



In partnership with the



A PERSPECTIVE on CLIMATE CHANGE ADAPTATION PLANNING in WAITATI

FINAL REPORT from BRCT to DCC

May 2014



1. At a Glance

Objective:	To develop a community-led approach to climate change planning in Dunedin through working with residents and groups in the climate change 'hot-spot' of Waitati.
Dates:	December 2012 - July 2013
Area:	Waitati
Funders:	DCC (Dunedin City Council) and BRCT (Blueskin Resilient Communities Trust)
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1.1. Executive Summary

This document combines a final report and a draft action plan for climate change adaptation planning in Waitati. The report pulls together information collected between December 2012 to July

2013, details the small-scale engagement process and highlights the level of participation in the creation of the draft action plan. The draft action plan sets out a preliminary approach suggesting an integrated community and council response to the challenges and opportunities of climate change. It details a set of actions, based on an initial analysis of issues arising for coastal settlements identified in the review of literature. The suggested actions range from simple to complex, and while they are purely local, they have regional and national implications and applicability. The draft action plan has been developed through a 'bottom-up' approach, with BRCT acting as a conduit for ideas to flow back and forth between residents in the settlement of Waitati and the Dunedin City Council.

1.2. Main Themes

1. **Community Participation:** Residents want to be actively involved and participate in planning for the future and value opportunities to contribute to, discuss and develop ideas and proposals with the DCC.
2. **A Connected Settlement:** Residents were all very aware of the importance of key infrastructure and its vulnerabilities to extreme events. Residents talked less about key links to Dunedin and more about the importance of infrastructure and communication between the settlements of Blueskin.
3. **An Informed Community:** Residents want to be informed about effects and solutions associated with climate change for Waitati.

4. **A Resilient Community:** Residents also indicated a need to have the capability and capacity to manage adverse climate change events (specifically including food, energy security, waste and water management and survival preparation).

Considering we spoke to Waitati residents about their community, it was not surprising that the importance of 'local' was commonly communicated. Some residents expressed fear and understandable uncertainty when discussing climate change and implications for Waitati. We learned that the climate change language was confusing for some members of the community. For example, some people understand climate change based on their own experiences (such as droughts, snow and flood events) and find talking about global surface warming, sea level rise, greenhouse gas emissions, storm surges, or loss of biodiversity, as too abstract. Other members of the community don't believe in human induced climate change yet are still interested and active in becoming more prepared for extreme events and referred to 'food security', 'water management' and 'survival preparation'.

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3. About the Project

BRCT has been an active advocate for local government involvement in climate change adaptation planning since 2008. In October 2012, BRCT was offered a \$5000 grant and DCC support team to develop a community-led action plan for climate change adaptation in the coastal settlement of Waitati. The objective of this work is to provide insights from a 'bottom-up' approach for climate change impacts by specifically working with the coastal settlement of Waitati. It was envisaged that this work would add an alternative perspective to what could be considered the more 'top down' approach the Council is pursuing in the South Dunedin area on climate change adaptation.

3.1. About Waitati

Waitati is 20km north of Dunedin and is just over the hill from Port Chalmers, North East Valley and Pine Hill. It is nestled among other small coastal settlements, located in the south-west of Blueskin Bay (see figure 1). Waitati functions as a 'hub' for the Blueskin community, with a shop, café, nursery, library, art gallery and mower repair business¹. There are approximately 500 people living in Waitati².

¹ This list is not exhaustive. Numerous residents work from home and other businesses thrive in Waitati or the larger Blueskin area, but we have focused here on businesses in the Waitati township.

² The 2013 census puts the population of Waitati at 513.

Much of Waitati lies at low elevation (<7m above mean sea level). The township is flanked by hills to the south and west and is bordered by the Blueskin Bay shoreline to the north. Two rivers enter Blueskin Bay in the vicinity of the township; the Waitati River flowing from west to east through Waitati, and Orokonui Creek, bordering the eastern edge. Both rivers currently discharge into the Waitati estuary at the eastern edge of the settlement.

3.2. Key Performance Indicators

The grant agreement set out three Key Performance Indicators:

1. A draft action plan is developed for progressing climate change adaptation planning after the project end;
2. A record of the number of households engaged during the nine months of the project is kept;
3. A mid-term and final report is delivered to the Council.

3.3. Project Description

The project is separated into four tasks:

1. **Literature review:** Review key literature and information in discussion with key stakeholder staff;
2. **Scoping:** Discuss findings from the literature review with key community groups, identify initial themes and identify key networkers for the following task;
3. **Community engagement:** Interview key networkers to map out initial thinking on what is needed for adaptation planning;

4. **Developing a draft action plan:** Draw together information gathered through the first three tasks to develop a draft action plan.

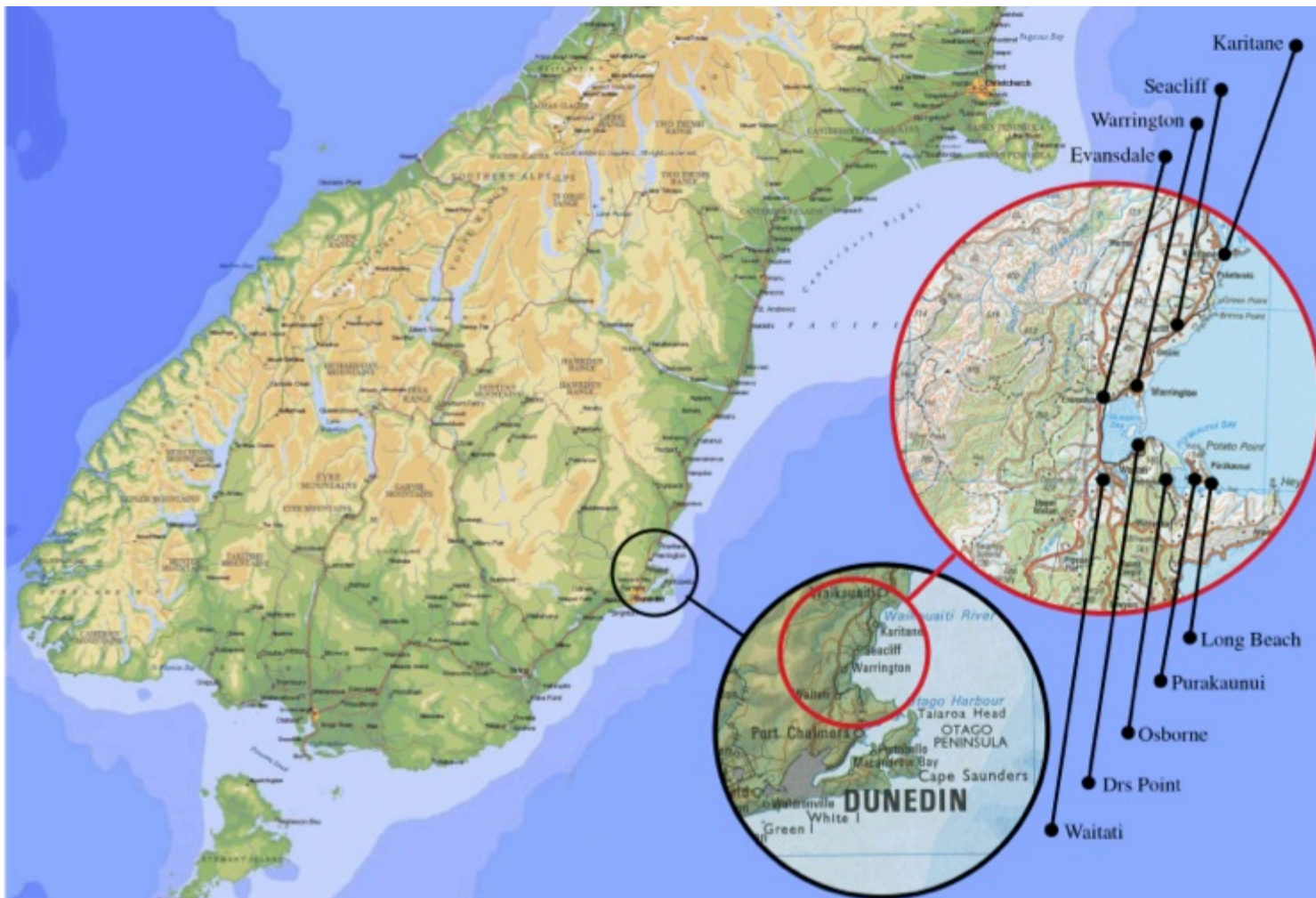


Figure 1: Waitati and the Blueskin Settlements

4. Literature Review

4.1. Introduction

The review of literature is organised to provide an overview of international and national climate science. In order to provide a clearer picture of climate change research, the first section begins with international research showing government initiated climate change action planning; the second section considers some international community-initiated climate change action planning. These first two sections highlight how climate change adaptation planning is essential, not only for environmental and economic resilience but also for social resilience. The action plans reviewed in the second section tend to focus on social solutions and how communities can be involved in understanding and creating change.

The focus in the third and fourth sections of the review, which consider national and local climate change reporting, is on process and how communities can become involved.

The last section of the review focuses on specific mapping for the coastal community of Waitati and local and regional councils modelling of natural hazards including sea level rise, direct inundation through storm surges, tsunamis, flooding and liquefaction.

4.2. Review of Literature

4.2.1. International Climate Change Action Planning: Council/Government Initiated Planning

In 2007, the Intergovernmental Panel on Climate Change (IPCC) released consensus findings on human induced climate change³. The summary document stated, "Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice and rising global average sea level" (IPCC 2007, p.2). The reports also indicates, "Global GHG (Green House Gas) emissions due to human activities have grown since pre-industrial times, with an increase of 70% between 1970 and 2004" (Ibid., p.5).

In 2010, the Centre for New American Security, in the US, published a report titled 'Broadening Horizons: Climate Change and the U.S. Armed Forces'. The report concludes that climate change will have important consequences for national security and will impact on the way the Department of Defence conducts business. The authors acknowledge that the effects of global climate change are likely to reshape the current and future security environment. The authors also argue, "Analysts expect changes such as extreme drought, more frequent heat waves, desertification, flooding and extreme weather events. The

³ The fifth assessment report from the IPCC was released on the 31st March 2014, after completion of this report from BRCT to the DCC.

combined impact of these effects will intertwine with existing political, social, cultural and economic trends, with significant implications for U.S. interests worldwide” (Carmen 2010, p.5).

In Europe, the European Commission has been consulting on a Green Paper titled ‘A 2030 framework for climate and energy policies’. The consultation period was open from 28th March 2013 to 2nd July 2013 and was aimed at all European Union (EU) citizens and organisations, inside and outside the EU (European Commission 2013). Alongside this work the European Commission has a European Climate Adaptation Platform (European Commission 2014), which shows the different stages European Environment Agency (EEA) member countries are at in terms of preparing, developing and implementing adaptation strategies. The development of the strategies depends on the magnitude and nature of the observed impacts, the assessment of current and future vulnerability and the capacity to adapt.

On the 1st July 2013, the Department for Environment, Food & Rural Affairs (DEFRA) in the UK updated their ‘Adapting to climate change policy’. This policy grew from an action plan released by local councils in the South West of England. That action plan stated, “Climate change is quite simply the greatest challenge of our time” (South West 2008-2010, p.2). The plan considers challenges and opportunities for both adaptation and mitigation. 15 actions are identified in the Action Plan to help the region adapt to climate change. Their priority objectives for adaptation are:

1. “Identify the parts of the region most vulnerable to extreme weather events and undertake actions to increase resilience.
2. Increase business preparation for the opportunities and risks of climate change.
3. Ensure regional land-use practices take account of the impacts of climate change and promote adaptation responses.
4. Ensure that all relevant regional and sub-regional bodies understand the impacts of, and take action to respond to, increasing flood risk” (Ibid., p.5).

A chapter within their plan is also dedicated to awareness raising, with the ambition to “be well informed about the specific impacts of climate change on the South West region in terms of our economy, population and environment” (Ibid., p.17). Subsequent chapters aim to increase community resilience to adapting land and marine management and to adapting to increasing flood risk. Mitigation focuses on carbon emissions from existing domestic stock, from business and the public sector, from transport and from increasing the installed capacity of renewable energy and low carbon technology and to position the South West as a leader in these technologies.

4.2.2. International Climate Change Action Planning: Community Initiated Planning

The Kinsale Energy Descent Action Plan was completed in 2005. It sets out how Kinsale, a town in West Cork (Ireland) of about 7,000 people, could make the transition from an energy affluent

town to a low energy town in response to the twin challenges of peak oil and climate change⁴.

The action plan offers a timetable by which Kinsale can begin putting in place the elements it will need in order to design and manage energy descent. "It is a roadmap to sustainability, to localisation, to abundance" (Kinsale 2005, p.5). The plan is divided into ten sections, which is intended to covering the majority of aspects of life in Kinsale. These are:

- Food
- Youth & Community
- Education
- Housing
- Economy and Livelihoods
- Health
- Tourism
- Transport
- Waste
- Energy

Within each section there is a review of the current situation (background information on each area). A vision for each particular important theme is provided and practical steps of how to achieve this vision over the course of the next 16 years are set out on a year by year basis. The Kinsale work was the catalyst for the global Transition Town (TT) movement. The action plan was supported by the Kinsale town council and prepared by permaculture students from Kinsale Further Education College.

⁴ Conventional Oil peaked in 2006 according to the International Energy Agency (IEA), see www.iea.org.

4.2.3. National Climate Change Reporting

Dunedin is not the only city in New Zealand to have coastal communities at risk. NIWA (National Institute of Water and Atmospheric Research) has done work on 'Coastal Adaptation to Climate Change' (see summary poster in Figure 2, overleaf).

NIWA's planning included specific risks and hazards for New Zealand's coastal communities, these include:

- "Sea-level rise;
- Changes to coastal storms, (storm-surge and wave heights);
- Increased frequency of coastal inundation from tides, waves and coastal storm surges;
- Increased erosion of coastal areas;
- Salinisation of near-coast groundwater systems and lowland rivers and creeks;
- Combined changes in river flooding and coastal inundation impacting on estuaries and coasts;
- Increased challenges for drainage of coastal and estuary margins;
- Changes in sedimentation in estuaries and harbours;
- Coastal squeeze of ecological habitats between advancing shorelines and human development" (NIWA 2011 a, p.12).

This research has direct implications for Dunedin coastal settlements such as Waitati.

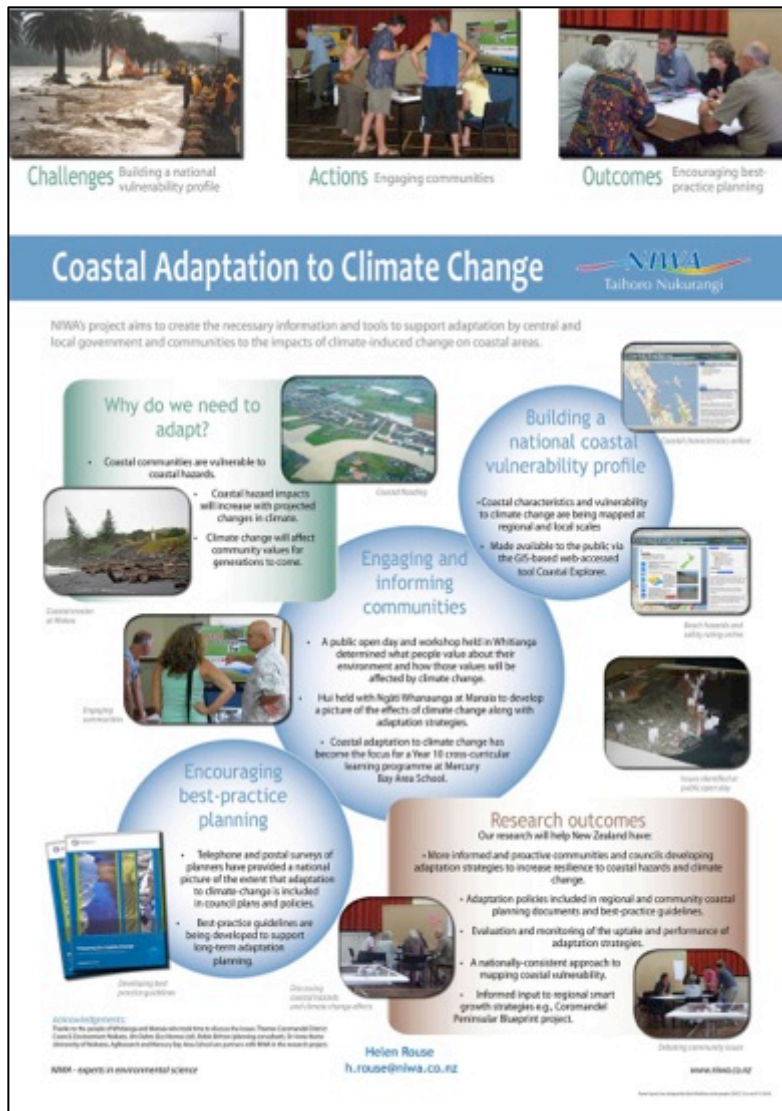


Figure 2: Summary Poster Coastal Adaptation to Climate Change, NIWA 2011

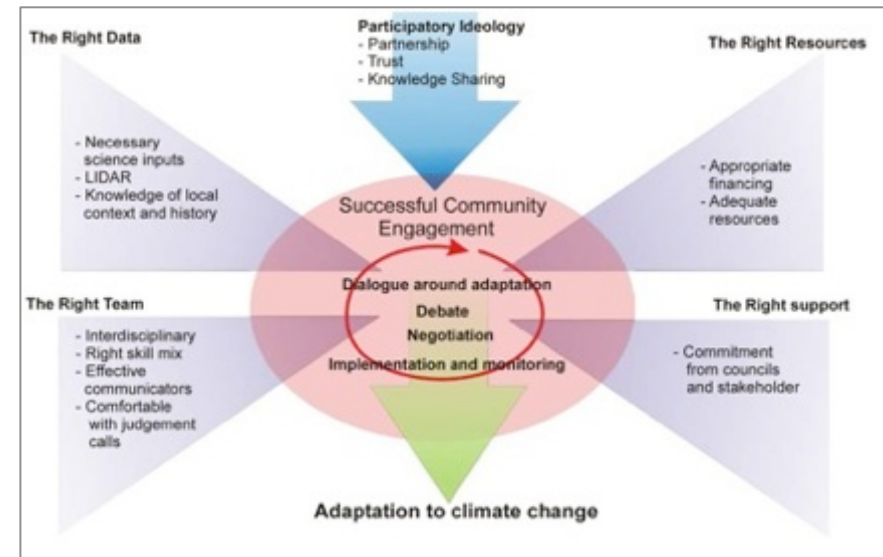


Figure 3: Engaging Communities: Making it Work Model (NIWA 2011 a, p. 61)

NIWA considered participatory approaches as a means of getting people 'on board', understanding complex systems and achieving outcomes through consensus. Figure 3 demonstrates their model of community engagement. NIWA also indicated that they found some challenges with this approach. For example:

- "pinpointing the community of interest and getting a cross section of people to take part; the ability of groups to reach consensus;
- how to introduce technical information in a meaningful way which is in keeping with the spirit of partnership and yet

guides the consensus of views towards scientifically robust outcomes; and

- making sure outcomes are locally focussed but not detrimental to regional or national outcomes" (NIWA 2011 a, p.5)

As a consequence of identifying challenges, NIWA recommends a strong engagement model in order to achieve climate change adaptation planning. For NIWA this means, the right team, good data, key resources and strong support are all necessary.

Similarly, the Kāpiti Coast District Council focuses on similar climate change impacts, specifically through their natural hazard work:⁵

- Temperature changes;
- Sea level rises;
- Rainfall changes;
- Storms.

NIWA's publication: Coastal Adaptation to Climate Change: Pathways to Change (NIWA 2011 b) is a useful tool to assist local working groups address these hazards. In the Kāpiti Coast model their local working groups identify:

- what the local community's values and aspirations are;
- what the local issues are;
- how soon response options might need to be ready to go;

⁵ For more information see: www.kcdc.govt.nz/Planning/District-Plan-Review/Coastal-Hazards/Background-Information.

- what the best range of options might be for that area.

Information from these sources and with these foci would help build a better understanding of potential climate change impacts in coastal settlements such as Waitati. Both NIWA and the Kāpiti Coast District Council approaches are of direct relevance to this climate change adaptation project, as both highlight the importance of strong community participation.

4.2.4. Local Climate Change Reporting

Local information regarding projected climate change for Dunedin City was gathered from 'Climate Change Impacts on Dunedin' by Blair Fitzharris, March 2010. In this report Fitzharris identifies five main sectors at risk. They are:

1. "Low-lying densely populated urban areas;
2. Coasts, especially near estuaries, and their communities;
3. Major transport infrastructure, mainly harbour roads and railway;
4. Dunedin Airport from enlarged tides, rising salinity and flooding;
5. Natural ecosystems" (Fitzharris 2010, p.5).

In terms of the coastal communities, Fitzharris states, "The main issue for residents of coastal towns will be protection against rising sea levels. Some coastal land and infrastructure may have to be abandoned in a planned retreat inland and to higher ground. These communities are unlikely to afford the cost of building and maintaining protection structures" (Ibid., p.33).

4.2.5. Local Natural Hazard Reporting

Following on from Fitzharris' report the Dunedin City Council (DCC) is undertaking mitigation and adaption work specifically on coastal natural hazards, and this is being informed by technical work being undertaken by the Otago Regional Council (ORC). The low-lying areas of Waitati, like many coastal communities, are likely to be vulnerable to the effects of climate change through increasing sea levels, especially when combined with heavy rainfalls and storms.



Figure 4: Dunedin City Council, Civil Defence and Rural Fires: Waitati Flood Report (DCC 2006, p.10)

A memorable event for many members of the community in Waitati was the storm and subsequent flood event in 2006. Figure 4 shows the approximate area of flooding during the April 2006 event.

The area defined by the black line (A) indicates the approximate area included in the 1998 DCC Lifeline Report, however, the areas marked Band C (inside the red lines) show where the April 2006 storm also affected. According to the Flood Report, the area bounded by the yellow line (D and E) indicates areas that may be at risk of flooding in the future (DCC 2006).

Important information to note is that Waitati sits at the mouth of a flood plain with much of the residential area situated on the flood plain itself. Waitati has been affected by high flows in the Waitati River nearly every decade (May 1957, March 1968, June 1980, February 1991 and April 2006) (ORC 2013a). The ORC obtained consent to extract gravel from the lower reaches of the Waitati River after the April 2006 flood to help improve channel capacity, reduce the flood risk to Waitati Township, and to limit bank erosion of the DoC (Department of Conservation) reserve. However, it is possible that further aggradation or sediment movement will occur, particularly during extreme flood events, due to the geomorphology of the flood plain (see figure 5).



Figure 5: Mapped alluvial fan hazard in the Waitati River catchment (ORC 2013b, p. 10)

The image in figure 5 shows the mapped alluvial fan hazard in the Waitati River catchment (shaded yellow). The current location of the main river channels are shown as blue lines (ORC 2013b, p.10).

The largest event since European settlement is likely to have occurred in the 1920's and highlights how dynamic and unpredictable the river can be. "Eyewitness recall that the worst flood occurred in the 1920's when the meandering Waitati became one sheet of water from one side of the valley to the other" (ORC 1993, p. 12). The main channel of the Waitati River

changed its course during a large flood in the 1880's, shifting flow from alongside Doctors Point Road to where it is today, running alongside Orokonui Road (ORC 1993) (figure 6, overleaf, clearly shows the channel of both flows).

The short and steep Waitati River behaves similarly to the Water of Leith in Dunedin (catchment area and topography are comparable, and their headwaters have a similar exposure to heavy rain from the east). Both rivers "can rise rapidly from a flow with little impact on people, to a level where significant flooding of urban areas can occur" (ORC 2013b, p.6).

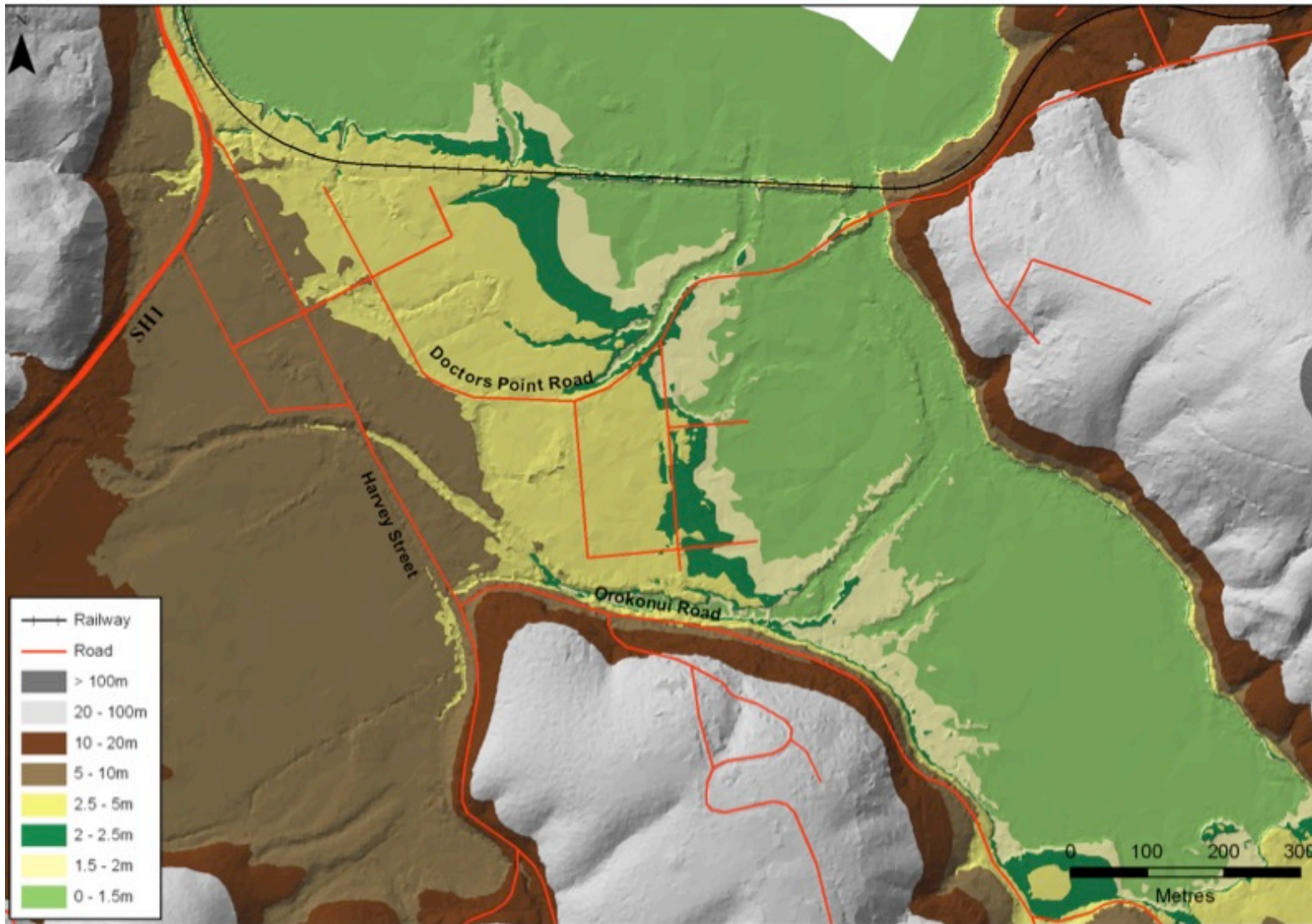


Figure 6: High-precision topographic data of the township of Waitati - LiDAR (light detecting and ranging) Map provided by ORC May 2014. Elevations are in metres above mean sea level

Figure 6 shows the topography of Waitati, with much of the township located at the mouth of the Waitati River, and much of the community situated on land which is less than 5m above mean sea level. This means Waitati may be exposed to inundation during elevated sea level events (ORC, 2013b). Extreme tides, storm surge and tsunami waves will initially enter the lower-lying parts of the township from Blueskin Bay as backflow up the Waitati River, while larger tsunami events may also overtop the railway embankment that lies to the north (ORC 2013b). The effect of elevated sea levels may be exacerbated if they coincide with high flow events in the Waitati River. Currently the ORC does not hold any modelling which considers the combined effects of river flooding and storm surge (ibid).

Figure 6 also shows the topography of the wide, flat flood plain to the south west of Waitati.

Other natural hazards identified by ORC (2013) include seismic hazard, ground subsidence or liquefaction as a result of seismic shaking and landslide hazard.

4.3. Conclusions

Information gathered from different organisations in Dunedin led BRCT to believe there is a significant risk in Waitati of extreme weather events, ranging from river flooding, droughts and snow fall to rising sea levels, storm surges and tsunamis, particularly when there is a conjuncture of events. The biggest risk is a combined event where extreme weather (rain storms causing high river flow) is combined with other events, for example

extreme high tides made worse by sea level rise, storm surge or the extreme event of a tsunami.

Climate science posits that climate change will result in a greater incidence of extreme events as sea levels continue to rise and weather patterns change (IPCC 2007). It is hard to offer residents certainty when, because of the very complexity of climate change, effects are hard to predict in detail.

In summary, "the location and topography of Waitati expose it to two broad types of hazards: inundation (either from the sea or river flooding, and deposition of water-borne sediment during heavy rainfall events) and land instability (including the effects of seismic shaking and liquefaction). The interaction of different hazards (e.g. elevated sea levels coinciding with heavy rainfall and high river flows) can increase the level of hazard faced by the Waitati community" (ORC 2013b, p.1).

5. Scoping Exercise

The literature review and regular meetings with the DCC team prepared the ground for the scoping exercise. Large-scale, rich community engagement was not resourced at this stage of the project but is a common recommendation within the literature and a desired and proposed component of the action plan set out in the final section.

5.1. Locating Community Groups

BRCT initiated the scoping exercise by setting out the climate change planning project in the Blueskin News and through the BRCT email update which goes out to over 300 addresses. The various announcements were similar to this example:

We are collecting ideas from Waitati residents about your values and aspirations for the community and about any local issues that you see as important in long term climate change planning. At our stall at the A&P Show we will have key literature and visual information from the DCC and the ORC about future potential climate change impacts. If you are a member of the Waitati Community then we are keen to talk to YOU about your ideas for long term planning for anticipated climate change impacts. If you are part of a community group and would like to engage in this conversation, or if you have any questions, please contact us: office@brct.org.nz

BRCT began first with conversations with community groups to:

- Introduce the climate change planning project;
- Discuss the information BRCT has collated and assessed during the literature review;
- Begin to scope what a draft action plan for climate change adaptation planning might need to contain; and,
- Identify members of the community to invite for the small-scale community engagement process.

Typically these discussions took part in the regular meetings as an agenda item and part of normal business for each group concerned. However, where regular meetings were not held an email was circulated to identify interested groups and individuals.

5.2. Community Groups Contacted

A variety of community groups were briefed about project, some of which were then visited and a question and answer session held:

- Blueskin Baywatch - briefed
- Blueskin Garden Club, WEGgies & WOO - briefed
- Waitati School PTA - briefed
- The Waikouaiti Community Board - briefed
- Community Resource Consent Application meeting - visited
- Waitati Film Society - visited
- Waitati Play Centre - visited
- The Volunteer Fire Brigade - visited

It is important to note that within the group settings there was no particular urgency regarding climate change⁶. However there was still a lot of interest in climate change from community groups, especially in what it may mean for the community. Some of this concern (from the Community Resource Consent Application meeting held in June 2013) may have been driven by the McLaughlin Street Resource Consent submissions⁷. In this instance, some submitters were opposed to the proposal to subdivide low-lying rural land for residential development, and gave climate change/ sea-level rise/ flood events (among other reasons) as a reason for their opposition.

A commonality arising for some people within the community was to recall the floods of April 2006. This flood event is within recent history and because it could potentially indicate scenarios associated with climate change, became a point of interest. In meetings, photographs were pulled out and the event remembered and discussed. Figures 7-10 show a selection of these photos.

⁶ The relative lack of urgency in relation to climate change in the group meetings was challenged in the individual interviews where interviewees were more animated about preparing for a changing environment.

⁷ The RC application SUB-2012-104 & LUC-2012-571 proposal is to subdivide the land into four new rural-residential sites.



Figure 7: Brown Street, Waitati



Figure 8: Bridge on Doctors Point Road, Waitati



Figure 9: Harvey Street, Waitati



Figure 10: Resident's driveway on Harvey Street, Waitati

On the 29th May, Scott Willis met with Terry Jones, OtagoNets Network Manager, to discuss the risk profile of the Waitati sub-station due to its close proximity to the river. OtagoNet is currently in the process of reviewing the safety, reliability of supply and earthquake reporting from the sub-station. What was new for Terry was the risk from climate change, which has now been included in the review process. Plans for the future of the sub-station will be decided at the end of the year.

5.3. Main Comments

1. The Volunteer Fire Brigade talked of its emergency response role in the community and members sought BRCT's assistance in promoting this emergency response service. Much discussion was related directly to the 2006 flood.
2. One idea emerging from the Community 'McLaughlin Street' Resource Consent Application meeting was to develop a plan for a managed retreat from the flat area of Waitati, with interest in planning for intentional co-housing and adaptability of land use⁸.
3. Another idea emerging from the scoping exercise was the importance placed on an access network between Blueskin communities specifically for walking or cycling. The use of

⁸ Interesting to note the decision on the proposed subdivision is "The Committee (by majority) has declined consent to the application on 12 August 2013". See www.dunedin.govt.nz/services/planning/browse-notified-decisions for more details.

paper roads, and enabling paper roads to develop as access ways, was extrapolated into opportunities to create leisure facilities in the area through new walking and cycling tracks. Figure 11 shows Walking Access NZ map of paper roads in Blueskin.

4. A further idea was strengthening access between Waitati and Purakaunui and Port Chalmers, especially in terms of public transport options and cycling and walking options.

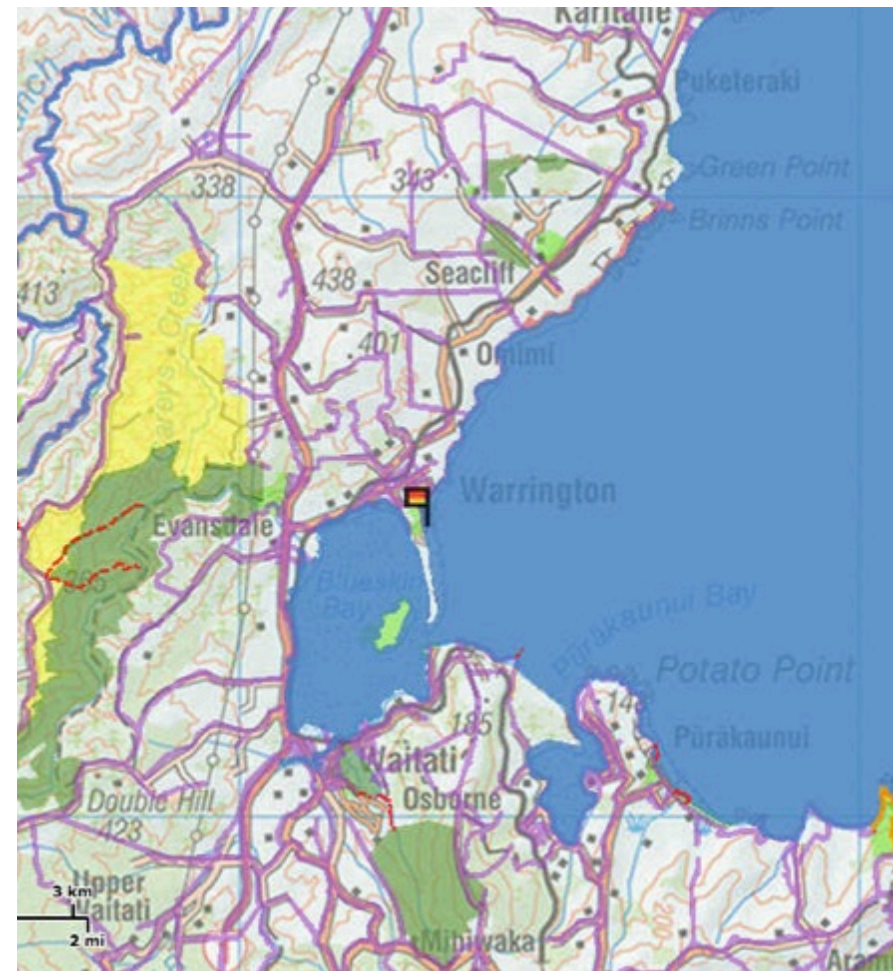


Figure 11: Walking Access NZ Map. Public access roads are shown in purple (from <http://www.walkingaccess.govt.nz>)

6. Small-Scale Community Engagement

The third stage of the project involved a small number of one-to-one interviews and small community meetings held with previously identified networkers.

6.1. Locating Individuals

The community meetings held for the scoping exercise enabled individuals to pass on their details if they wanted to be involved in the project further. At the BRCT stall at the A&P Show on the 13th April 2013, information regarding the climate change planning project and a sign up sheet for individuals who wanted to participate further was available.

17 people in total participated individually in the climate change discussions and contributed to this report. BRCT recognises that this process was limited and wider community engagement could not be sought. BRCT only had the opportunity to talk to a fraction of Waitati residents. BRCT also acknowledges that each community will find different ways of addressing potential climate change impacts – the timing and staging of responses might vary from one area to another, or the appropriate responses might be different. This report offers the first stage to better understanding Waitati residents' values and aspirations in terms of climate change adaptation planning.

6.2. Planning Small-Scale Engagement

6.2.1. What is an adaptation plan?

The world's climate and weather patterns are changing. Global temperatures are rising, causing more extreme weather events, like flooding and heat waves. 'Adaptation' involves changing the way we do things to prepare for the potential impacts of climate change. This means we will be better protected against negative impacts. It also means we'll be better prepared for new opportunities. The earlier we plan for adaptation, the less it will cost and the better equipped we will be to cope with potential changes.

6.2.2. What is an action plan?

At BRCT, we have the opportunity to layout some initial action plan ideas with the help of some Waitati residents. The draft action plan focuses on how to begin climate change adaptation planning for Waitati. Information gathered from the small selection of the Waitati community frames the issue of adaptation and the range of processes that are recognized as being part of an adaptation response. The draft action plan pulls together information and thinking that has taken place during the project, and details the process and scale of participation and engagement. The draft action plan provides a map to help plan future directions.

6.2.3. Interview schedule (open-ended interview methodology)

In order to map out initial thinking on creating a draft action plan for adaptation planning, questions were designed to stimulate thinking around the topic of climate change. They are:

- What does climate change mean for you?
- Who might be affected by climate change? How?
- What steps could we take - as individuals? Community? Council? Government?
- How do you want to be involved?
- What ideas do you want to communicate to Council (regarding climate change), whether positive or negative, community building or radical change of plan?

6.3. Main Comments

A wide range of comments regarding the DCC, climate change, and aspirations and values for Waitati emerged from these initial interviews. The full list of comments is included in Appendix A.

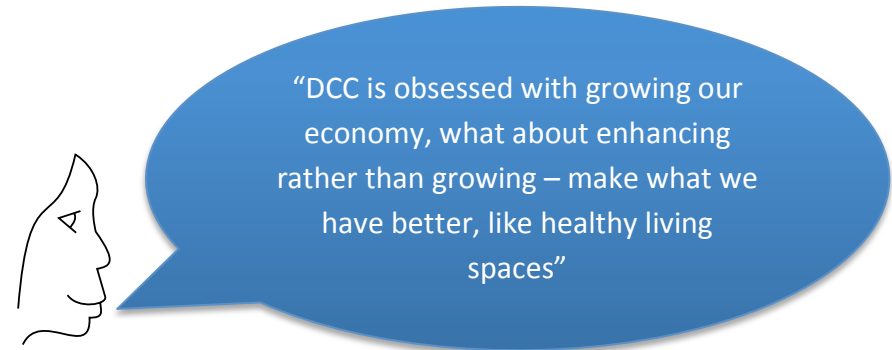
6.3.1. Regarding the Dunedin City Council

The main comments that emerged regarding the DCC were about being more prepared for climate change, such as "Council could encourage curbing our use of oil based products"⁹, "Council needs to be more prepared for extreme events" and

⁹ On the 13th May 2014 the DCC put ethical limits on investment of the Waipori Fund.

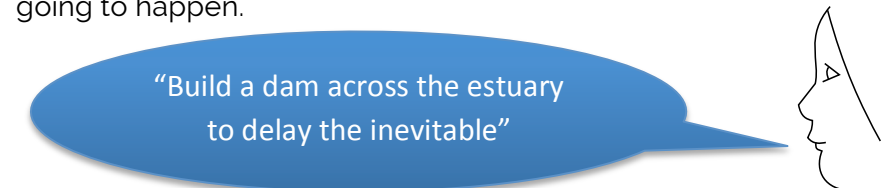
"Climate change is like an earthquake – we know it is going to happen we just don't know when – there are a lot of risks and we need a high level of discussion to decide how to manage it properly – then we can deal with the specifics of the problem".

Other relevant comments regarding the DCC indicate the council is good at consulting, such as "I want the same sort of consultation that DCC does now, so I can make suggestions – although people who have been here for 30 years have more knowledge - residents are experts of their own land". Other comments were more nuanced:



6.3.2. Understanding climate change

The main comments that emerged regarding climate change ranged from quite clear and definitive ideas about changing weather patterns, population patterns, peak oil and human survival; to comments that indicate we really don't know what is going to happen.





“The thing I worry about the most is rising tides, I am concerned about changing weather patterns”



“I want to be involved”

6.3.3. Aspirations and values for Waitati

The main comments to come out of the small-scale community engagement section illustrated some key aspirations and values for Waitati. They tended to follow certain themes, such as being consulted, connected, informed and resilient. The following summaries explain the themes; each theme also has an example comment to illustrate (see full list of comments in Appendix A).

Community participation:

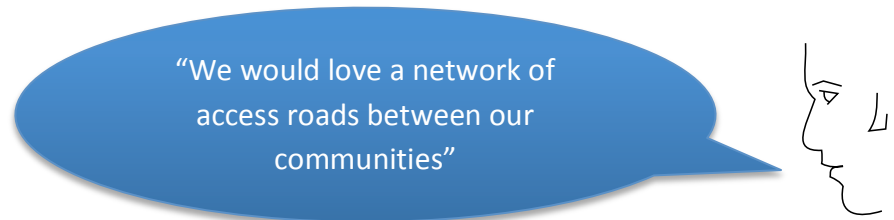
Comments transpired that indicated a strong desire to be consulted on all issues (not just climate change ones).

A connected community:

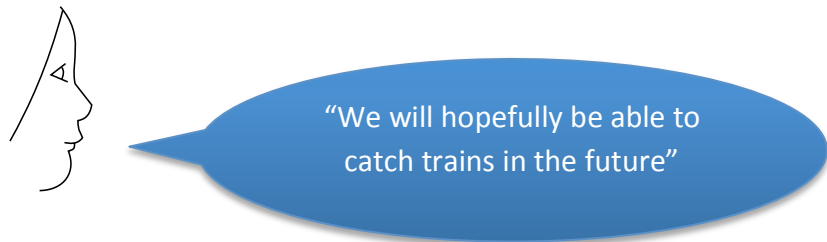
A clear indication was that being connected was essential for the residents of Waitati interviewed. Being connected to the city was important but equally significant was accessibility between Blueskin communities.



“We have a good participatory community out here, we meet regularly about issues (Orokonui/stadium) so council could help promote gatherings to get further community engagement here in Waitati”



“We would love a network of access roads between our communities”



“We will hopefully be able to catch trains in the future”

An informed community:

Comments highlighting the need for better education and awareness raising in terms of climate change were apparent. Suggestions of potential community development schemes emerged.



“Help us be more sustainable – build a pub, here in Waitati, do more local things”

“We need help to create easy options for families to become self sufficient, have their own power, grow their own food”



A resilient community:

The theme, a resilient community was also strong. Comments included notions of better management of our water, our food systems, our waste and our energy.

“We need to give back not waste?”



“Waitati has food growing everywhere but it needs more communal food, we need cheaper ways of surviving, food is expensive”



“We might have more or less water – how do we prepare? How do we control the water?”



“Food, petrol and power are increasing rapidly – we need these things but they are becoming difficult”

In summary, main comments from the small-scale community engagement process showed four key themes were prominent. These were (1) community participation and being (2) a networked, (3) informed and (4) resilient community.

7. Developing an Action Plan

A draft action plan emerged out of the tasks of this project. The literature review, the scoping exercise and the small-scale community engagement process have all provided knowledge that informs an action plan. The following steps would be necessary for further development.

7.1. Step One – Community Participation

Resulting from the scoping exercise (section 5) it became apparent that there was a lack of urgency around the need to prepare for changes regarding climate change. However, these findings were significantly different when interviewing individual members of the community. From the small-scale community engagement exercise (section 6) it was apparent that there is some fear and anxiety around climate change, in particular around the unknown. Comments related to preparation, survival and consultation. The latter also featured in the aspirations and values for Waitati, which were themed into having a participatory, connected, informed and resilient community.

Delving into a small number of Waitati residents' understanding surrounding issues connected to climate change proved to be beneficial. Therefore a more in depth and thorough community engagement process is recommended.

Further participation, awareness and discussion could take place in the form of an information day. A key feature would be enabling dialogue around adaptation. The aim would be to

strengthen community partnership with local council, build trust and share knowledge and experiences relevant to our changing climate and surrounding landscapes. The DCC, ORC and other knowledgeable staff would ideally present the science to the community in a straightforward, open and honest discussion about our situation and potential hazards for the future.

Key components of the event would be:

- All local residents and businesses in the community would be invited;
- The local community hall would be used to identify parts of the region most vulnerable to climate change;
- Ideas gathered from local residents and businesses at the event on what is important for them in their community;
- Ideas gathered on regional land use;
- Ideas gathered on mitigation and adaptation planning.

Reports from this participatory community engagement would produce information for the creation of an adaptation plan.

7.2. Step Two – Funding

Climate change adaptation planning is a large and resource intensive project. Funding partners will be essential for further planned action.

7.3. Step Three – Create Adaptation Plan

An Adaptation plan could be based on different (existing) sectors of life in the community. These could be:

- Economy and Livelihoods
- Education
- Energy
- Food
- Health
- Housing
- Tourism
- Transport
- Waste
- Youth & Community

Each of these sections will require information on the current situation, a vision for the future and practical steps on how to get there. Further work could also include how to get buy in from stakeholders, how to monitor each step and a review of each step.

The following section is a first draft of an action plan that focuses on local Waitati issues identified within this report. We have started with food and energy as both of these are of primary importance for climate change adaptations.

7.4. Step Four – Further Research

Since this report was written BRCT has secured a grant to complete a food system assessment for Blueskin, and in conjunction, develop a community-led vision for a local Blueskin food system. A framework will be developed to assist the community in achieving that vision, highlighting opportunities for local economic development and community initiatives. In addition, an assessment of the resilience of the existing food system to both natural hazards and climate change will be completed, informing community understanding and aspirations for their future food system. The project will be complete at the end of 2014.

8. Draft Action Plan - Climate Change Planning for Waitati

This draft action plan is the work of the BRCT team and as such it is a starting point for discussion rather than a directive. Our aim in setting out a preliminary action plan is to provide a way in to community discussion and increased participation in working towards a better future and we don't have the answers ourselves. This 'Blue-sky' work however has not just come from us: we've also had the wealth of thought of a number of residents who volunteered their concerns and ideas during the small-scale community engagement interviews, and we also start it with a 'here and now'. Ultimately our hope is that others will contribute through a collective process to allow a broad agreement and collective action plan that can be adopted by the whole community.

8.1. Food

8.1.1. The Present

Waitati is the hub settlement in a happy group of settlements known as Blueskin. There is a high percentage of home gardeners and one commercial grower in the settlement of Waitati. Many residents keep poultry and there are many lifestyle blocks, often with a few sheep and some have a few cattle. Livestock production (sheep and beef) is widely practiced on the farms around Waitati and there is a tiny amount of small-scale dairy production. A few people find employment in food production, either for the commercial grower or for home growers. There are two existing community groups seeking to boost food production in Waitati (Waitati Edible Gardeners and Waitati Open Orchards) and two businesses selling seeds, seedlings and/or trees and bushes and services (Blueskin Nurseries and Sutherland Nurseries¹⁰) and support services like Blueskin Mowers and Cargill Contracting. Much of the highly productive land is under pasture or is currently residential area. There is a shop at Waitati on SH1 supplying basic supplies, some vegetables, etc and four seasonal markets are held in Waitati each year¹¹. Residents are highly reliant on commercial Dunedin food outlets such as the supermarkets, the farmers market, the organic shop (Taste Nature) and town restaurants and fast-food outlets and there is little integration of production with consumption in Waitati at present.

¹⁰ Since this report was written Sutherland Nurseries is now "Habitata".

¹¹ Since this report was written a monthly Blueskin Market (including food) has replaced the seasonal Waitati Harvest Market in Waitati.

8.1.2. The Vision

By 2050 Waitati has made the transition from food dependence to food sovereignty. Residents are active managers of the local food system and hold weekly local farmers markets, with food from backyard surpluses, community allotments, local producers and community gardens. A food crisis management team manages the Waitati 'food picture', ensuring that there are sufficient calories in stock to feed residents in any crisis situation and ensuring there are distribution networks available. We eat predominantly from within our local food web, have a thriving local economy, and broad intergenerational gardening and farming skills. As people have become both formally and informally more linked to our local food web, we develop shorter, thicker, and more resilient food chains, and people are less stressed, have access to a larger range of fresh vegetables and local meat, poultry and fish with a consequent reduction in illness and general increase in health and well-being. Residents love holding street parties at any one of the edible streetscape locations scattered around the settlement.

8.1.3. Practical Steps

2014	Existing:	Waitati Edible Gardeners (WEGgies) continues to hold an edible gardening workshop and maintain a community garden Waitati Open Orchards (WOO) continues to maintain community fruit trees for public access Waitati Brewers continues to hold an annual event
	New:	Consultation with Waitati residents (specifically existing community food groups, like WEGgies and WOO) regarding a local food system, what it is and what they would like to see Completion of a local food system assessment by BRCT with Ahika Consultants Formal establishment of a Waitati Food Coop to begin integration of production and consumption DCC bans the use of pesticides in Waitati
2015	Existing:	Waitati Edible Gardeners hold an edible gardening workshop and maintain a community garden Waitati Open Orchards maintain community fruit trees for public access Waitati Brewers holds an annual event
	New:	Waitati Food Coop secures a lease on fertile soil and puts in first crops Waitati Food Coop secures access to public land for food production in partnership with the DCC
2016	Existing:	Waitati Edible Gardeners hold an edible gardening workshop and maintain a community garden Waitati Open Orchards maintain community fruit trees for public access Waitati Brewers holds an annual event
	New:	Waitati Food Coop works with WEGgies and WOO to boost number and size of local food markets Waitati Food Coop works with local farmers to ensure a regular local meat supply Waitati Food Coop works with the DCC to establish a commercial kitchen in the settlement

2017	Existing:	Waitati Edible Gardeners hold an edible gardening workshop and maintain a community garden Waitati Open Orchards maintain community fruit trees for public access Waitati Brewers holds an annual event
	New:	Food crisis management team formed to begin emergency food planning in partnership with Civil Defence and local business Waitati Food Coop opens retail shop and social venue to sell surplus and bulk supplies and provide a social hub
2018	Existing:	Waitati Edible Gardeners hold an edible gardening workshop and maintain a community garden Waitati Open Orchards maintain community fruit trees for public access Waitati Brewers holds an annual event
	New:	Waitati school introduces a local food procurement policy for Friday school lunch Waitati Food Coop works with DCC Parks and Recreation team ¹² to ensure that DCC employees working in the Waitati area are well versed in permaculture principles and knowledgeable about climate risks Waitati Food Coop assist Waitati School boost its food garden area First Community Supported Agriculture farm arrangement organised
2019	Existing:	Waitati Edible Gardeners hold an edible gardening workshop and maintain a community garden Waitati Open Orchards maintain community fruit trees for public access
	New:	Waitati Brewers holds an annual event The community, with a steering group from the various community organisations, hosts a week long Local Food Celebration event, supported by the DCC, in which: local food is showcased; pruning and gardening workshops are held; Community Supported Agriculture farm visit; brewers challenge held
2020	Existing:	Waitati Edible Gardeners hold an edible gardening workshop and maintain a community garden Waitati Open Orchards maintain community fruit trees for public access Waitati Brewers holds an annual event
	New:	Waitati Food Coop secures further leased land for food production Cooperative local dairy established Commercial grower numbers double and food is retailed through the Waitati Food Coop

¹² Food Network funding proposal approved in 2014

8.2. Energy

8.2.1. The Present

Waitati is the hub settlement in a happy group of settlements known as Blueskin, however its current electricity supply and transport fuel supply is provided through long supply chains, and for transport, from non-renewable sources currently (with some exceptions). Many homes have a first tier of thermal insulation (ceiling and underfloor) and aspire to do better. There is a very small but growing percentage of homes either generating their own electricity through solar photovoltaics or micro wind, and/or generating hot water through solar thermal. A Blueskin wide wind generation project is well advanced and when developed will feed electricity into the local network centred on the Waitati substation. The substation itself is in a flood prone zone beside the Waitati river. Electricity is a heating source for many homes, but a high percentage of homes use wood as a heating fuel and a very small number of residents burn coal for heating. Transport fuel is supplied through retailers in Dunedin, Waikouaiti or further afield, although there is one fully electric car in Waitati at present deriving most of its electrical power from local renewable generation.

8.2.2. The Vision

By 2050 Waitati is a net energy exporter on an annual basis and has secured all its energy needs for residential use. Waitati residents joined the rest of Blueskin to establish the Blueskin Wind Cluster that was commissioned and began generating electricity in 2016. During roughly the same period, solar photovoltaics and solar thermal were slowly added, until now 70% of houses have some form of solar energy collection installed. All use of coal has been eliminated through changes in norms and material culture (i.e. greater thermal productivity in the home and replacement of coal burners with efficient wood fires or electric heating). Fossil fuels remain in limited use for a small number of transport tasks and by and large the transport system has been electrified. The Waitati Substation was moved to higher ground in 2014 and can be islanded from the rest of the grid when there are problems in the rest of the network to ensure the lights stay on. Home Performance Advisors work within the community providing free independent energy advice and Waitati residents are part of a Dunedin wide housing 'Warrant of Fitness' scheme, and consistently get high ratings. Residents are warm and cosy year round, and their energy bills remain under 10% of their total household income.

8.2.3. Practical Steps

2014	Resource consent application submitted and approved for wind farm development Fundraising for wind development begins DCC and BRCT agree on principals for a long term hedge agreement for Blueskin electricity from the wind farm
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	<p>BRCT office in Waitati hosts a 'turn on the sun' event as the office becomes solar powered</p> <p>Retrofitted Electric Vehicle (REV) cooperative company formed</p> <p>5 more households 'go solar'</p> <p>3 cold, inefficient homes receive a 'brush with kindness' cosy home makeover</p> <p>Cooperation between existing community groups results in a 'first cut' database of those in fuel poverty in the community</p> <p>Community Energy Advice service is strengthened</p>
2015	<p>Keystone wind farm investment secured and first development contracts signed</p> <p>Fundraising for wind farm development continues</p> <p>Fuel poverty database work grows</p> <p>Trial of Silverpeaks firewood supply in a City Forests/community agreement to address fuel poverty in the community</p> <p>REV coop commissions its first REV</p> <p>The new Waitati substation is built beyond the flood zone</p> <p>5 more households 'go solar'</p> <p>3 cold, inefficient homes receive a 'brush with kindness' cosy home makeover</p> <p>Community Energy Advice service continues</p>
2016	<p>Foundations are poured and turbines ordered for wind farm</p> <p>Fuel poverty database work continues</p> <p>Community firewood supply confirmed (to focus on addressing fuel poverty and elimination of coal)</p> <p>REV coop commissions its second REV</p> <p>5 more households 'go solar'</p> <p>3 cold, inefficient homes receive a 'brush with kindness' cosy home makeover</p> <p>Blueskin wind farm is commissioned and begins producing electricity</p> <p>Community Energy Advice service continues</p>
2017	<p>The first community dividend from the wind farm is received and celebrated with a community party</p> <p>Fuel poverty database work updated annually</p> <p>Energy Advice and fuel poverty action is no longer primarily Waitati based but has a wider Blueskin focus</p> <p>Community firewood supply boosted by new supply and delivery arrangements and coordination between community groups</p> <p>REV coop commissions its third REV and inaugurates a 'REV Library' to allow other users to experience electric vehicles</p> <p>Coordinated action on insulating shed/skillion rooves and installing wall insulation begins, using wind farm subsidies</p> <p>10 more households 'go solar'</p> <p>3 cold, inefficient homes receive a 'brush with kindness' cosy home makeover</p> <p>Community Energy Advice service continues</p>
2018	<p>The second community dividend from the wind farm is received and celebrated with a community party</p>

	<p>Fuel poverty database work updated annually</p> <p>Local builders receive a Cosy Homes contract to complete wall insulation and double glazing in a 'buyers group' of at least 5 households, offering cost benefits to residents and work security to local business</p> <p>Search for a community woodlot site begins; community firewood service consolidates</p> <p>REV coop opens a public space to promote REVs and low carbon transportation; REV coop commissions its fourth REV</p> <p>Coordinated action on insulating shed/skillion rooves and installing wall insulation continues, using wind farm subsidies</p> <p>10 more households 'go solar'</p> <p>3 cold, inefficient homes receive a 'brush with kindness' cosy home makeover</p> <p>Community Energy Advice service continues</p>
2019	<p>The third community dividend from the wind farm is received and celebrated with a community party</p> <p>Fuel poverty database work updated annually</p> <p>Local builders receive a second Cosy Homes contract</p> <p>A community woodlot site is selected and negotiations entered into; community firewood service consolidates</p> <p>REV coop holds REV workshop; 3 private REVs commissioned</p> <p>Coordinated action on insulating shed/skillion rooves and installing wall insulation continues, using wind farm subsidies</p> <p>10 more households 'go solar'</p> <p>3 cold, inefficient homes receive a 'brush with kindness' cosy home makeover</p> <p>Community Energy Advice service continues</p>
2020	<p>The fourth community dividend from the wind farm is received and celebrated with a community party</p> <p>Fuel poverty database now comprehensive</p> <p>Local builders receive a third Cosy Homes contract</p> <p>Community woodlot negotiations are completed and planting begins; community firewood service consolidates</p> <p>REV coop holds second REV workshop; 3 private REVs commissioned</p> <p>Coordinated action on insulating shed/skillion rooves and installing wall insulation continues, using wind farm subsidies</p> <p>10 more households 'go solar'</p> <p>3 cold, inefficient homes receive a 'brush with kindness' cosy home makeover</p> <p>Community Energy Advice service continues</p>

8.3. Other Sectors

Each of these important sectors, whether 'food' and 'energy' as above, or the proposed 'economy & livelihoods', 'education', 'health', 'housing', 'tourism', 'transport', 'waste' and 'youth & community, (all fashioned along the Kinsale model lines) deserve solid attention, each in their own right. When we think of the NIWA model of community engagement, it is clear that some aspects (the 'Right Data') will be

generally applied. However other aspects (the 'Right Team', the 'Right Support', the 'Right Resources') will each depend on the sector investigated.

Each sector of life in the community investigated and developed as an Adaption Plan will involve partnerships with often different stakeholders and may have different 'lead' partners, and other contributing partners depending on sector. For example:

- 'Economy & Livelihoods': it is difficult to imagine who would be the best lead partner in the sector looking to adapt the economy and livelihoods to climate change. Our traditional economic model is based on a high-carbon economy, and fresh innovative thinking will be required to lead this planning work with the community.
- 'Education': clearly schools and community institutions are the key formal learning centres, and it would be sensible to design an education sector plan managed within the educational institutions. However these institutions are not resourced to do this work or to oversee this work.
- 'Health': the Southern District Health Board or the Southern Public Health Organisations are ideally placed to be the lead partner(s) in this sector.
- 'Housing': like 'Economy & Livelihoods', the transformation of the housing sector under the climate change scenarios will be significant. We anticipate that the community institutions may be best placed to be lead partner in this sector.
- 'Tourism': Tourism Dunedin (currently funded by the DCC) would ideally be the lead partner in the tourism sector with contributing partners of local business, such as Orokonui Ecosanctuary and community groups.
- 'Transport': the DCC/Community Boards would ideally be the lead partner in the transport sector, but necessarily with contributing partners NZTA and Kiwirail.
- 'Waste': here the DCC is the logical lead partner, with the ORC as potential contributing partner.
- 'Youth & Community': one educational institution, either a school or community institution, would ideally be lead partner here, with DCC as contributing partner.

We have sketched out two of the sectors ('Food' and 'Energy') that we have the most involvement with, without designating the lead partner as such. However we anticipate that in:

- 'Food': the lead partner here may be either the DCC if it takes a more strategic interest in food security¹³, or one or other of the emerging food coalitions, such as 'Our Food Network'. The SDHB is an obvious potential contributing partner as well as any producer and consumer bodies.
- 'Energy': Given our experience and current range of energy initiatives, BRCT is well placed to be the lead partner in the energy sector, with potential contributing partners the DCC, OtagoNet, Gentailers, City Forests and Telecommunications companies.

Waitati is not unique. Other communities around New Zealand and around the world face the same challenges, and some adaptation planning work has already been completed for similar scale communities. What will make a formal adaptation planning process meaningful for residents and other communities will be participation in, and dialogue around adaptation, involving the necessary debate, negotiation followed by implementation and monitoring, as referenced in the NIWA model on page 8. It is only through providing real avenues for people to be actively involved in future planning and normalising climate change adaptation that we can hope to avoid a disorganised run-down of services and infrastructure as a result of the changing environment. We need to work together, as community, recognising each others strengths, to successfully adapt to climate change and maintain social well-being, while working constructively to mitigate more extreme climate change.

¹³ Food funding from the DCC

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10. Appendices

10.1. Appendix A: Comments and Aspirations from (section 5) Scoping Exercise and (section 6) Interviews

The following lists are recorded in random order from the scoping exercise and the individual interviews.

10.1.1. Scoping exercise - General comments in relation to climate change

Comments:
Volunteer Fire Brigade talked of its emergency response role in the community and members sought BRCT's assistance in promoting this emergency response service
An idea mentioned in Community Resource Consent Application meeting was about a planned retreat from the flats in Waitati to up the hill
Ideas from Film Society meeting included better access between local communities via rail corridor and via paper roads
Hide behind a giant sea wall was suggested by someone at Waitati play centre

10.1.2. Individual interviews –Comments in relation to DCC and climate change

DCC being prepared:
We want a by pass around Dunedin
Build up banks around the sea – build dykes
I am not averse to shifting up the hill, away from flat flood prone land – but how? Council won't fund this. If I retreat, is there any collective assistance? Loosen up rules on subdividing and building?
Future planning of floor heights and dealing with existing low lying floor level properties
Council needs to be more prepared for extreme events
Raise roads that currently get flooded
Council could encourage curbing our use of oil based products
DCC is obsessed with growing, what about enhancing rather than growing – make what we have better, like healthy living spaces
Want better building control – easier to fix up our old houses
Build a dam across the estuary to delay the inevitable
Volco has very big section of land on hill with ability to house large community in short notice (IVT: Initial Volco Trust)

We can't say which risk will be bigger but we have to prepare, balance one risk over another
Would be good for DCC to change rules on where we can build (so don't build in flood plain)
Tree planting is known to stop erosion
We need the government to give low interest mortgages to help people shift up the hill
Our homes need work, such as reroofing houses and making adjustments to cope with more rain, big eves and large verandas
We need to know how to survive disasters
Climate change is like an earthquake – we know it is going to happen we just don't know when – there are a lot of risks and we need a high level of discussion to decide how to manage it properly – then we can deal with the specifics of the problem
We are already affected by climate change, but the effects are subtle but they will become more pronounced, we need to be more prepared
Economic costs, both to both private and business, will become large
I have what I need here for my survival but thinking about moving is hard, I live in the flat land, we flood a lot, I wouldn't want to move and start all over again – but the alternative is scary, how can moving be made viable?
Mitigation isn't possible, adaptation... well council need to take into account flood risk and extreme events
Risk needs to be managed at community level, as public assets – water, energy, transport? Maybe rail?

DCC good at consulting:

It is reassuring to see DCC is taking earthquake planning and community resilience seriously – we need a plan in place so civil society functions well
Good to work on precautionary principle where we have a problem and the right time frame – A lot has come and gone, we have time to make changes now, we now climate change is coming
The DCC is doing a good job on some parts of consultation, it is good and necessary, but climate change is just another 'thing' to be balanced; means the significance of the risk doesn't come through in the Annual Plan, which means citizens don't learn the urgency and importance of the seriousness of the risk of climate change
I want the same sort of consultation that DCC does now, so I can make suggestions. – Although people who have been here for 30 years have more knowledge - residents are experts of their own land
I like that the council is teaching about composting and growing food, but what do we do if we have no power or water?
It is shared responsibility, not just government or council, but only certain people will be willing to act
Good approach from the DCC but responsibility is at industry and commercial level

General comments

I think that kid friendly parking in the city, bigger spaces is really important

Ban parking down George Street

On the one-way road system, we could have angled parking on one side and the other side just cycling

10.1.3. Individual interviews – Understanding climate change**Changing weather patterns:**

Relieved we are referring to it as climate change not global warming as don't believe world is heating up instead becoming more chaotic

On going and irreversible change in weather patterns

Sea level rise – wetter and dryer weather, maybe warmer

Rainfall could be higher

Changing quality of our oceans

There is a mixture of uncertainty, anxiety and fear

Managing the unknown weather changes

Greater effects on weather patterns

Flooding and destabilising of land, especially high land

The thing I worry about the most is rising tides, I am concerned about changing weather patterns – it seems common to have 4 seasons in one day

It means a lack of topsoil

Increase in sea levels, extreme weather, bad for pacific islands

It used to worry me a lot but I don't worry about it so much now – we can't stop it, we can't control mother nature

If water levels are rising then we need to save the polar bears

Changing climate from normal fluctuations and patterns towards problems that will effect how we live

Changing population patterns:

More immigration, changing migration patterns of people

Peak oil:

Peak oil precipitates most changes under the vague heading of climate change

Curbing use of oil-based products – finding cleaner ways of producing energy

Human survival:

It is the consequence of human action on planet and atmosphere, about changing quality of oceans, which affects us

Doesn't believe in human induced climate change but would rather focuses on human survival

We don't really know:

Climate change means uncertainty, potential for extreme weather, actually unknown weather, climate, sea levels

Uncertainty is frightening

We don't know, maybe wilder, maybe tornados

To an extreme it could be the end of the world

Used to be called 'El Niño' but now everything is changing

Summer might be good but bad at other times

It is difficult to get a unified response with climate change

Big topic, both political and practical

10.1.4. Individual interviews - List of aspirations and values in relation to climate change**We want to be consulted:**

Want to be invited to contribute – need top down plans, mechanism for integrating work – communities come from bottom up and need to find a way where not threatened – find a balance

We hear enough but DCC don't listen, they call for submissions but then make compromises – so nothing gets done – we need more consultation especially for central government

We want more hydro, no nuclear, less coal, NO oil drilling, we are as important as other countries and we WANT to be involved

I would prefer to be consulted on climate change and how it will affect my land, and me we rely on district plan which gives us info on where to build – does this not need changing?

I was involved in consultation on new subdivision, why are they building on flood plane? I am also against the giant glass hotel in Dunedin

We have a good participatory community out here, we meet regularly about issues (Orokonui/stadium) so council could help promote gatherings to get further community engagement here in Waitati. Waitati is unique has many member who feel strongly about issues

We don't want a giant sea wall, moving up the hill is a good idea but people can't afford to move – how can we work together?

Council will need to engage community – especially relating to recent review of flood plane, e.g. Blacks road is in high tide area and gets flooded, need better drainage

I have kids so I am time poor, but if I could get to a consultation on this, then I would be there – it would be easier if consultations were out here

We would like local consultations, not around dinner time, so single parent families can get there

I want to participate. I don't have much time, but I would put the time in if important and there was opportunity to do things differently

We want better transport between our communities:

We want to have a worker's bus that goes down coast road and over Mount Cargill

I want to see a footbridge over from Waitati to Warrington

My suggestion is that we have a ferry link to Seacliff

We want to see passenger rail up and running again

We could create cycle ways using existing paper roads or on the rail corridor

The ridge roads (paper roads) above Waitati could create better access

VOLCO has paper roads running throughout. Including original Bullock Track – these could be useful for future use

Waitati is surrounded by hills but it is the roads that get cut off in extreme weather – Council needs to monitor prone areas to ensure clear flow, like the Blueskin to Port Chalmers road – keep the water flowing in the gutters not on the road

It would be great to be provided with a boat and life jacket for all of us on the flats– so we can still get around with extreme weather events

We would love a network of access roads between our communities - some members of our community are already working on this

We want better transport between Waitati and the city:

Improve public transport, cycling and cable car – actively discourage driving (make parking more expensive, build inner city car park, build apartments, one day a week all buses are free, ban parking down George Street) For cycling – on one-ways have one side cycling and one side angled parking, have a cycle park/ city park where you can pick up a bike and use

Better and safer cycling in the city

DCC need to improving cycling facilities, I think they are just toying with us right now

We will hopefully be able to catch trains in the future

We need better transport structures, improved light rail

We want better community development:

Help us be more sustainable – build a pub, here in Waitati, do more local things

We want to keep communities together (build ferry link to Seacliff or a bridge)

We need to plant more food crops and more natives in all of our unused spaces

We want to see the development of more shops (out here in Waitati) to increase resilience

Provide people on the flats with lifejackets and small inflatable boats

When people were stranded in Waitati on from the big snow the resourcefulness of people here was great, people turned up with blankets and food – we are a strong community

Our community board deals with local issues, DCC needs to create a new local working group to deal with these climate change issues

People buy from the little shop in Waitati just to keep it viable – more products are more expensive but we do it because we want a shop in Waitati

We have an open orchard project in Waitati, which is community project of planting fruit trees in public places – it is a good way of bringing people together, growing together, learning together – localising 40people's enjoyment of their spare time

In the flood emergency situation I was surprised that the fire department would not let me wade through the water by my house to get out to my family, who live up the hill, it was my escape plan that they wouldn't allow me to do – I felt trapped – I did it anyway

People have been allowed to build where others haven't before – why? It is not viable

We want better education and awareness raising in terms of climate change:

I think we should have a letter or statement on our rates bill "Your house is xx above sea level and by current calculations you will be underwater in 20xx"

We need to survive disaster, individuals need to learn, I would want to be involved in community group to learn survival skills – I am not paranoid and I tend to live for today rather than plan for tomorrow but I think we need to be better prepared

Need to help people understand the importance of what may be happening. Take awareness raising out to people – not patronising or smug

Windpower – we need to show people it is a good thing

Are we threatened by sea levels? For low-lying communities we are, we need to prepare ourselves, we need to make ourselves safe

I have low GV on my property because we are flood prone, makes it hard to get insurance, can't put it on mortgage – what do we do? What do other people do?

Our community board deals with local issues, DCC needs to create a new local working group to deal with these climate change issues

We are not prepared for natural disasters, when we have extreme events (snow) people get stranded, floods cause contamination from septic tanks

We need to be "in tune" with nature and make sure there is enough bush behind houses so doesn't fall on them, so pasture is grazed but well maintained

We need help to create easy options for families to become self sufficient, have their own power, grow their own food

We can't say which risk will be bigger (in terms of climate change), but we have to prepare

We want to manage our water better:

We might have more or less water – how do we prepare? How do we control the water?

We need more planting of eucalyptus as it soaks up high ground water levels

Rainfall could increase, getting higher – more extreme water events will effect Council

We don't catch the flood water and we also suffer from droughts – we need to get smarter about our water use/waste

Our Waitati water used to come from the river but council allowed redevelopment on river catchment

We want to see plantings out along our river and not poisonous weed killer- planting is good to help reduce flooding

We could help with flooding by storing water on our land (in dams and swales) and not getting rid of it out to sea

Resilient water supplies will help secure food production

Strategies in permaculture and biological farming create better soils that hold water

How does DCC monitor contamination in our drainage systems? Septic tanks a re big issue for us with the regular floods we have – how much water do they take? Where does it go? New houses need holding tanks for sewage systems and grey water can't flow into septic tank

We need rainwater collection on every new build of house

Our waterways are not well maintained, creeks are not working, blocked which is real bad consequences – access and destabilising of land

We can't fight water, it will always find its way and it washes everything away, we can't rely on banks

There are other things we can do, such as keep trenches and channelling alongside roads, clear

Erosion control – appropriate tree planting

We want to manage our food systems better:

We need more fruit trees, we need to be able to access more food

We need help to create easy options for families to become self sufficient, have their own power, grow their own food... so we can survive

All subdivisions need food/fruit trees around them

Need more community gardens – we need to be growing more food, we all need to be growing more

Teach people permaculture, so they can be independent and self sustaining, not stripping the land of everything that is good

Community gardens provide food for us –they are very important

Using systems that use low tillage to not burn up carbon in the soil can lock carbon in and build up the soil which has many benefits for growing

Diversification of land use helps resilience in face of storms and changing seasons or year-to-year

Permaculture design is about holistic thinking about landscape use, alternate crops, perennial cropping systems, integration of different aspects of productive systems – they all feed into each other for mutual benefit in uncertain times

Southern Clams monitor water quality, are they concerned about contamination in the bay after flood events?

We monitor water quality and do not collect shellfish directly after flooding, too many contaminates (septic tanks)

Waitati has food growing everywhere but it needs more communal food, we need to find cheaper ways of surviving, food is expensive

We have no top soil, we have not looked after our top soil, we need to protect our soil and water

Food security is a big risk, it will create challenges to maintain food production systems – because crops will be damaged by storms and flooding, growth will be effected, pollination and ripening of crops and droughts causing failures. – we need to spend energy on adapting to change

Waitati has a lot of flat land, very good market garden land which needs to be protected by the council – I would like to see people wanting to develop it back into commercial scale gardens supported in this endeavour

We want to manage our waste better:

We need to have improved waste streams: red/green/yellow bins to include organic materials

I want to see better curb side recycling, we want a collection of compost

To stop global warming we need to put in what we take out – we need to give back not waste

Agricultural management plans – such as effluent collection systems – we need a cohesive advance on this

We want to manage our energy better:

Finding cleaner ways of producing energy

What is our consumption of electricity – what can be done about reducing it

I think we should be into windpower – we need to get connect to that – I would take out a loan for that

Food, petrol and power are increasing rapidly – we need these things but they are becoming difficult