

Re-imagining the City: Climate Change Adaptation and Governance in Christchurch's Residential Red Zone

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This report forms part of a partnership project between the University of Oxford, UK. and the University of Canterbury, New Zealand. Four students from the University of Oxford were asked to develop proposals to strengthen resilience to environmental change in the Avon-Ōtākaro River Corridor, in the face of climate change and related extreme weather events. The following paper is the product of three weeks of learning and discussion (see Appendix I) surrounding a city in transition and makes recommendations for the long- and short-term governance of an area with great potential.

Re-Conceptualising Environmental Hazard Management

The Canterbury earthquake sequence in 2010 and 2011 significantly increased the flood risk of Christchurch, raising the water table across the city and damaging pre-existing flood mitigation systems (Regenerate, 2017). Regenerate Christchurch (2017) estimates that even after the evacuation of the Red Zone, eight-thousand households in the River Corridor still remain at risk of flooding in extreme events. As the effects of climate change increase and sea levels rise, this number is expected to further increase. The previous clearance of the Red Zone presents a unique opportunity to mitigate this risk.

Before considering any current barriers that the Red Zone project is facing, ‘resilience’ must first be clarified. While it has become interchangeable in its social and environmental use, the concept of resilience is originally ecologically defined as; ‘the measure of the persistence of systems and of their ability to absorb change and disturbance and still maintain the same relationships between populations or state variables’ (Holling 1973). Interactions between ecological and social systems are just as important as components of those separate systems if functionality is to be maintained. As this definition is basic and is appropriate for a holistic approach to management, it was deemed ideal to use in structuring arguments outlined in this report.

In our conversations with community groups and leaders, we encountered considerable frustration regarding the lack of transparency in the application process for transitional use of the Red Zone area. There was uncertainty about the criteria used to assess proposals and examples of lacking communication between relevant government agencies and the community once proposals had been sent in. Furthermore, whilst most agencies and communities we spoke to seemed to hold the same values and hopes for the future of the Avon-Ōtākaro River Corridor and Red Zone, we observed confusion regarding the process by which this plan would be implemented post-2021, after Regenerate Christchurch’s mandate ends. The commonalities in core values and their translation into a long-term vision, despite being clear to us, did not seem to be acknowledged in the relationships between the agencies working in the Red Zone, and while this problem is not unique to Christchurch, it represents a significant barrier to formulating a sustainable, holistic and inclusive management strategy (Mguni et al 2015).

Governance is a key aspect of this problem, confusion among agencies despite common ground will limit success of any initiatives to regenerate the Red Zone in providing long term benefits on different scales. A sound governance strategy is a prerequisite to addressing other parts of this complex issue and will address vulnerability in a number of areas; from involving all stakeholders in future policy (socio cultural sustainability) to re-conceptualising management of environmental hazards (environmental sustainability) and creating a more holistic, flexible management strategy (systems).

Governance of the River Corridor: Community Land Trust

A Community Land Trust (CLT) is a non-profit organisation whose purpose is to acquire, own, steward and never sell land so that it may be used for welfare purposes, typically affordable housing and community facilities. The Trust takes the land out of the market economy and into the social economy, and therefore a CLT is an ideal governance structure for ensuring that the long-term common vision for the Red Zone, as outlined by Regenerate Christchurch, is achieved (Johnston, 2009).

The structure of a 'classic' Community Land Trust is centered around its tripartite board of directors. The board is composed in equal thirds of leaseholder representatives, community representatives, and public representatives such as local government, iwi, funders, scientific experts and others who speak for the 'public interest' of the Christchurch and Canterbury area. The management board should be democratically elected. The 'classic' CLT model has the leaseholder representatives elected from and by other leaseholders, community representatives elected from and by the community, and public representatives as appointed by the board - with the board's appointees subject to ratification by a vote of the membership. However, currently only thirty percent of CLT's in the US currently use this 'classic' tripartite model, meaning that there are many existing examples of successful CLT's that structure their management alternatively. Some Community Land Trusts have appointed private sector directors or lease-holder director seats by tenure, for example co-op or single family. The 'classic' tripartite model is a good place to start when thinking about the organisation of a Community Land Trust since it ensures a balance of skills and representation in a CLT's governance, however there is much flexibility in this structure and it can easily be adjusted to the specific needs of the Avon-Ōtākaro River Corridor and Red Zone in Christchurch.

Making a city more resilient to environmental change means that advancements in scientific knowledge need to be reflected by policy in the shortest possible time frame. This is not synonymous with scientific understandings having priority over other perspectives on policy- such a technocratic approach can be damaging and examples of this can be found at multiple scales, including within the UN (Yearley, 2005). Local experts having a place alongside other stakeholders within the CLT's tripartite structure would be an effective mouthpiece for the scientific community and inform the rest of the trust board about any developments that have implications for the Trust's land and river catchment. These may include relevant developments such as improvements in modelling, which would reduce uncertainty in future predictions of risk from multiple hazards and allow for rectification of any elements of existing policy that detriment from this uncertainty. The CLT constitution could reflect this by allowing for policy reviews to be triggered if such a development occurred, if it was deemed appropriate by all trustees, alongside current approaches where reviews take place over time intervals.

A ground lease is commonly used to set out the rights and responsibilities of involved parties in a CLT. In the US this lease is typically valid for 99 years. The ground lease will usually set a rent for use of its land on a submarket basis, typically at a 'peppercorn' rate that recovers some of the key costs of the Community Land Trust in providing access to its land. The ground lease also gives the Trust some reserve powers to step in if a leaseholder does not use the land responsibly - for example if they let a structure become derelict or fail to uphold the set values of the Trust. The CLT can, in such cases, require the owner to make repairs or change their relationship with the land they are renting (Johnston, 2009). In this way, a Community Land Trust acts as a protector in *permanent*

stewardship over the land it holds and is ultimately responsible for all aspects of the land's wellbeing and usage.

For information regarding the key elements of the Community Land Trust model that distinguish it from a form of land tenure, such as multiple occupancy or community title, and from non-profit organizations with similar activities, such as non-profit land banks, please refer further to Johnston, 2009.

Values of Community Land Trusts

The Canada Mortgage and Housing Corporation, in their overview of Community Land Trusts in North America, observes the notion that 'land is not a commodity, but a fundamental resource in which the community as well as the users have interests. CLTs see themselves as performing a stewardship role over the land on behalf of the community' (McKinlay Douglas Ltd, 2007). An integral part of a CLT governance system is the specific value set laid down by a Trust's board at its conception. These values tend to focus on sustainability, welfare of land and people, guardianship and responsibility, and in this way a CLT model aligns well with Maori values and in turn the relationship of Ngāi Tahu and Ngāi Tūāhuriri to Red Zone land. A Community Land Trust structure of governance is vital in ensuring the cultural heritage of red zone land and mana whenua continues to be acknowledged in all future developments and that Kaitiakitanga is upheld. A CLT would prioritise the wellbeing of the land and water in the Red Zone for all future developments whilst giving agency to the local community and those who are directly involved with the land and its life. As New Zealand comes to terms with a changing climate, a Community Land Trust form of governance in Christchurch would be invaluable in encouraging the sustainable adaptation of the city and surrounding area. A Community Land Trust would help to secure the long-term success of Christchurch as a 21st century city sensitive to its 21st century responsibilities.

Read 'Cultivating a Governance Model for Community Land Trust in Parkdale' (2012) for a comprehensive review of the governance structure of the Parkdale CLT in Toronto, US. See particularly 'Future Recommendations for a Similar CLT' section.

Examples of Community Land Trusts

Scotland

There are a large number of community land initiatives in Scotland. Most of these receive financial support from Highlands and Islands Enterprise, a Scottish government agency who also fund a website, Scottish Community Land Network, at <www.communityland.org.uk>.

The activities of CLTs in Scotland tend to be whole-of-community ones allowing inclusive access to land for common purposes. While provision of affordable housing might be one of the objectives of a Scottish Community Land Trust, unlike in the US the primary purpose of these CLT's are generally focused on the social and economic sustainability of the community. As Craig Johnston notes, the Scottish model of a CLT is different from the American model in a number of ways. The differences between the values and objectives behind typical American and Scottish CLTs may mean that those considering the governance of the Residential Red Zone may find it helpful to look at Scottish models alongside the more widely known American ones.

The purposes for which a Scottish community land trust would seek to acquire land are far more wide-ranging, being about social and economic sustainability of a community, which might also include protection of environmental values and affordable and adequate housing but is not usually restricted to those... they draw on existing land-use practices that value communal use of land and accept leasing arrangements for use of certain parcels of land, e.g. for tenant farming; these practices and values are culturally-specific to the Celtic zone in Scotland... they also have access to institutionalized funding mechanisms, in particular grants programs for community improvement run by the National Lottery. (Johnston, 2009)

Kotare Village

Kotare Village is the first community land trust formed in New Zealand. The village is located in Hawk's Bay and is designed for up to 50 families, the village also includes the Koanga Institute Centre for regenerative living which helps maintain permaculture as one of the villages core values as well as coevolution, village living and local economy. The community trust along with the institute is also focused on creating a regenerative future for all in the community. The roles of the community land trust include the Stewardship and guardianship of the land, tenure agreements, land and resources management agreements, making decisions on land and resource use, decisions on village development, direct supporting research in all these areas. The community land trust is governed by a constitution and a trust board. Trustees are elected to the board and can only be elected onto the board after two years of residency.

The Kotare community land trust contains the Kotare Village Association which represents all the lease holders, members appoint a committee and there are regular member meetings. This holds the lease agreement with the Kotare CLT and leases the land in the home block. The roles of the village association are the manage the common areas of the housing clusters, nurture community development, develop relationships with the wider community, facilitate and coordinate not business interactions within the village, manage some of the village's resources. Members are the leaseholders which are governed by a committee, a minimum of five members are elected every year. The trust board of the Kotare community land trust is made up of two elected trustees from the Koanga Institute and two elected trustees from the Kotare Village Association. Each year both groups of trustees elect two more trustees to the board as they see fit.

Funding a Community Land Trust

There are many different avenues for funding a CLT, and we believe that a CLT for the River Corridor has the potential to be a leading example in innovative funding structures. Some CLTs are heavily funded by grants from foundations and nonprofits such as the National Lottery in the UK (Johnston, 2009). Indeed, there is increasing evidence to suggest international interest in CLTs; since 2014 Citi Community Development has invested \$4.7m into capacity building and seed funding to establish CLTs in various locations across the United States (Tuma, 2018).

It is also possible for a CLT to generate its own revenue. Once a community land trust has been established, it can generate revenue from lease agreements. Although these fees may be small if lease-holders are community or non-profit groups, they can provide a vital contribution to operational costs. Further revenue can be generated by providing other business services to its lease-holders, or surrounding organisations (Johnston, 2009).

We envisage a number of different possibilities for the generation of this further revenue. Each possibility would require further research, but present intriguing and innovative means to value the ecological benefits the land provides to the city, both now and in the future. One of the main ways the River Corridor's CLT could fund itself is through an acknowledgement of the ecosystem services that the Red Zone provides to Christchurch as a whole. This could be through an 'ecological levy': the city would pay the CLT for the ecological benefits it provides. Research varies in its estimates of the economic benefit of flood mitigation of wetlands, but some estimates are in the region of \$5000 USD per hectare per year. This would equate to \$700,000 NZD (Watson et al. 2016). This funding could then be spent on Sustainable Urban Drainage Systems, increasing the resilience of the entire catchment area. Hancock (2010) and Watson et al (2016) give good introductions to ecosystem services and potential methods for determining levy rates.

It may also be possible to levy the difference in property rates that arise from the reactivation of the River Corridor. Regenerate has predicted that property values around the River Corridor could increase by \$1.3bn over 30 years from 2019. Since these increased rates will be linked to the Trust's work to reactivate the River Corridor, then it may be agreed that the rate differential could be an additional source of funding for the Trust.

The uncertainty of the risk faced by Christchurch - synergistic effects from multiple hazards mean that the frequency and magnitude of flood events is hard to calculate - means that research into more long-term funding structures will be invaluable. Community wealth funds, modelled on sovereign wealth funds, are one method of ensuring that the River Corridor is resilient to both the ecological and economic realities of Climate Change. The One Planet Sovereign Wealth Fund Framework has interesting research on this at a national level, and there are local examples in the US, with Detroit Community Wealth Fund an interesting model - see the bibliography for links. See also 'Strong resourceful communities: The case for a Community Wealth Fund' for an example of increasing interest in the UK.

Potential for Polycentric Governance

It is easy to think that the multitude of agencies working to regenerate Christchurch is a problem, making priorities and responsibilities blurred. Conversations with various community groups suggested that there was a lack of support for those looking to apply for transitional use in the River Corridor, but the following section will address this in more detail. Here we will show that a further agency will not worsen this problem, but in fact ameliorate the situation.

Most people that we spoke to have held similar values and hopes for the Red Zone's future, as outlined in the Red Zone Futures Exhibition: what has been lacking is a dedicated forum, such as a land trust, that provides a space for different parties to come together and realise both their similarities and differences. Research on polycentric governance supports this thesis. Since the 1960s researchers have found that that polycentric systems: local, public economies established within broader national systems, are more likely to improve outcomes, with organisations engaging in both cooperative and competitive relationships (Ostrom, 2009).

In her Nobel Prize Lecture, Ostrom (2009) discussed research into police forces in the US, which found that in no instance did large centralised forces outperform smaller forces serving similar areas. Ostrom succinctly expresses this idea: "complexity does not have to equal chaos" (ibid.). In fact, further research suggests that polycentric governance is most effective when institutions are

created to directly address the problems faced (Pittock et al, 2012): a Community land trust, dedicated to the regeneration and stewardship of the Avon-Ōtākaro River Corridor alone, could therefore be the most effective governance structure post-2021. The CLT would act as the central node in the network of agencies working towards a shared vision for the River Corridor: a project that braces the city against social and environmental change on multiple scales.

There are already effective examples of this in Canterbury such as the Canterbury Water Management Strategy, whose Zone Committees are based on Ostrom's ideas, as well as across New Zealand. The Waikato River Authority in the North Island - a crown, iwi partnership - is another good example, with a bipartite, not tripartite, governance structure.

Sustainable Urban Drainage Systems: A Systems Approach

Christchurch's involvement of Sustainable Urban Drainage Systems (SUDS) already in regeneration plans is very positive and marks a step towards a more sustainable and resilient approach to flood risk mitigation and environmental management. The long-term vision for the Red Zone to transition into the natural wetland that was present before human development will, in addition to many other functions, introduce a wide array of ecosystem services that can benefit the entire city. However, to increase Christchurch's resilience to environmental change then the Red Zone development must be seen as a 'crown jewel' in a catchment-wide initiative. Any attempt to increase lag times in the catchment is crucial, particularly because of the city's coastal location (strategies to transport water downstream are risky).

Retrofitting is expensive- the city council's current Stormwater Management Plan expects to cost \$101.4 million over 25-30 years (2015)- and the current opportunistic approach to retrofitting is ideal under current budget constraints. However, as with many other cities experimenting with SUDS, the level of application has yet to reach catchment-wide (or citywide) levels; the opportunity that the Red Zone presents may allow Christchurch to become a leader in sustainable urban water management.

The right governance strategy is the first step; while the proposed CLT will not have authority over the whole catchment, it can liaise with surrounding local authorities to establish a long-term systems approach. Natural phenomena like flooding do not adhere to administrative boundaries and therefore must be faced in a collaborative manner to be affected meaningfully by policy. Systems policy approaches recognise the fluidity of these boundaries when dealing with environmental risk and will therefore increase resilience if applied.

Encouraging community engagement with SUDS is another step towards both increased benefits from SUDS and involving the community in the implementation of policy and increasing the city's resilience. Reaching the next generation of Christchurch residents is crucial and the multifunctional development that was envisaged in the Red Zone Futures Exhibition could reflect this. The Copenhagen Climate Adaptation Plan (2011) prioritises SUDS over updating hard infrastructure as it found that doing so had negative benefits to the city. In Tåsinge Square, one of the city's first successful SUDS project, children were engaged with a multifunctional 'water play' installation (Klimakvarter, 2015). This used water harvested from rooftops and areas where contaminant levels were not deemed potentially harmful in an interactive experience involving water pumps; the planned playgrounds along the Green Spine could incorporate something similar.

To engage adults, some of the funding gained through the levy could be set aside for SUDS subsidies for local residents. This would encourage application of SUDS on a household level as well as directly involving communities in increasing environmental resilience. Environment Canterbury already have a scheme directed at wood fuel burners for low income households so these measures could complement them. Subsidies could also be offered to households for low-level maintenance of some SUDS (weeding and cleaning litter from rain gardens, etc.) on an opt-in basis, which could cut costs of regular maintenance for relevant authorities. This suggestion does not represent a full solution to increasing resilience but contributes to key issues like public engagement in the long-term and could complement the CLT structure that would be enacting these policies. Re-conceptualising SUDS governance, as well as other aspects of environmental governance, to engage communities constantly will be instrumental in maintaining support for measures increasing resilience that have heavy implications for Christchurch in the future.

Reactive vs. Proactive Approaches to Transitional Use

Response times to applications for transitional use can take months, and there is very little clarity regarding the detail necessary for a successful application. A meeting with Land Information New Zealand revealed a lack of empathy, bordering on disdain, for community groups struggling to work out what is required for an application to be successful. There seemed to be an unwillingness to provide information about what sort of transitional uses might be definitively rejected, despite clearly stating that no permanent structures would be allowed. Additionally, there was no willingness to broaden out the decision-making panel to include more stakeholders from the community and/or other agencies, suggesting that doing so would make the panel 'unbiased'.

More help and support must be provided to applications, not simply on an ad hoc basis but in the form of official guidance, both through meetings and in writing. More information should be given about what makes an application successful and why, which areas of land are best suited to particular ideas and advice on how ideas could incorporate elements of climate change adaptability. Simply publishing the applications of successful applicants would be a significant improvement.

Future actions

The potential of the Otakaro Avon River Corridor can only be realised when the Crown, City Council and members of the community work collaboratively. This report shows the unique structure of a Community land trust can ensure the governance of the River Corridor upholds kaitiakitanga, safeguarding the environment and the land for the benefit of the community, both now and in the future. The agencies and communities who work in and around the River Corridor have a unique opportunity to protect Christchurch from some of the hazards posed by Climate Change. Good governance, with community members at the centre of all decision making, is critical to ensure the area thrives. We hope that this report can encourage further discussion and research into the best forms of governance and climate mitigation in the River Corridor, both in the short term and post 2021.

Appendix I: Stakeholders

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