developed as a community, to better enhance self sufficiency in residents day to day lives. The first transition town, Totnes, was established with the intention of providing better community resilience in anticipation of a peak-oil and economic crash. The development of Totnes into a Transition Town, and other towns and communities since then which include Otaki, New Zealand; Nambour, Australia and Venice, Florida, provide an effective background for the application and development of large scale resilience initiatives, such as the proposed Resilience Centre, within the Harbour Basin area.

The communities in the Lyttelton Harbour Basin already collectively offer some effective resilience strategies. The Lyttelton community has a time-bank system, as well as a popular farmers market and several different community projects and groups. The movement of Transition Towns has been described by Connors and McDonald as

“a global phenomenon, aimed at assisting towns and communities to envision sustainable and self-reliant futures post-peak oil” (2011, p.1).

Rather than focusing on post-peak oil, the Harbour Basin communities are focusing on post-disaster, but are also considering future disasters. Aspects of the changes these Transition Towns and communities have undergone are applicable to the situation which the Harbour Basin is in. They are able to be used as examples and guidelines for how to achieve a more sustainable and resilient future for residents in a geologically and socially turbulent environment. The establishment of a Resilience Centre has the potential to facilitate the growth of a more self-reliant and resilient Harbour Basin community.

Drawing upon previous research, including that already outlined, we developed our definition of resilience. A common theme in the investigated literature and one we

aim to carry through our own research is the ability of a system to withstand external pressures. To this end, we developed the following definition of resilience:

“Resilience is the ability of a system to adapt, restore, and recover when subjected to forces which have the potential to be destructive. In a community context, resilience refers to the ability of a community to thrive when faced with disruptions, such as those caused by the Canterbury Earthquakes.”

This study is focused on the need for this resilience within the Harbour Basin communities, how it has changed, and what could be done to improve community resilience and self-sufficiency. This led to the development of our research question: “What are the current attitudes towards resilience in the Lyttelton Harbour Basin and how would these be affected by the potential development of a Resilience Centre?” This question was answered with the aid of surveys within the Harbour Basin, a focus group in a Harbour Basin community, and textual research which focused on resilience in post-disaster situations, as well as Transition Towns and Resilience Centers which have been previously established.

As we began to explore our topic the focus of our research became inherently more complex. This was due to a range of opinions regarding key aspects entailing the need to streamline our research focus. This produced a refined set of objectives needing to be examined from a community resilience standpoint. Perspectives of the Basin residents regarding resilience and how it has changed were assessed through the survey. We also aimed to assess the feasibility and reactions towards the Resilience Centre idea being considered by Project Lyttelton. This would be an educational facility aimed at improving community resilience through workshops, practical teachings and the showcasing of resilience based initiatives

## **Methods**

In order to assess resilience perceptions, a community survey a focus group and an interview were conducted. These methods of data collection were chosen to represent public opinion (Burford et al., 2009; Dolle, 2001) but are methods which are dependant on the scope of use and rate of return. These methods were also suggested by our community partner at the initial briefing.

### *Surveying*

The survey sought to gauge an understanding of community perceptions. We aimed to ensure the questions were clear, avoided jargon, and were of an appropriate length for a community based sample (3-4 pages) so as not to deter responses (Dolle, 2001; Neuman, 2000). We found surveying to be a large time investment which yielded few results. We obtained a response rate of approximately 23% with the information obtained generally of good quality. There were 2 respondents that chose to scrutinise our survey instead of complete it, with one suggesting we had “hijacked” the word resilience.

The survey (Appendix 1) was split into three sections, comprised of 16 questions in total. All sections consisted of both open and closed questions. Closed questions were used to obtain maximum information with relative ease. Open questions were used to capture people’s thoughts and beliefs without their response being influenced by the wording of the survey. A mixture of both was used to get focused information on certain topics but to also allow individual perspectives and feelings to be expressed. This was best used to full effect in Question 5 (Appendix 1) where the combination saw an effective use of questioning to obtain useful and relevant results. 300 questionnaires were printed in the hope of maximizing available time to gain the highest possible return rate.

To implement the survey we initially decided to target the Lyttelton Farmers Market and settlements in the Lyttelton Harbour Basin. A face-to-face survey at the Lyttelton Farmers Market was chosen to accompany the door-to-door survey. This was selected due to the anticipated high attendance rate of residents at the market. Those approached to participate in the survey were generally above 40 years of age. After surveying the Lyttelton Farmers Market on the 25th August 2012 the decision not to return was made as many people that were approached were not from the Harbour Basin. It was also likely that those who go to the market are the same that frequent it most weeks.

The focus then shifted to settlement surveying. Door to door surveying was chosen

over other surveying methods such as online, mail or telephone surveying as it tends to have a higher response rate (Neuman, 2000). Door to door surveying enables residents to express their views in a familiar setting in a way that is not intrusive. It allows for greater levels of personal interaction; with the potential for the surveyor to gather information beyond what could have been expressed solely in the survey and can be recorded for use in interpreting results.

The questionnaires were administered in Lyttelton, Cass Bay, Governors Bay and Diamond Harbour between 26th August and the 16th September 2012 (Figure 2). Due to external commitments, the amount of time surveying was limited, meaning that a fair proportion of the population was missed in our sampling. Our sample size was reasonably small, in that we gained 50 residential responses from an estimated 2250 dwellings (Stats NZ, 2006). Surveying has allowed us to gain, what we believe, is a fairly accurate representation of perceptions amongst the residents of the Harbour Basin. The initial decision to survey every third house was revised as it was found that many houses remained unoccupied due to earthquake damage. Therefore our sampling method was refined to target every house on the streets visited unless it looked structurally unsafe, had a dog, was too far away from the main road, or had a large fence.

The people surveyed tended to be from similar demographics. Figure 3 shows the skewed nature of the ages surveyed. Figure 4 demonstrates the large percentage of those that are either employed full time or are retired, which is reflective of the predominant age groups within the area. Had our respondents consisted of an equal number of people in each 10 year age bracket, with equal dispersal between employment statuses, our surveys may have yielded different results.

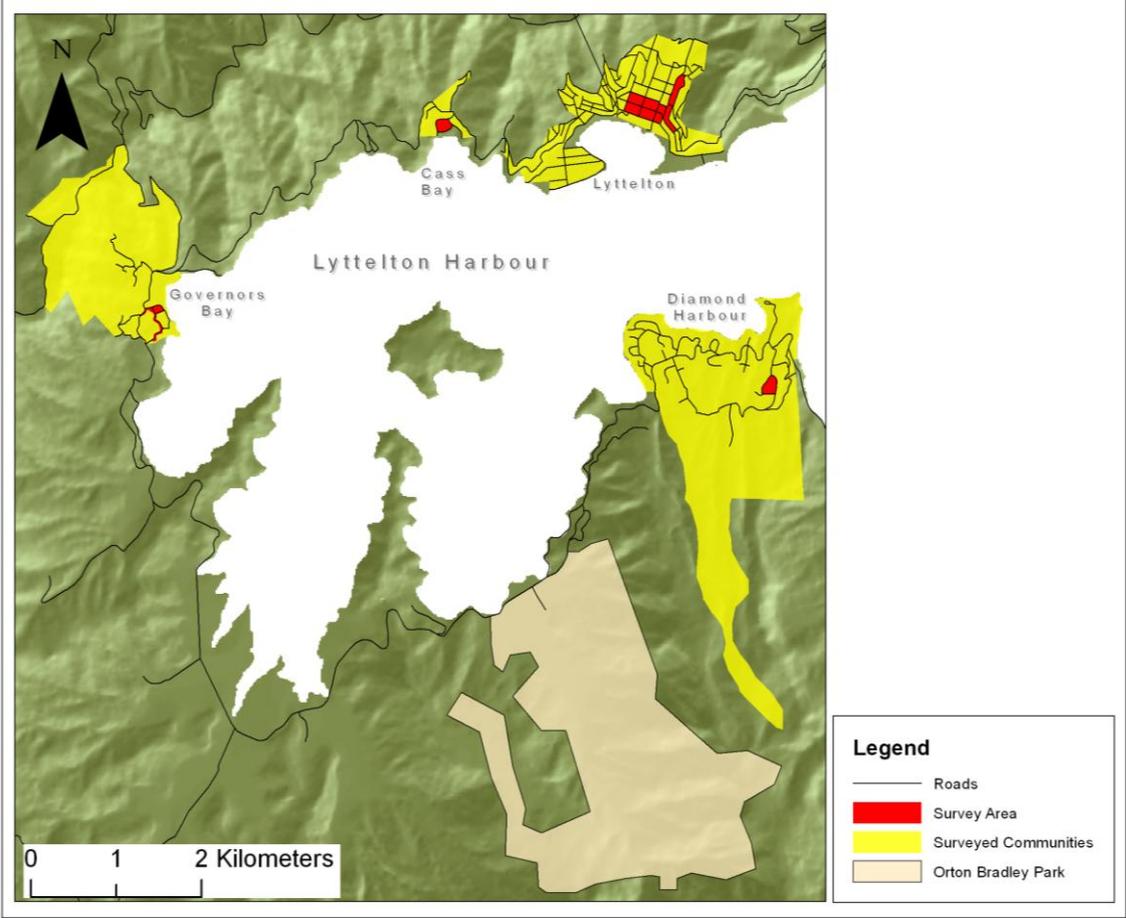


Figure 2: Surveyed areas and location of Orton Bradley Park.

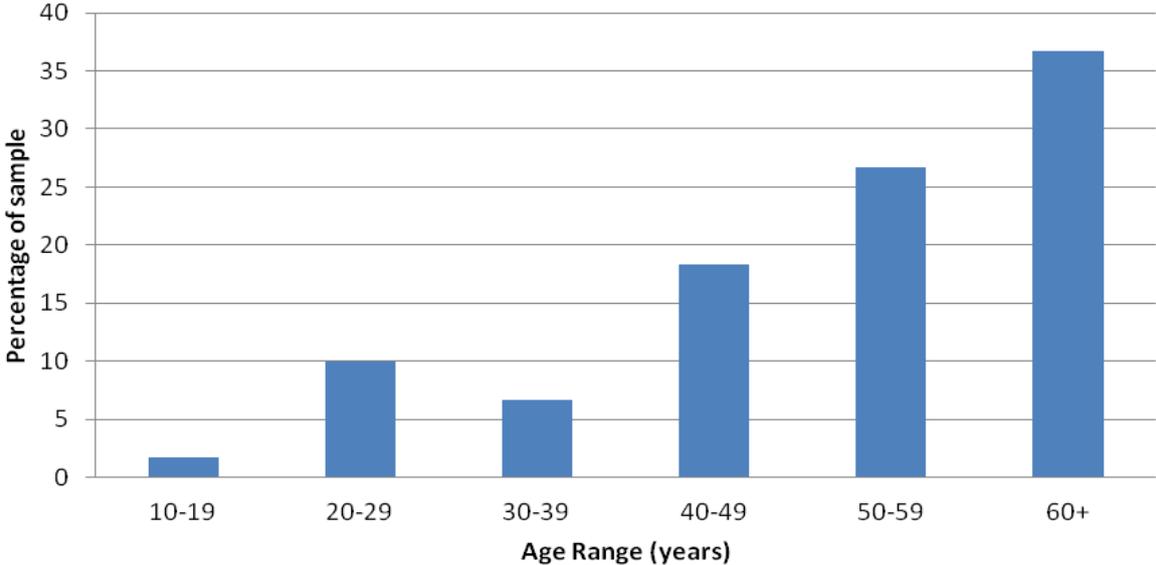
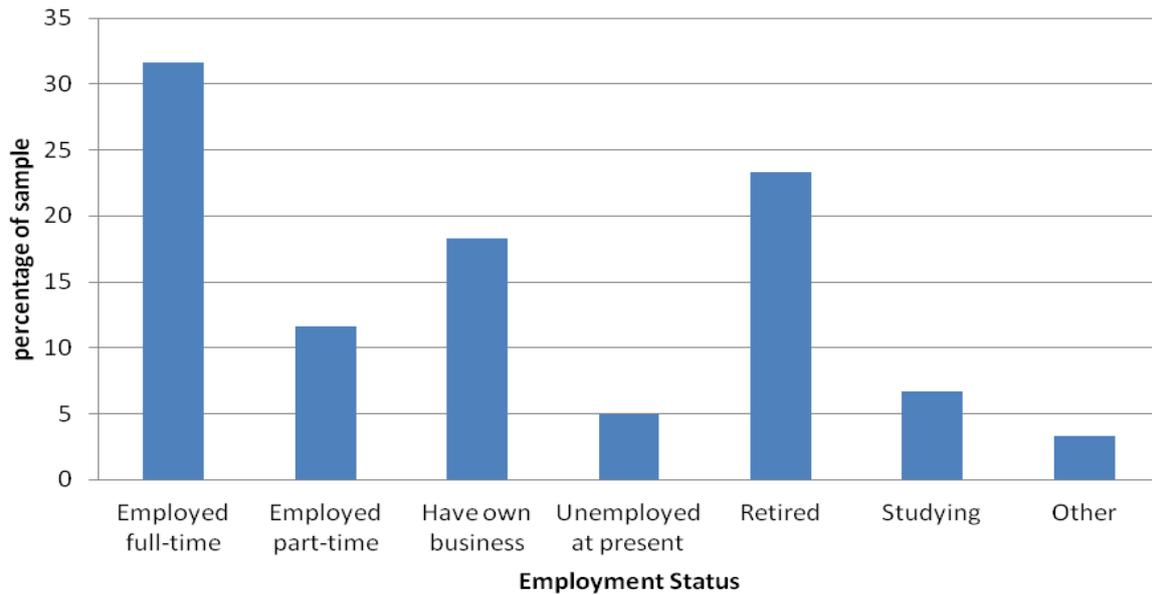


Figure 3: Ages of respondents.



**Figure 4:** Employment status of respondents.

#### *Focus Group*

The focus group was organised with the assistance of our community partner. It was used to support and elaborate on the findings from the surveying as they generally provide greater detailed information and an increased potential for new information to arise during discussions (Breen, 2006). We were provided with a list from our partner of community groups in the Harbour, of which we approached 12. We had responses from 5, with 2 inviting us to attend their meeting. Due to confusion about the dates, the first focus group was missed. As we did not account for a slow response time from the groups we did not allow enough time to correct for a lack of respondents, so only one focus group was held.

At this meeting we had a limited timeframe in which to interact with the group so a set of questions was devised based upon those asked in our initial questionnaire. This approach allowed us to best utilise the time we had with the community group. The loose framework we had established upon which to base discussion allowed a natural and logical development of ideas to occur. To supplement missing the first focus group, a phone interview was conducted. Having a strong environmental background, sound, logical comments were gained regarding resilience and the proposed Resilience Centre. These opinions are not as diverse as that which could have been gained had a focus group taken place instead. Comments delivered by

way of the focus group and interview delivered responses very similar to those which we had gained during the administration of our survey.

## **Results and Discussion**

Resilience and resilient practices are of great importance within the Lyttelton Harbour Basin. Over 80% of those surveyed identified that resilience was important to them. Feedback has indicated that there has always been an awareness of resilience in the area, especially the ability for a community to interact, bond and cope with difficulties. Attitudes towards community resilience have improved and become more formalised following the earthquake events through increased community interactions. This is conceptualised through higher participation in community activities and more robust communication within the communities. This result was similar to the increase in community resilience discussed by Torstenson and Whitaker (2011) where it was noted that communities see themselves as growing stronger as a result of the impact of earthquakes. This fits with Harrald's (2010) model of resilience. Where a city is resilient if its people and community structures are strong, with the ability to absorb the impacts of a natural disaster and to recover quickly when subjected to potentially destructive external forces.

Our survey identified the importance of access to local products to Harbour residents. Information obtained from the focus group indicated that, for many residents, travel to a supermarket on a frequent basis is uneconomical. It is therefore common practice for households to have food stores and vegetable gardens. Table 1 shows the prominence of vegetable gardens and the importance of local products to residents. Feedback from the focus group indicated that, in the Harbour Basin, it is common to have extra food provisions. Food stockpiling was not indicated in the survey as being regarded as an attempt at being resilient. This may be because the survey did not suggest stockpiling of provisions as a prompted answer. Alternatively this response may have arisen because food accumulation is not perceived as a resilient practice. Instead it is a normal social routine due to the location of the communities. This was an interesting observation, suggesting the Basin communities

may perceive themselves to be different to residents of more urban Christchurch communities.

**Table 1:** Community resilience activities.

| <b>Activity</b>                               | <b>number</b> | <b>Percent</b> |
|---|---------------|----------------|
| Community Groups/Associations/School projects | 18            | 33.3           |
| Farmers Market/ Local markets                 | 24            | 44.4           |
| Tree planting                                 | 6             | 11.1           |
| other   | 4             | 7.5            |
| restoration projects                          | 2             | 3.7            |
| <b>TOTAL</b>                                  | <b>54</b>     | <b>100</b>     |

Participation in community groups was also seen as highly important. Responses to questions on community and personal resilience showed that respondents placed great importance upon being able to participate in resilience activities and community activities. 33% of those surveyed indicated that they participated in such activities (Table 1). Since the 2010 and 2011 earthquakes, residents report an increase in social cohesion and communication through increased participation in groups undertaking community activities. In Governors Bay, interest in neighbourhood contact has increased, with community group emailing and phone lists becoming increasingly comprehensive. The resident's association Facebook page has also seen an increased use. This is possibly a common occurrence for isolated communities as Therrien reports in regards to rural communities:

“People living in rural areas have different environments, both social and physical, than people living in cities. Healthcare facilities and stores might be further from home, public transportation is not available everywhere, road conditions differ, and social interaction and support might differ as well. Therefore, the level of urbanization of the area in which people live could have a significant impact on their level of participation.” (2010, p. 52)

We did not have an indication of increased community interaction from the survey results. This may be as we did not prompt this as a possible response. As may be seen in Table 1, participation rates in sustainably practices are reasonably varied. The trend shows that people are more likely to participate in sustainable activities where they are more accessible. The survey also found that community projects had a higher participation rate than use of local products. Our results suggest that community strength is an important social factor within the Lyttelton Harbour Basin and there is general community interest in building upon this framework for resilience. The findings of our research are generally reflective of that which is illustrated in existing research. In Campanella (2008) it was identified that in post Hurricane Katrina, New Orleans community resilience was greatly determined by community strength. This suggests that the people look inwards for support rather than relying on external agencies. This was reflected by the findings from our focus group with participants commenting that neighbourhood support was vital in the weeks following the major earthquakes. Following the earthquakes, Governors Bay residents took a 'bottom-up' approach to resilience, one resident responded that:

“It was street level, neighbourhood level, and then those overarching higher levels that everything kicked in... you shouldn't ever let those systems that are too formal undermine those very grassroots systems... where neighbours just check on neighbours”

A study of community resilience in Christchurch following the September 2010 earthquakes by Torstonson & Whitaker (2011) discovered that community activities, bonding and meetings increased immediately following the earthquakes. Only one question within our survey assessed the change in awareness of resilience in Lyttelton Harbour Basin communities following the Canterbury earthquakes. The results showed that respondents generally saw an increase of resilience awareness in their community. A reasonably high level of importance was placed upon the ability to participate in resilience based activities and community activities by respondents. This is a key factor which also became apparent by way of comments gathered from the focus groups.

Currently under consideration is a proposal to develop a Resilience Centre at Orton Bradley Park, at the head of the Harbour. We were interested to gauge how

members of the community felt about this location and proposed initiatives to be showcased at the centre. Responses to the proposed location (Table 2) showed that generally there was neither overwhelming widespread support nor opposition to the location. Instead responses were generally recorded as being in the mid ranges of our scale, with roughly 65% of respondents selecting 'OK' or 'Good' when asked how they felt about the proposed location.

Accessibility was one of the factors that seems to have decreased respondents' support for a centre of this type. One respondent during the focus group reported that:

"In terms of access, it [the Resilience Centre] is a bit far away for that sort of thing. I think that it could serve Diamond Harbour well but I can't see it serving us [Governors Bay] or Lyttelton."

It could be noted that several respondents also reported concerns about the small population of the Harbour Basin and the implications this would have upon patronage at a centre of this type. An interesting comment made in the focus group helped to highlight this concern:

"I think it's a good idea too, but it does have to be citywide. I can't see it ever being supported locally. Not many people live around here."

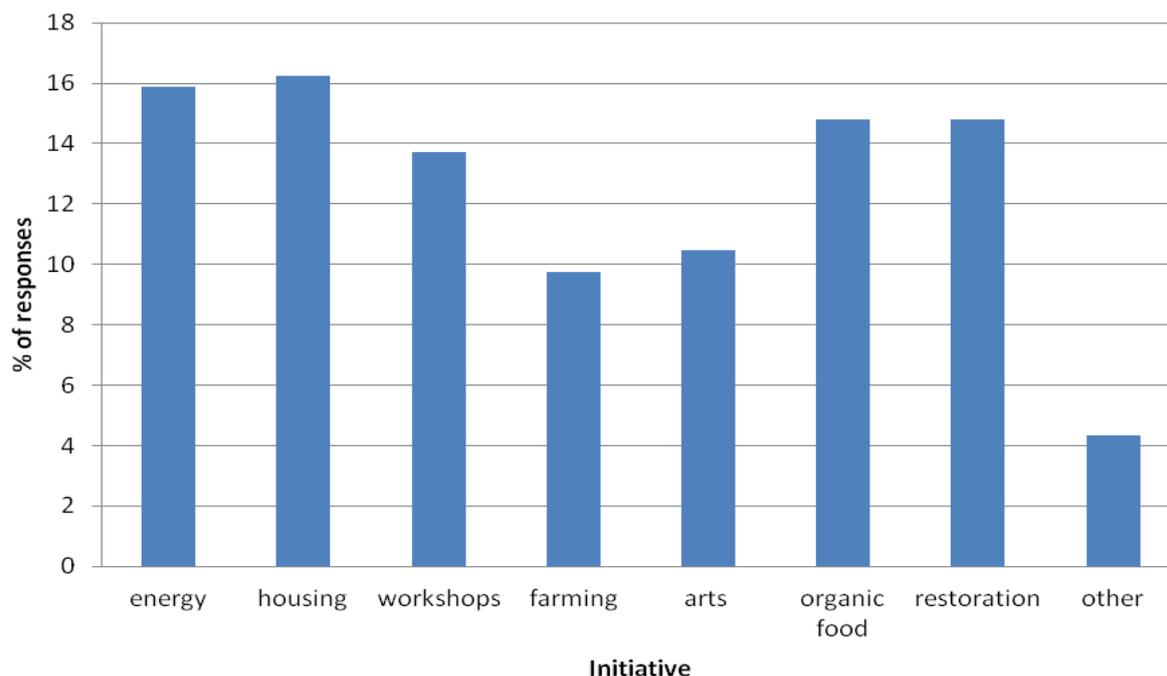
When asked to consider personal use of a Resilience Center, should the development go ahead, the majority of respondents selected 'No' or 'Unsure' (Table 3). This is most likely because the centre and initiatives are still very much in the conceptual planning stage, and many residents were reluctant to comment without knowing exactly which services the Centre could provide to them. Despite the lack of possible personal use of the centre, potential resilience centre initiatives were received positively (Figure 5) and selected activities that have a tangible aspect, appears to influence the willingness of residents to participate.

**Table 2:** Location Suitability Results.

| <b>Location suitability</b> | <b>Response</b>     |                  |             |           |             |                  | <b>Total</b> |
|-----------------------------|---------------------|------------------|-------------|-----------|-------------|------------------|--------------|
|                             | <b>Not answered</b> | <b>Very poor</b> | <b>poor</b> | <b>ok</b> | <b>good</b> | <b>Very good</b> |              |
| <b>Percentage response</b>  | 6.5%                | 8.1%             | 6.5%        | 43.6%     | 21%         | 14.5%            | 100%         |

**Table 3:** Potential to use the Resilience Centre.

| <b>Likely to use</b> | <b>Percent</b> |
|----------------------|----------------|
| Yes                  | 66.1%          |
| No                   | 29.%           |
| Unsure               | 4.8%           |
| Total                | 100%           |



**Figure 5:** Appeal of resilience center initiatives.

There was a large emphasis placed on community involvement throughout the survey. The questions posed attempted to assess household and community resilience activity participation. The results gathered indicated a seemingly higher participation in local activities which result in tangible rewards for those participating. This is reflected in high reported support for local markets and participation in community, school and other groups (Figure 5). A range of other activities which respondents perceived to be contributing to community resilience were also recorded. These included such initiatives as active involvement in tree planting within the Harbour Basin area.

This willingness to participate in community activities links to the core values exhibited in our case study of Totnes transition town, where community engagement helped to drive the development and support for the community-centric initiatives undertaken. It would seem that within the results shown by our research this willingness to participate in community activities, and the importance placed on social networks, does not perhaps transcribe so willingly into commitment to support the proposed Resilience Centre.

An underlying theme of many responses regarding the Resilience Centre was that resilience was already a strength within the Harbour Basin. In this sense some felt that efforts would be better focused on further developing existing resilience practices, as opposed to creating a new venture which would possibly detract from current initiatives. This was reflected in the focus group, where one respondent noted that: "There's always a place for education but you've got to pick a community that needs it most."

## **Conclusion**

The findings of the research conducted indicate a reasonable understanding of current attitudes towards resilience within the surveyed population of the Lyttelton Harbour Basin. Our results show a strong sense of awareness of the importance of resilience within Basin communities and at a personal level. Responses and discussions from the sampled population suggest that current neighbourhood support and communication networks are strong. Some respondents noted an increase in these links following the disruptions caused by the Canterbury Earthquakes. The sample population was small. This must therefore be kept in consideration when applying the findings of this study.

With regards to the Resilience Centre, many residents indicated a strong existing sense of resilience and sufficient extent of resilience initiatives within the Harbour Basin. In this sense residents suggested that while the concepts behind such a centre were well-intentioned, there was not an overwhelming sense of need for the centre within their communities. It would therefore be our recommendation that perhaps a Resilience Centre is not the answer for these communities. The development may be better suited as a service for the Metropolitan population of the City of Christchurch.

To better promote resilience in the Lyttelton Harbour Basin, grassroots approaches are needed to develop prepared individuals and more resilient communities. There is a notable desire from residents to build on existing practices and more traditional sustainability methods, without undermining those strong community networks which

exist by further spreading the pool of resources available within the Lyttelton Harbour Basin. Some residents' feelings towards resilience and its place in the Harbour Basin are effectively summarised as follows: "I don't feel too concerned about the future. I don't want to sound complacent but I think if any community's reasonably well prepared, it's these communities."

## **Acknowledgements**

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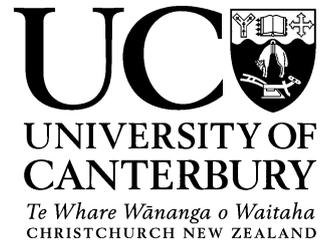
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## Appendix 1 Survey Administered



### COMMUNITY RESILIENCE IN THE LYTTELTON HARBOUR BASIN

*We are a group of undergraduate Geography students from the University of Canterbury. We are working with Project Lyttelton to gather information on community resilience within the Lyttelton Harbour Basin Area. This survey is part of that work.*

*Resilience is an important factor in the ability of households and communities to absorb the impacts of external disruptions, whatever form these may take.*

*There is no obligation to take part in this survey, but your response will help Project Lyttelton to deepen its understanding of how Harbour residents are thinking about resilience and how resilience might be strengthened in your area. The answers you provide will remain anonymous and you will not be personally identified in any presentations or reports.*

*Thank you for your time and consideration.*

### PERCEPTIONS OF RESILIENCE

*Resilience is the ability of a system to adapt, restore and recover when subjected to forces which have the potential to be destructive. In a community context,*





6. If a Resilience Centre was developed, what initiatives do you think should be part of it? (please tick all that apply)

- sustainable energy use and generation
- sustainable housing design & technologies
- sustainability (workshops and) education and practical workshops
- "low carbon" modern and heritage farming techniques
- arts
- organic food production
- restoration projects
- Other (please state): \_\_\_\_\_

7. What do you think about Orton Bradley Park as a location for a centre of this type?

- very poor choice of location
- poor choice of location
- okay choice location
- good choice of location
- very good choice of location

(Please add any comments you may have about the Centre's location)

8. Would you anticipate making personal use of the facilities at the Centre?

- Yes

No

Unsure

9. Are there any aspects of this project which would reduce your interest or support for the Resilience Centre?

10. Would you be willing to contribute resources such as time/finance towards the development of the Resilience Centre? If yes, please explain.

11. Do you have any other comments about resilience in the Lyttelton Harbour Basin?

## DEMOGRAPHIC INFORMATION

*These demographic questions will help us to understand how people's answers vary by age, between men and women, and on the basis of their work situations.*

12. What is your age group?

10-19

20-29

30-39

40-49

50-59

60+

13. What is your gender?

M     F

14. Are you (tick one)?

Employed full-time

Employed part-time

Unemployed at present

Have own business

Retired

Studying

Other? please state \_\_\_\_\_

15. If applicable, what sort of (paid) work/studies do you do?

\_\_\_\_\_

Not applicable

*Thank you for completing this survey. Your responses will help Project Lyttelton to determine the feasibility of the resilience centre and what might be done to increase resilience in Harbour Basin.*

*All of your responses are and will remain anonymous.*

*If you have any further questions about this survey please contact:*

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