CCRU
CHRISTCHURCH COASTAL RESIDENTS UNITED

Introduction

CCRU is committed to supporting community engagement and consensual adaptation to the effects of climate change. As a community partner with Regenerate Christchurch in their South New Brighton and Southshore Project, as well as with Christchurch City Council for other coastal parts the City, this guidance is critical for us, because it will inform both our Local Government colleagues, as well as our communities. Accordingly we thank MfE for giving us this opportunity to submit.

Context of the Guidance

This guidance is not about the eventual impacts on (for example) sea level on climate change. There is less uncertainty there, and if you look at the record, depending on what our species does, in terms of sea level rise, it could be 10 - 20m over the next 10+ thousand years. That is not our issue, and not the discussion we are having. It is also I suggest not the focus or even the 'back story' of the (revised) guidance. Our issue I think is much harder to resolve and comes with greater uncertainties.

Although there are issues of natural justice and resourcing, these are not engaged in this document. Our focus is about 1-2 human lifetimes, and the future of hundreds of communities on that timescale. It is about avoiding maladaptation (*i.e*. staying where we should not, or alternatively leaving too soon). Creating and maintaining enough development and infrastructure to sustain a community, but not such that we leave behind massive stranded assets.

Greatest Failing of Current Guidance

As part of a major adaptation project in Christchurch, the large gap in the current guidance that needs to be filled is on effective adaptation. We agree with the previous guidance that it is the only method available that provides a reasonable basis to engage the inevitable but time uncertain impacts of climate change, but it must be resourced. We are unsure that what has occurred thus far in NZ is what would be recognized as adaptation in other overseas countries which are increasing their resilience in the face of climate challenges.

It is clear both ourselves and our Local Authority partners are "...*building the plane as we learn to fly it*…". Workshops thus far have not been enough to prepare them for the processes ahead. Minister Shaw has assured me that

there are no RMA barriers to the processes of joint decision making between communities and local authorities in the context of adaptive planning, but still the barriers around local adaptation of even a few communities are many, and worse, it is very likely that they are 'unknown unknowns'. We need to build adaptive capacity[1]:

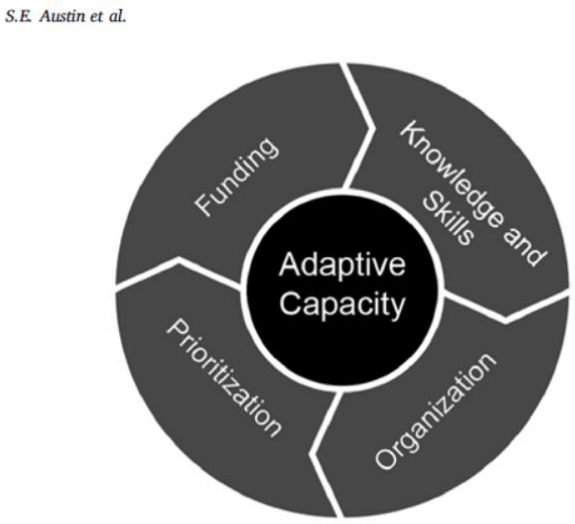

Fig. 1. Dimensions of adaptive capacity.

An example of a framework you may consider in your guidance is one that is currently informing health adaptation. The previous guidance is very mechanical on the processes that should happen, but the mainspring of that process, community engagement, joint decision-making, consensual adaptive management and planning is largely absent.

Other issues in the current guidance

We previously made comments about issues of tone and 'academic' rather than human nature of some of the advice, e.g. p66:

Guiding principle

- If the risk is **underestimated**, the consequences could be financial, loss of property and livelihood, social and economic disruption, inequities created regionally and accumulated nationally, loss of environmental services and possible loss of life.
- If the risk is **overestimated** for a specific timeframe, the repercussions will be temporary, because sea level will continue to rise (it is only a matter of time before the adaptation threshold is reached for those exposed to the risk), but social and economic penalties occur in the interim.

[1] Austin et al. (2019) Enabling local public health adaptation to climate change. Social Science & Medicine **220** pp236-244.

As we noted previously, advice like this to Councils is misplaced, recommending over-estimation of effects invites maladaptation, and treats people like cattle. Which leads to a very related matter that we now have even greater concerns about as we talk to Planners and Local Government Strategy departments around the country: the application of the Precautionary Principle (PP) to the effects of climate change.

Although PP is enshrined in the RMA, LGA, NZCPSs, and is usually exactly the correct approach to hazards, it is also specifically recommended in this guidance see pp33, 36, 38, 157 *etc*. PP is specifically not applicable to the certain but temporally ambiguous impacts of climate change, as demonstrated by the 'Guiding Principle' example (p66) above. In this context, its use invites maladaptation, and will incur extra social, health and financial costs. At the risk of being too direct, this is a self-inflicted wound. Although probably in almost all other environmental situations, I would suggest it is a 'sounding board' against which to test policy, Precautionary Principle in this context is completely wrong. It mitigates directly against adaptation and should be removed from this guidance.

The remainder of this document comprises of brief comments laid out thematically around the main issues presenting: most are not about the underlying science, but instead about tone, clarity, and interpretation of facts and the impact of this on community buy-in. Enough people must be convinced that adaptation is in response to a major impending set of problems that really do affect them. Some simply cannot or will not see, and reaching out to them is likely to be fruitless. However, many 'in the middle of the distribution' are amenable to evidence, but it needs to be honest evidence, not skewed, otherwise they will reject the entire proposal.

Thematic Areas

Sea Level Rise

Interpretation of actual data

a) One of the confusing things here is the relationship between the 'source' data and the model output data. At points it is unclear which is which, *i.e.* whether the dog is wagging the tail, or the tail is wagging the dog. The best example is the sea level data for which we have just over a 100y record. While we (CCRU) think that the rate of sea level rise will increase, our view is at the moment the record does not show consistent and

robust evidence that the rate of sea level rise is increasing. If we were less cautious, we might take the last 20 years of satellite data and conclude "it is 3mm per year", but the longer record is lumpy. We had similar or higher rates of sea level rise over a 30+ year period 1920s-1950s as those we have now, so we do not believe that there is currently robust evidence of a long term change of rate. This is consistent with the 2013 IPCC view:

"*…Tide gauges with the longest nearly continuous records of sea level show increasing sea level over the 20th century. There are, however, significant interannual and decadal-scale fluctuations about the average rate of sea level rise in all records. Different approaches show very similar long-term trends, but noticeably different interannual and decadal-scale variability. The rate from 1901 to 2010 is 1.7 [1.5 to 1.9] mm/year, which is unchanged from the value in AR4….*" [IPCC AR5 WG I Section 3.7.2]

and again from IPCC 2013 re their Fig 3.5 below:

"*…It is very likely that the mean rate of global averaged sea level rise was 1.7 [1.5 to 1.9] mm/year between 1901 and 2010 . . . and 3.2 [2.8 to 3.6] mm/year between 1993 and 2010. It is likely that similarly high rates occurred between 1920 and 1950….*"

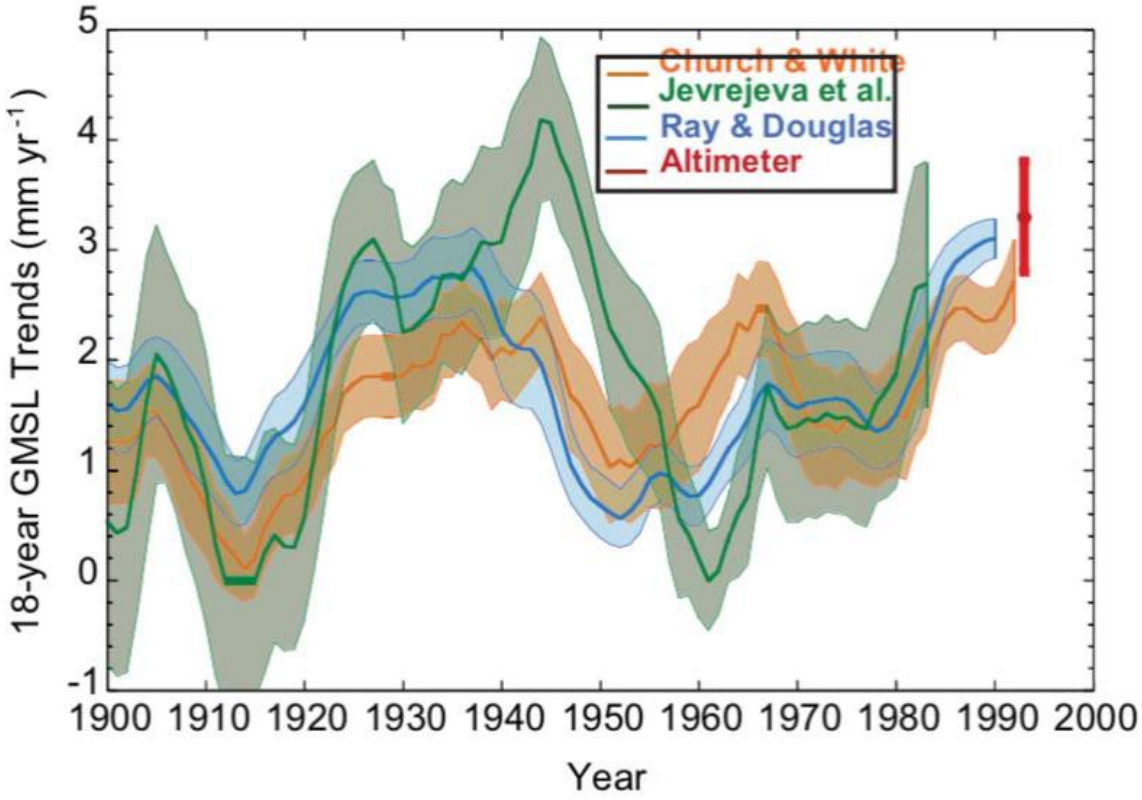

Figure 3.5 18 year trends of global mean sea level rise estimated at 1-year intervals. The time is the start date of the 18-year period and the shading represents the 90% confidence. The estimate from satellite altimetry is also given, with the 90% confidence given as an error bar. [IPCC AR5 WG 1 Chapter 3 Figure 3.14]

Since 2013, 6 further estimates of 20th century global sea level rise confirm the uncertainty but are not inconsistent with the 2013 IPCC 1901-2010 estimate of 1.7 mm a-1, see Table below (from Curry, 2018)[2]:

Table 3.1: Recent estimates of 20th century mean global sea level rise

Source	Rate of SLR	Period
Jevrejeva et al (2014)	1.9 ± 0.3 mm/year	20th century
Kopp et al. (2016)	1.4 ± 0.2 mm/year	20th century
Mitrovica et al. (2015)	1.2 ± 0.2 mm/year	1900–1990
Hay et al. (2015)	1.2 ± 0.2 mm/year	1900–1990
Thompson et al. (2016)	1.7 ± 0.3 mm/year	20th century
Dangendorf et al. (2017)	1.1 ± 0.3 mm/year	1900–1990

IPCC estimates of global sea level rise from their current report (2018) is 3.2 - 9.4 mm a^{-1} by 2100. The bottom of this range is similar to the 1993-2010 sea level rise rate[3] of 3.2 mm a^{-1}, (medium confidence). Presumably

[2] Curry, J. (2018) Sea Level and Climate Change. Climate Forecast and Applications Network (Special Report).
[3] IPCC 2013

this very high range, 3.2 - 9.4 mm a^{-1} has been back modelled from their work. However, the data is the data, and the 20 years of satellite data is simply not sufficient to be statistically significantly different from the existing much longer record, or the 30 years 1920s-1950s when the rates were higher (then) and for longer than the current satellite data derived rates (now).

We also understand that global sea level rise can be very different from local sea level rise: there are circulations/currents and seabed/coastal topology that affect such measurements in different locations at different times. So around New Zealand, such considerations (*e.g.* the Pacific Decadal Oscillation) are likely to mean that local sea level rises more slowly or even falls for the next few years, whereas polar melting may mean it rises faster. This is consistent with the MfE guidance[3] released in Dec 2017 but needs to be spelt out more clearly.

Management Framework

b) "…*The LGA requires councils to give regard to the avoidance or mitigation of natural hazards when performing its role in making decisions and undertake financial planning for risk reduction activities*…." Along with the NZ Coastal Policy Statement #26 talks of natural flood defences (dunes, wetlands..*etc*.), and #27 does not necessarily rule out hard structures as the start of an adaptation process, and case studies overseas initially use small hard structures to prevent maladaptation, *e.g*. raised cycleways. The guidance with other relevant policy advice specifically rules out hard structures. Looking overseas, this is a mistake. The costs (health, well-being, poverty, crime, all maladaptation) of moving people out of their communities too early is easily offset by low investment infrastructure, *e.g.* 0.5m cycleway *cum* bund. Clearly it is situation specific, but the guidance currently is too dogmatic about this, or at least three local government groups I have spoken to believe that was the clear message left by the MfE workshops.

c) "…*Avoiding increasing risk in areas subject to hazards which are unacceptable, such as areas likely to be subject to coastal inundation or erosion over at least the next 100 years, or flood waters of high depth and velocity which pose a risk to life*…". We cannot realistically assess the risks over the next 100 years for many areas (LA planning timescale), so how are councils and communities supposed to avoid maladaptation? The information has much more surety out 50 years. Clearly this is why we have adaptive planning, but there needs to be central government responsibility to assist local government and midwife in these changes. Minister Shaw's response of "…it is one of the challenges…" was simultaneously completely true, and completely unhelpful.

We look forward to the revised guidance, and hope you find this document helpful. If you wish to discuss any aspect of this submission, please get in touch.

Simon Watts (CCRU, Chair)