
Proposal to Regenerate for a pre-Adaptation Strategy for Southshore and South New Brighton.

“...This is about embracing the future, not the past...”¹

Preface

CCRU is committed to supporting community engagement and consensual adaptation to the effects of climate change. We are a community partner with Regenerate Christchurch in their South New Brighton and Southshore Project, as well as a community interlocuter with Christchurch City Council (CCC).

The recent changes within Regenerate Christchurch, and now a ‘pause’ by Regenerate Christchurch has caused widespread concern amongst key stakeholder groups and communities. This document has been informed by informal conversations with local residents and some other stakeholders. Due process is underway for it to be formally considered by Community Boards and Residents’ Associations.

This document concerns the Southshore-South New Brighton Project area and represents a community submission to Regenerate Christchurch to assist them as we all remain in this period of ‘pause’, and to assist the adaptation process forward after the ‘pause’ along the agreed *Howteam* pathway.

A draft of this document was pre-released to Regenerate Christchurch and Christchurch City Council for their comments, and CCRU wish to thank both organisations for their useful feedback.

Structure of Document

- Executive Summary
- Introduction
- Background
- What happens now: pre-adaptation
- Specific Recommendations
- What happens next

¹ Andy Burnham, Mayor of Greater Manchester [2019] on the UK Central Government’s attempts to impose Fracking for Shale Gas on UK Local Government

Executive Summary

Regenerate Christchurch have a mandate as a planning and policy advisory body to enable a “...focused and expedited regeneration process..”², and their context includes the repair of earthquake damage³. They are engaging with the communities in the South New Brighton and Southshore Project area. They have facilitated the development of a community plan for an engagement process necessary for consensual adaptation of the project area to the effects of climate change (including sea level rise), *i.e.* the *HowTeam* plan. This plan has been endorsed by Christchurch City Council. This is a considerable achievement for Regenerate Christchurch and the Communities. The ‘pause’ of Regenerate Christchurch is of great concern to the affected communities.

Community engagement has experienced setbacks as communities have awaited repairs of the earthquake damaged estuary edge which threatens parts of the spit and decisions on the repair or future of parts of South Brighton. Given the resultant levels of stress in the community, Community Board raised concerns about community well-being in respect to having a climate change conversation prior to earthquake issues being resolved. The communities are agreed that repair of earthquake damage precedes climate change adaptation.

The continued delays are hard to understand. It is unclear how long they will last, what is causing them, or what the result will be. This situation increases community uncertainty and stress, hence mistrust of agencies. We do not want to lose the trust which has thus far been achieved. However, it is also fair to say that there is confusion about the relative roles and mandates of Regenerate Christchurch *vis.* Christchurch City Council in these matters going forward.

Regardless of the setbacks, the community is excited to move forward with whichever agency to deliver an effective and consensual long-term plan for adaptation of Southshore and South New Brighton, increasing local resilience and certainty for the project area and The City.

This report contains eight recommendations in classes that mostly fall cleanly into either:

- earthquake repair/pre-adaptation
- support for our future adaptation process

Clearly the community engagement process will generate adaptation proposals.

² Purposes 1(a) Greater Christchurch Regeneration Act (2016)

³ The Canterbury Earthquake Sequence ended about six years ago in 2011-12.

Introduction

New Zealanders are not unfamiliar with hazards, whether they are natural, biological or those that are human-made. We are now facing a new threat, anthropogenic climate change, which is likely to amplify existing natural hazards⁴.

Sufficient changes to human behaviour that are necessary to stem or reverse climate change (*i.e.* mitigation) will be difficult: indeed it is uncertain whether we are able or willing to make those changes. However, even if successful such actions will not slow or reverse the enhanced natural hazards for tens of years. Hence as a coastal community and part of a coastal city we also need to adapt to those enhanced natural hazards.

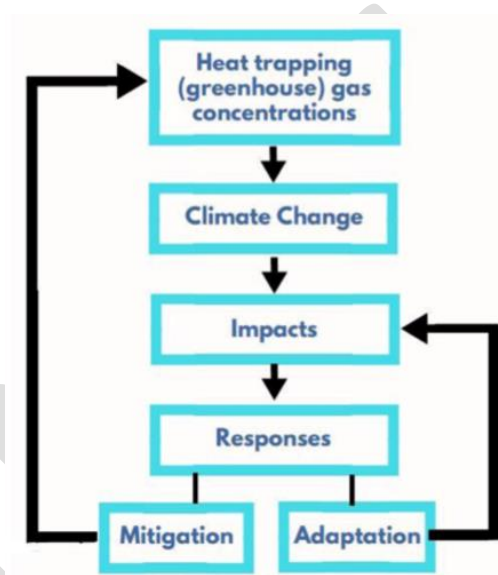


Figure 1: The relationship between mitigation and adaptation⁵

Adaptation revolves around making changes to prepare for and negate the effects (or those projected to occur), of climate change thereby reducing the vulnerability of the economy, communities and ecosystems. The costs and risks of adaptation to climate change and transitioning towards a low carbon economy increase radically the longer we delay⁶.

In parts of the project area there seems to be good evidence that the natural hazards we will need to adapt to include sea level rise and concomitant groundwater level increases. The natural hazards and timescale over which adaptation to those hazards is considered, is critical to the approach taken and avoidance of maladaptation⁷.

⁴ Coumou, D. Rahmstorf, S. (2012) A decade of weather extremes. [Nature Climate Change](#), Perspective. DOI: 10.1038/NCLIMATE1452.

⁵ Source: based on Locatelli & Pramova (2016) Forests and synergies between adaptation and mitigation, weADAPT. Courtesy Annette Bolton

⁶ Stern, N. (2007) Stern review: the economics of climate change.

⁷ Bell, R. Lawrence, J. Alan, S. Blackett, P. Stephens, S. [2017] [Coastal Hazards and Climate Change: Guidance for Councils](#). Wellington, Ministry for the Environment Dec 2017

History implies that the cumulative effect of Green House Gas emissions, land-use change, and the physics/chemistry of water has thus far accumulated ~10m of sea level rise at equilibrium⁸, most of which is from ice melting:

“...Any significant change in the total mass of the major ice-sheets would cause sea level rise of the order of metres and have a dramatic impact on coastal communities and habitats across the world. While it is thought that the Greenland and Western Antarctic ice-sheets may be vulnerable to collapse, satellite measurements and models suggest that the size of the Eastern Antarctic ice-sheet is relatively stable. However, any significant change in the mass of the ice-sheets would be gradual, with adjustment occurring over many centuries...”⁹

However, this reasonably certain outcome is on a timescale of many centuries to millennia, and this far distant future is not our adaptation focus. The economic and social challenge is not about moving people and assets above the 20m contour over the next tens of years. Instead our adaptation focus is the next 1-2 human lifetimes, where in the face of deep uncertainty about timing, estimates from 0.5-1m of sea level rise by 2100 are in common currency. The largest uncertainty in the short-medium term is the stability of ice sheets. However, there are natural processes that even under very severe and currently unlikely scenarios, are likely to limit somewhat the rate of sea level change¹⁰.

In order to manage the existing and evolving risks from natural hazards and climate change, New Zealand has signed up to international agreements, provided legislation, *etc.* These laws or agreements create challenges as well as requirements for New Zealand local and national government in the way it pursues adaptation. A sample of those challenges include:

[to reduce] “...losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities...”¹¹ and the Paris Agreement “...Assessing risks and identifying priorities through risk and vulnerability assessments...” [and include] “..leave nobody behind..” and “...make cities and human settlements inclusive, safe, resilient and sustainable...”¹². The Resource Management Act (RMA) 1991, amended 2017¹³ under which the management of “significant risks from natural hazards” is a matter of national importance under Section 6^{14,15}. This should increase consistency across different geographic areas, but

⁸ Over the timescale of hundreds to thousands of years when the changes have equilibrated across the planetary system.

⁹ Postnote 363 September 2010 The Parliamentary Office of Science and Technology, Houses of Parliament, UK.

¹⁰ Postnote 363 September 2010 The Parliamentary Office of Science and Technology, Houses of Parliament, UK.

¹¹ <https://www.unisdr.org/we/coordinate/sendai-framework>

¹² <https://www.preventionweb.net/drr-framework/sendai-framework-monitor/common-indicators>.

¹³ see <http://www.environmentguide.org.nz/issues/natural-hazards/managing-natural-hazard-risks-in-new-zealand/>

¹⁴ <http://www.mfe.govt.nz/climate-change/what-government-doing/adapting-climate-change/adaptation-and-local-government>

¹⁵ <http://qualityplanning.org.nz/>

there is the possibility there may be less focus on key situation forming local conditions.

In terms of this document, these challenges become the criteria by which proposed adaptation planning and implementation should be judged. The adaptation planning processes performed need to deeply involve stakeholders and communities¹⁶, (e.g. the *HowTeam* Process), and to be effective need to be consensual¹⁷ and joint with agencies, rather than the traditional 'community consultation' processes.

Finally, adaptation and the benefits of adaptation can easily be lost or diluted by the costs or potential costs of the proposed adaptation interventions. It is beyond the scope of this document to summarise the stages of funding, but internationally many local and central government organisations are beginning to identify funding sources and funding mechanisms for adaptation¹⁸. Examples include Paris¹⁹ and Glasgow²⁰. The focus of these examples is to use strategically necessary resilience programmes to fund adaptation. Some strategic adaptation projects involving movement of entire communities were funded directly by central or local government²¹. In New Zealand we need to start developing these funding sources and mechanisms in collaboration with key stakeholders and business.

Unlike many countries, ~70% of the New Zealand population is located within a few kilometers of the coast, so government buyout of communities cannot be the default option. This means that design of adaptation plans for NZ although informed by overseas experience, need to be tailored specifically to the unique NZ situation. It may be that for cities, strategic city twinnings with those further ahead would be useful.

¹⁶ Bell, R. Lawrence, J. Alan, S. Blackett, P. Stephens, S. [2017] Coastal Hazards and Climate Change: Guidance for Councils. Wellington, Ministry for the Environment Dec 2017

¹⁷ <http://www.asocam.org/sites/default/files/publicaciones/files/07308a8b9018adf191f294398246bb23.pdf>

¹⁸ Bolton, A. Watts, S.F. [2019] Funding models for adaptation – a limited survey. Sustainability (Special Collection: Brighton Observatory of Environment and Economics). In preparation.

¹⁹ €700 million in bonds were issued for mitigation. The income from the mitigation generated the \$300 million that was earmarked for adaptation.

²⁰ Climate Ready Clyde have costed the effects of climate change on the Greater Glasgow Area at ~£400 million a⁻¹ to give themselves a budget.

²¹ Freudenberg, R. Calvin, E. Tolkoﬀ, L. Brawley, D. [2016] Buy-in for buy-outs. Lincoln Institute of Land Policy, Regional Plan Association. Available: <https://www.lincolninst.edu/sites/default/files/pubfiles/buy-in-for-buyouts-full.pdf>

Background

A prerequisite to good health is good mental health or wellbeing²². Post-earthquake, about half the population of the eastern suburbs could be classified as “low wellbeing”: this proportion was higher than other parts of Christchurch and about double the national average²³.

The communities in Southshore and South New Brighton were devastated in the 2009-2011 Christchurch Earthquake Sequence. Partly due to the level of damage sustained, historical post-earthquake damage and the behaviour of insurance companies, in these suburbs segments of these communities are financially and emotionally ‘stuck’ in 2010-2011.

Additionally, the effect of Christchurch City Council District Plan policies and rules²⁴ which bundles key earthquake repairs with adaptation to climate change brings into question whether those repairs (or closure for the communities) will occur at all. This has not helped the well-being crisis, as it increases community uncertainties and builds fear. Indeed post trauma, continuing stress and worry decreases wellbeing²⁵. Any issue or circumstance like this, *i.e.* that threatens a person’s home and community, cut at the basis of wellbeing and personal capacity (base of Mazlov’s Pyramid).

The two suburbs of South New Brighton and Southshore although sharing some issues also have separate problems and histories: for example whilst one on them rose in the two most recent earthquake sequences, the other subsided. Hence consistent with the *HowTeam* approach, they need to be considered separately.

The unrepaired earthquake damage (for example in Southshore along parts of the estuary edge: the area most vulnerable to erosion and sea level rise), was probably caused by insufficient supervision of the activities of insurance companies (as they demolished red zone housing). This resulted in damage to existing edge protection as well as the lowering of the estuary edge in many places by about a metre²⁶ (very many years sea level rise equivalent). Additionally in the same process the grading of previously higher land down to the estuary water level also results in the same outcome. This has made the communities more, not less vulnerable to natural hazards, and increased their fear of the longer-term impacts of climate change. This is akin to a serious storm hitting a populous Pacific Island and doing a lot of damage. However, instead of disaster management, the islanders are told that because rising sea levels will eventually (maybe in 100 years) make the island uninhabitable then the damage will not be repaired, hence increasing the speed of inundation of the island.

²² Department of Health and New Horizons. [2010] Flourishing People, Connected Communities: A framework for developing well-being. London, UK.

<http://www.medicalwomensfederation.org.uk/files/Summary%20FrameworkJuly%2009.pdf>

²³ <https://www.stuff.co.nz/national/health/83124349/christchurch-dilemmas-christchurchs-mental-health-crisis>

²⁴ <https://ccc.govt.nz/news-and-events/newsline/show/2783>

²⁵ Department of Health and New Horizons. [2010] Flourishing People, Connected Communities: A framework for developing well-being. London, UK.

²⁶ Evidence reconstructed from concurrent photographs available on request

Another example of this is an area²⁷ of South New Brighton. Some parts of this area have massive unrepaired earthquake (land) damage with very high lateral spreading rates and now high groundwater levels. This area was not included in the red zone²⁸. There is great anger and frustration here as many feel trapped and unable to move, others have very great fear, anxiety, despair and cynicism as they metaphorically wait for high tides and groundwater flooding. These feelings are components of the general feeling of the communities and contributory to their attitude. Although fraught with difficulties, it is hard to see how Regenerate Christchurch can credibly avoid at least starting the community conversation or brokering talks about the different views on the future of the earthquake damaged area of South Brighton. From a community perspective it looks like this area of South New Brighton has been filed in the ‘too hard basket’.

Hence communities in the project area perceive a gross injustice: the city seems to have been (is being) rebuilt, without necessarily mitigating the regionally anticipated direct and indirect impacts of climate change, whereas in the project area the repair of earthquake damage is subject to climate change considerations. This situation with the associated fears is impeding community willingness to engage in climate change adaptation planning.

At the time the relationships between Christchurch City Council and the affected communities was strained and probably occluded by the various IHP and RMA process around the natural hazards chapter of the District Plan. Given this situation, Regenerate Christchurch with their (apparent) mandate for earthquake repairs and regeneration²⁹ were the obvious choice to lead the engagement with affected communities. Regenerate’s vision as expressed on their website was consistent with community expectations³⁰:

“...Regenerate Christchurch will work with the community, iwi and local businesses to drive regeneration in key areas, including the central city, residential red zones and New Brighton...”

Not unreasonably the communities’ view was that Regenerate Christchurch would deal with earthquake repairs, (climate change was not mentioned). Figure 2 describes the Community expectation. The organization initially enjoyed huge public support.

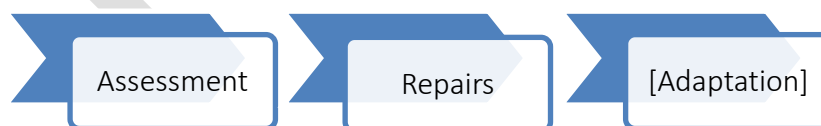


Figure 2: Implied Regenerate Christchurch sequence of operations Southshore-South New Brighton Project based on their 2016 website content.

²⁷ The area around Estuary Road bounded by Rodney Street and Bridge Street. It could also include up to New Brighton.

²⁸ SBRA 2018 Long Term Plan presentation to Christchurch City Council

²⁹ Greater Christchurch Regeneration Act (2016)

³⁰ as reflected from their website strapline in 2016.

However, there is an unfortunate problem here around the organization name and their purposes and function which is not immediately apparent those non-legal members of the communities, see Figure 3 below.

- (2) In this Act,—
- regeneration** means—
- (a) rebuilding, in response to the Canterbury earthquakes or otherwise, including—
 - (i) extending, repairing, improving, subdividing, or converting land:
 - (ii) extending, repairing, improving, converting, or removing infrastructure, buildings, and other property:
 - (b) improving the environmental, economic, social, and cultural well-being, and the resilience, of communities through—
 - (i) urban renewal and development:
 - (ii) restoration and enhancement (including residual recovery activity)
- urban renewal** means the revitalisation or improvement of an urban area, and includes—
- (a) rebuilding:
 - (b) the provision and enhancement of community facilities and public open space.
- Compare: 2011 No 12 s 3

3 Purposes

- (1) This Act supports the regeneration of greater Christchurch through the following purposes:
- (a) enabling a focused and expedited regeneration process:
 - (b) facilitating the ongoing planning and regeneration of greater Christchurch:
 - (c) enabling community input into decisions on the exercise of powers under [section 71](#) and the development of Regeneration Plans:
 - (d) recognising the local leadership of Canterbury Regional Council, Christchurch City Council, Regenerate Christchurch, Selwyn District Council, Te Rūnanga o Ngāi Tahu, and Waimakariri District Council and providing them with a role in decision making under this Act:
 - (e) enabling the Crown to efficiently and effectively manage, hold, and dispose of land acquired by the Crown under the [Canterbury Earthquake Recovery Act 2011](#) or this Act.

Figure 3: The Nature of Regenerate Christchurch (extract from text of the Act)³¹. Top panel is definitions, bottom panel purposes of the organization.

The definition of the words *regenerate* and *regeneration* in the Act are not good descriptions of the purpose (*i.e.* what this organization is supposed to do). It is very easy to equate the **definitions** of “regeneration” (which include “...rebuilding in response to the Canterbury Earthquakes or otherwise...”) with the **purpose**. However, in this case none of the purposes include an operational role beyond planning and strategy (Figure 3 lower panel). In retrospect, with an organization called *Regenerate Christchurch* tasked to produce a *Regenerate Plan* or *Strategy*, this misunderstanding by the community is not only entirely predictable but almost inevitable given the concerns that the communities hold³².

Anyhow, back to the timeline. So as time progressed, and for whatever reason Regenerate Christchurch refreshed its website and the strapline changed (as currently) to:

³¹ Greater Christchurch Regenerate Act (2016). Text available: <http://www.legislation.govt.nz/act/public/2016/0014/latest/whole.html#DLM6579208>

³² Such issues were noted in *Howteam* discussions wrt a Regeneration rather than Adaptation Strategy

*“...The Southshore South New Brighton Regeneration Strategy is all about finding short, medium and long-term options to adapt to **the effects of climate change**. It will also consider a plan for the future of South New Brighton's and Southshore's red zone...”* Current strapline from the Regenerate site [my emphasis]

Certainly, the strapline was now more consistent with the arrangements between Christchurch City Council and Regenerate Christchurch³³, and around the same time the previous Christchurch City Council project names and logos “Coastal Futures” were adopted by Regenerate Christchurch as their badging for the Southshore/South New Brighton project³⁴.

This was the situation by the time the *HowTeam* project started, but the Communities increasingly perceived this as a change of emphasis by Regenerate Christchurch from repairing earthquake damage to adaptation to the effects of climate change. In reality of course, Regenerate’s mission had never included carrying out (themselves) earthquake repairs.

Things began well, as lead organization Regenerate Christchurch funded the Renew Brighton project, *HowTeam* which was a project to design an effective community engagement plan ultimately for the production of an adaptation Strategy or Plan.

Within *HowTeam*, both community and agency members/representatives began to work together. Their work was underlain by recognition of the issues and mutual trust. That process would in time yield a plan and method for the community engagement and partnerships that must underlay successful adaptation.

As time progressed however, two things began to emerge from the community engagement, again in hindsight they were almost inevitable:

1. Regenerate Christchurch was increasingly under pressure from affected communities to ‘do something’ rather than just talk about it.
2. Engagement was very much more from Southshore rather than South New Brighton.

It became clear that some members of the affected communities (particularly South New Brighton) were increasingly stalked by fear that Regenerate Christchurch and/or Christchurch City Council were not going to do the repairs or move people out. Clearly the community expectations were not consistent with Regenerate Christchurch’s Purposes, and hence as the communities’ requests for help to Regenerate increased with no resolution, the stress levels in the communities increased, and degree of participation in the community engagement slowed. Community Board members raised concerns about community well-being around

³³ Strategic Capability Committee minutes Thursday 8 June 2017.

http://christchurch.infocouncil.biz/open/2017/07/SCCM_20170707_AGN_1576_AT_htm

³⁴ December 2016 “The Coastal Futures project will also inform the 30 year infrastructure strategy and in particular the long term river and tidal flood management approach for the coastal settlements across the district.” Strategic Capability Committee minutes.

having the climate change conversation prior to earthquake issues being resolved. Further work in the community revealed in their own words increasing levels of fear and cynicism [indicates addition of joining words]³⁵:

On community engagement: “...a waste of time...” [because] “...we have been questioned and consulted to death...”, [and from another] “...but still nothing happens, we have told them time after time but they do not listen...”, [and from yet another] “...enough is enough, the prevarication must end: we need to be safe...”

Clearly in the minds of many members of the community, the previous Christchurch City Council ‘community consultation’ activities have been rolled into the more recent Regenerate activities. Indeed in both South New Brighton and Southshore, residents (probably for different reasons) are willing, even keen to talk about adaptation, many have participated in previous engagement events, responded to surveys, seen the Regenerate Christchurch exhibition etc., but increasingly only prepared to engage in the adaptation conversation when they have seen results implemented from previous consultations, hence this document. Again in the words of residents: (on adaptation)

“...I’m all for adaptation, we need to do it, but first they need to do the repairs..... but the proof of the pudding is in the eating...”.

The *HowTeam* process has now become the Regenerate Process, outlined in Figure 4 below³⁶. The work was detailed, and the underlying body of data and work belies the simplicity of the figure. The strategy is also designed to be responsive and evolving.

The timescale of the work was necessarily truncated in part due to the impending expiry of the main sponsor, Regenerate Christchurch and its empowering Act. Nonetheless, the process is now falling seriously behind the original schedule where Phase 3 (see Figure 4) should have begun in August 2018, but as yet Phase 2 is still unfinished.

The current situation is that Regenerate Christchurch have ‘paused’. The *HowTeam* community engagement process necessary for consensual adaptation of the project area to the effects of climate change is falling further behind schedule. The community engagement on adaptation to the effects of climate change is also stalled (or close to) for the reasons outlined above. Nonetheless the communities retain some faith but recognize that little has happened on-the-ground in the project area.

Unfortunately many in the communities do not yet realise that Regenerate’s mandate does not and never did include on-the-ground repairs, and at least some were thinking/hoping that the pause was to do the repair works so that the adaptation conversation could start.

³⁵ Quotes are collected since February 2018 and have been strung together to give a sense of the types of feeling expressed at social events.

³⁶ <https://engage.regeneratechristchurch.nz/coastal-futures>

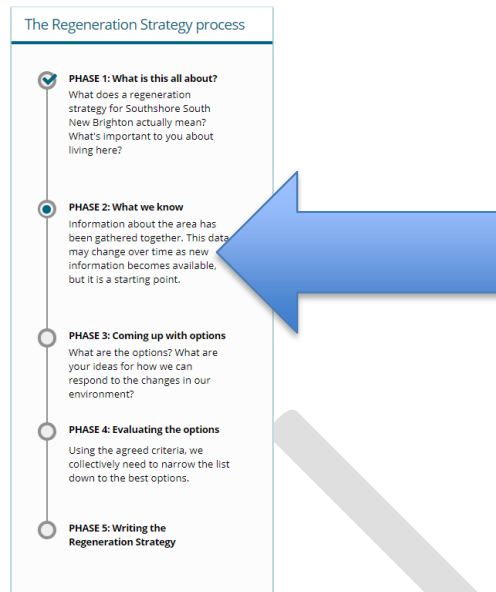


Figure 4: The Regeneration Strategy Process³⁷ (adapted), blue arrow indicates progress.

The main groups/entities/parties involved in the Southshore/South New Brighton adaptation process are outlined in Figure 5.

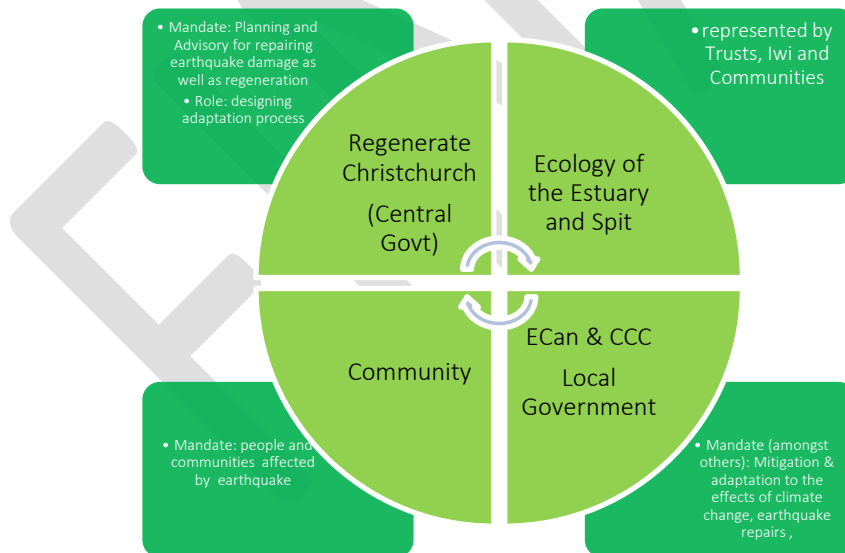


Figure 5: The parties, mandates and roles in the Southshore-South New Brighton Project.

Consistent with the Greater Christchurch Regenerate Act, it seems that Regenerate should be the driver of “Regeneration” and earthquake repairs. Christchurch City Council should run the Adaptation process, and also is the operational part of the partnership for carrying out

³⁷ <https://engage.regeneratechristchurch.nz/coastal-futures>

work on the ground (or water). However, this largely represents guesswork: it is not easy to understand which organization is running what.

Certainly for the future, the Dynamic Adaptive Pathways Planning (DAPP) approach is foundational for successful adaptation. However, this requires a much closer collaboration between communities and the Council, particularly between communities and the Council officer core. Council needs to work creatively with communities to discover how the very impersonal and impartial RMA planning processes can be fulfilled but these processes themselves also be 'adapted' to become a full consensual partnership. As the Minister for Climate Change said³⁸ on this very issue "...this is one of the problems...".

But partnership is both possible and vital. As a nation we are consensually policed by the New Zealand Police Service. That may mean that a police officer stops me and informs me I am breaking the speed limit. In that situation my part of the consensus is that I accept that the officer has the right to do this, and the officer accepts that it is their duty to enforce the law without bias according to their best judgement.

And here is the challenge...it would be very good, indeed will become imperative that Christchurch City Council 'find a way' to reconcile the formal requirement of their processes with community consensual partnership - so that residents feel that they do own their District Plan, and the Council officer core are also happy that they can operate it within the consensus.

³⁸ Email response from Hon James Shaw to Simon Watts (CCRU) on the RMA and practical barriers to adaptation.

What happens Now: pre-Adaptation

The two areas under pre-adaption are:

1. Repairing earthquake damage
2. Improving social wellbeing and resilience of the community

The communities need to see something substantial happening and be told about it. Regenerate Christchurch with Christchurch City Council have an opportunity to rest community fears by:

- initiating and announcing the repair process to the estuary edge damage in Southshore, and
- engage the impacts of the earthquake damaged residential and commercial land in South New Brighton.

As a first step on these we would expect Regenerate Christchurch to include them within its regeneration scope. It is understood that such processes are likely to require Regenerate Christchurch to modify land designations and identify what parts of the District Plan need changes. This will take time, but communities need to be 'kept in the loop'.

Doing this simultaneously starts Regenerate Christchurch on the road to fulfilling their mandate in the project area, congruent with Figure 3. The community understands that Regenerate Christchurch are probably the only organization in this situation (Figure 5) who can effectively unpick the District Plan policy decision of Christchurch City Council that rolled earthquake repairs into climate change adaptation.

Beyond removing the primary sources of stress, pre-adaptation also includes other ways to help increase community cohesion and lower stress. Examples abound and are very diverse but could include opportunities for interaction with animals hence reducing human stress^{39,40} through to providing facilities for people to explore and enjoy the environment in which they live, or social spaces like cafés *etc.* Our local Red Zone is full of opportunity, but this is probably the domain of Regenerate Christchurch and the *HowTeam* with their community engagement process to make specific proposals. The 'take-home' point is this needs to happen much sooner than later....it is pre-adaptation, effectively social repairs, NOT adaptation.

In summary, the social, economic and well-being damage to the communities, as well as the reputational damage to both Regenerate Christchurch and Christchurch City Council of leaving these areas in their current state whilst talking about climate adaptation cannot be over-emphasized.

³⁹ Beetz, et al. (2012) Psychosocial and Psychophysiological Effects of Human-Animal Interactions: The Possible Role of Oxytocin. *Frontiers in Psychology* **3** pp234. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3408111/>

⁴⁰ Crossman, M.K (2017) Effects of Interactions with Animals On Human Psychological Distress. *J Clin Psychol.* **73** (7) pp761-784. doi: 10.1002/jclp.22410. Epub 2016 Nov 3.

List of Recommendations

This report contains eight recommendations in classes that mostly⁴¹ fall cleanly into either:

- earthquake repair/pre-adaptation
- support for our future adaptation process

These recommendations are not complete and need ‘finishing’. Each will need to be the subject of a conversation with community, Regenerate Christchurch, Christchurch City Council and experts around the table to ensure maximum value-add and high resilience potential.

These are pre-adaption proposals, predominantly NOT adaptation proposals. The agreed community engagement process, *HowTeam* will develop adaptation proposals.

Repairs and pre-adaptation

By not repairing earthquake damage like the estuary edge the community also remain “damaged” by fear and are socially and emotionally unable to move forward and fully engage in the long-term process of adaptation. Hence this work is a prerequisite for the larger and more all-encompassing adaptation conversation and adds value to the spit redzone.

Recommendation 1 (Protection): Regenerate and/or/with⁴² Christchurch City Council to repair the parts of the Southshore estuary edge damaged by the earthquake and subsequent contractor removal and demolition of red zone houses, including that graded from existing higher land down to estuary level. This repair should be extended north through the southerly part of the South New Brighton estuary edge until it meets the reserve areas zoned there.

Recommendation 2 (Protection): After brokering the conversation with communities, Regenerate and/or/with Christchurch City Council make recommendations/decisions about the repair or future of parts of South Brighton including estuary edge and residential areas. This will generate specific further recommendations.

⁴¹ Strictly, the Repairs/Adaptation category contains both repair and adaptation components, BUT this is because the required on-the-ground work should probably be done simultaneously.

⁴² “and/or/with” form is used for all recommendations to indicate lack of clarity about the perceived governance/responsibilities and nature of the process

Repairs/Adaptation

The isolation of the communities in the project area caused by the policy decision to roll earthquake repairs into adaptation needs to be addressed. The effects of protracted uncertainty on matters close to the base of Mazlov's Pyramid is known to be dangerous to personal and social wellbeing. This recommendation supports spiritual, physical and emotional health and re-connection with the City. Spending time in more natural environments supports wellbeing.

Recommendation 3⁴³ (Reconnection and Protection): Regenerate and/or with Christchurch City Council physically reconnect the isolated communities of Southshore and South New Brighton with the end of the Ōtākaro Avon River Corridor and the village of New Brighton by the construction of a raised scenic cycle and walking track along the estuary edge between Southshore and New Brighton. (This includes the upgrading/overhauling and connection of existing parts of this track in South Brighton and New Brighton with each other and the Ōtākaro Avon River Corridor and Southshore, as well as connections into the rest of the City Cycle network). Improve and include signage and interpretation and promote as a community asset – this would support spiritual, physical and emotional health and re-connection with the City.

⁴³ See also Recommendation 4.

The ecology of the estuary and the area is also a significant part of the community, and its ecological and environmental well-being is of concern to the communities here. Although this part of the environment cannot be shielded completely from the impacts of climate change, this recommendation is to help the ecology have 'somewhere to go' as well as increase opportunities of community interaction with the environment which yields health and well-being benefits⁴⁴, as well as supporting growing tourism in the area.

Recommendation 4⁴⁵ (Reconnection and Protection): Consistent with the Reserve Status of parts of the South Brighton Red Zone, and to support the estuary ecology, longevity of the track, and rest community fear, Regenerate and/or/with Christchurch City Council ensure that the completed scenic cycle and walking track is:

- about 5m in from the current estuary edge,
- is raised by at least 0.5m and protected along its length
- uses hybrid ecosystem-based adaptation solutions along the estuary and land edges.

In the scenario of rising waters, one of the major benefits of ecosystem adaptation solutions are that they can extend across from the land to the emergent (water based) systems. This means that the very positive effects of trapping and holding soil/sediments in place reduces, prevents or even reverses erosion, even under storm surge conditions⁴⁶. Other key benefits include that such systems provide new and more refuges for juveniles to hide, and potentially more ecological niches. One of the requirements of such systems is protection against wave action whilst the system is establishing. This is often a period of 5 years.

N.B. eutrophication of such systems decreases their diversity and function, hence water quality is important, hence estuarine water quality remains important.

Recommendation 5⁴⁷ (Protection): Consistent with the Reserve Status of parts of the South Brighton Red Zone, and the outstanding scenery of the estuary walk, Regenerate and/or/with Christchurch City Council and ECan devise a strategy to dissipate most of the incoming wave energy over the first few years along the estuary edge to support the establishment of the ecosystems.

⁴⁴ <https://www.cdc.gov/onehealth/basics/index.html>

⁴⁵ See also Recommendation 3

⁴⁶ Gedan et al. (2011) The present and future role of coastal wetland vegetation in protecting shorelines: answering recent challenges to the paradigm. *Climatic Change* **106** pp7–29. DOI 10.1007/s10584-010-0003-7

⁴⁷ See also Recommendation 4

Support for Adaptation

The mandates of the different players in this situation seem not well aligned to their current and future roles. This recommendation is a plea for clarity on the long term continuation of processes that have been started and have community backing. There needs to be discussion between Regenerate Christchurch and Christchurch City Council as to which of them have the mandate and facilities to best take forward and implement Regenerate Christchurch's community engagement and adaptation work. The results of that discussion need to be clearly communicated to affected communities

Whichever organisation proceeds this work, all concerned need to rejoin the *HowTeam* process and begin the serious work of joint (community and agency) adaptive planning and adaptation in the project area.

Recommendation 6 (Mandate and Process): Consider whether Regenerate Christchurch or Christchurch City Council has the mandate to pursue the adaptation conversation. Then whichever organization is deemed appropriate continue the *HowTeam* process.

We are treading new ground. Given the international and national situation with respect to adaptation it is likely that funding sources to support adaptation will be needed to support rates or other agency funds. Accordingly it will become necessary to identify other funds and funding mechanisms. This report gives a few overseas examples, but we will need to scope and develop these first at local then national scale. This process could start in this project.

Recommendation 7 (Strategic Financial Planning): Regenerate Christchurch and/or/with Christchurch City Council with other regional or territorial authorities commission research to review and model existing and potential funding mechanisms and then consider approaching NZ Treasury with proposals to inform further work to develop a national fund.

Adaptation globally and in New Zealand is new territory for humankind, but for New Zealand it is vital that we do this well. This means growing our new economy and avoiding maladaptation. Strong collaborative partnerships with others further ahead on the same journey avoids 'reinvention of the wheel'.

Recommendation 8 (Support for Adaptation): Alongside and from its 100 Resilient Cities membership, Christchurch City Council consider twinning with another Resilient City which is maybe slightly further along an adaptive pathway, a suggestion might be Glasgow or possibly Manchester, UK.

FINAL

What Next

Ultimately a successful adaptation process will result in optimal outcomes for the affected parties and will not result in massive stranded assets or mal-adaption costs, *i.e.* communities must not stay too long, nor leave too soon. But whilst those communities are there, sufficient infrastructure and protection must be in place to support them.

This pre-adaptation plan comprises the work required which will release the community to take a full part in the adaptation process.

Beyond this a joint adaptation strategy is envisaged, developed and agreed between the Communities and (we assume) Christchurch City Council. Once this is agreed, then adaptive planning including local trigger points for different scenarios can be developed. At this point the adaptation plan can be implemented.

It is a long journey, but it is a joint journey. We need to make this journey together, or we will not make it at all. Successfully completing this journey lays the groundwork for other communities and helps realise some of the silver linings that are available at the local, regional and national levels.