



PO Box 11 302, Manners St, Wellington 6142

Ph: 04 889 2337

E-mail: info@coastalrestorationtrust.org.nz

26 March 2021

Climate Change Commission
Submissions analysis team
PO Box 24448
Wellington 6142

Attention: Melanie Dixon

Submission from the Coastal Restoration Trust of NZ in response to the *Climate Change Commission 2021 Draft Advice for Consultation*

About the Coastal Restoration Trust of New Zealand

The Coastal Restoration Trust is a nationwide organisation that brings together the knowledge and experience of communities, iwi, management authorities, industry, and science agencies to restore coastal ecosystems with an emphasis on natural form and function. The Coastal Restoration Trust is an incorporated Charitable Trust formed in 2007 as the Dune Restoration Trust that, in turn, continued the work of the Coastal Dune Vegetation Network from the mid-1990s. Our aim is to support and encourage the development of cost-effective practical methods for coastal communities and management authorities to restore coastal ecosystems and their function with a focus on native flora and fauna.

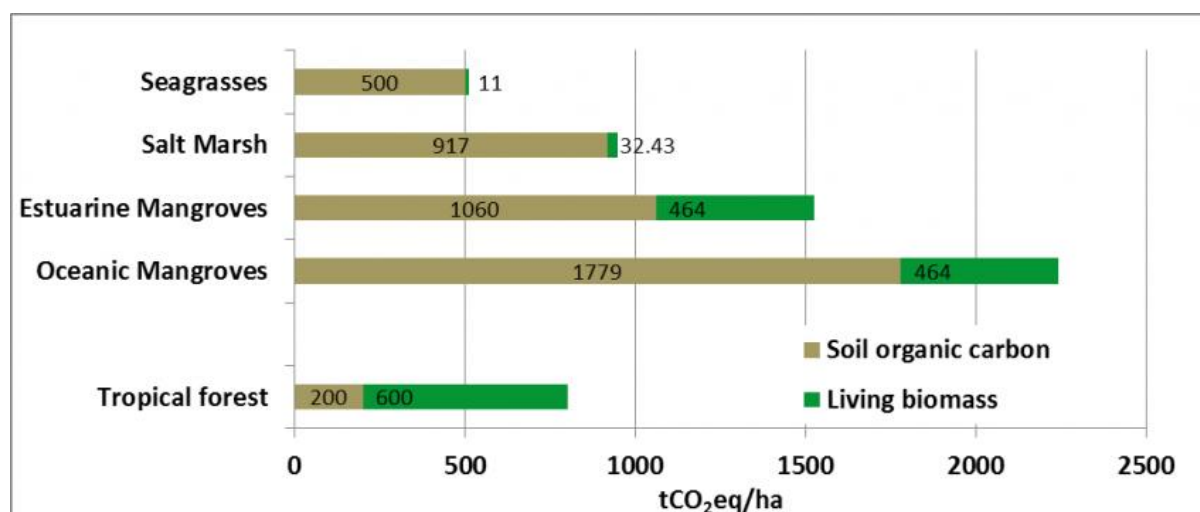
New Zealand's coastal environments are one of the most important and most degraded landscapes and ecosystems in the country. Coastal systems such as sand dunes, soft shores of estuaries, gravel beaches and cliffs are our natural barrier to the sea. If well looked after, and restored to natural form with native vegetation, these coastal systems lessen coastal hazards and erosion, they provide backdrops to our summer holidays, picturesque views, and habitat for those specialised plants and animals adapted to live between two worlds – land and sea.

The Coastal Restoration Trust of New Zealand has spent over 20 years accumulating knowledge on the benefits of coastal ecosystems and with Coastcare communities and coastal managing agencies nationwide supported applied research and developed best practice methods for restoring them. Our knowledge of dunes is particularly well-developed, and we would welcome the opportunity to share this knowledge with the Climate Change Commission and directly contribute to coastal climate change adaptation. Check out our website for the wide range of projects and free to access technical resources and practical community-based guidelines on restoring our coastal ecosystems.

Our submission summary

The Draft Advice for Consultation is an important step towards climate change mitigation, and we welcome the opportunity to provide a submission in this work. However, we feel the Draft Advice is lacking in some critical areas.

The Draft Advice fails to consider the carbon sequestration of coastal and marine ecosystems (“blue carbon”), and the emissions created following destruction of these ecosystems. Coastal ecosystems such as mangroves, tidal salt marshes and seagrass meadows sequester and store more carbon per unit area than terrestrial forests ([Blue carbon | IUCN](#)). 83% of the global carbon cycle is circulated through the ocean. New Zealand has approximately 15,000km of coastline, the 9th longest coastline of any country. This makes New Zealand ideally positioned for reaching carbon zero status more rapidly using blue carbon than would be achieved using only terrestrial solutions.



Retrieved from [Blue carbon | IUCN](#) on 24 March 2021.

The International Union for Conservation of Nature (IUCN) produced a guidance document for national blue carbon activities, many of which could be readily implemented by the New Zealand government within the next 5-10 years. Immediate steps could include legal protection and restoration of existing mangrove forests, saltmarshes and seagrass meadows to maximise their carbon sequestration potential. These ecosystems are under significant threat from developments and their protection might prevent large stores of carbon being released to the atmosphere.

The Draft Advice does not recognise the value coastal ecosystems have in reduction of coastal hazards. Coastal ecosystems perform many important functions relevant to climate change. Dunes act as a self-repairing buffer system between the sea and land, sacrificing some of their width to coastal erosion during storms, then later accumulating sand post-erosion to build seaward once more.

Mangrove forests and salt marshes accumulate sediment washed down from catchments, literally and naturally building new land. Subfossil records indicate mangroves can rapidly adapt to sea level changes, and that in some instances are accumulating sediments at the same rate as sea level rise, effectively negating the impact of sea level rise (Alongi 2008). Mangroves have been demonstrated

to absorb up to 98% of the energy of a normal wave (Parvathy & Bhaskaran 2017). The tragic 2004 Indian Ocean tsunami provided strong evidence that areas where mangrove forests had been removed were more severely impacted than adjacent areas that had retained mangrove forests (Alongi 2008)

The Draft Advice does not acknowledge the impact of failing to act on climate change, including the anticipated effects of sea level rise. Recent estimates indicate \$8 billion of Council-owned infrastructure would need to be replaced with 1.5m of sea level rise ([47716-LGNZ-Sea-Level-Rise-Report-3-Proof-FINAL-compressed.pdf](#)). It has been estimated that for every 10cm of sea level rise, thousands of people and their homes are exposed to high risk of flooding ([People, roads and billions in assets vulnerable to climate change-related floods | Stuff.co.nz](#)). Every year there are examples of coastal erosion and inundation affecting homes and livelihoods. Acknowledging the impacts of failing to act on climate change and how they will affect every aspect of human life for the foreseeable future might stimulate more effective change from industry and local government.

The Draft Advice does not address the need for building resilient ecosystems that will respond to the expected 1.5°C average temperature rise. Coastal squeeze is already a common occurrence in New Zealand- where coastal ecosystems are caught in the middle between sea level rise and coastal infrastructure. Often the coastal squeeze is further exacerbated by coastal erosion prevention measures (e.g., seawalls), that only act to hasten ecosystem loss. The development of infrastructure on coastal areas almost invariably is positioned too far seaward to cope with predicted climate change effects and has caused destruction of coastal ecosystems. Further infrastructure and housing developments on low-lying areas and areas close to the coast need to be prevented, in order to prevent future coastal squeeze. Furthermore, existing infrastructure needs to be reviewed and moved further landward where possible. Ecosystems affected by coastal squeeze need to be provided with room to move inland as sea level rises, through widening and restoring of coastal and riparian reserves.

The Coastal Restoration Trust has two current small regionally based research programmes underway investigating options for increasing the resilience of our coastal systems to expected impacts of climate changes. These are:

1. ***Adaptive Management of Coastal Forestry Buffers*** – This pilot project explores practical options to transition failing exotic forest buffers that protect sand dune exotic forestry and farms adjacent to exposed coasts by replacing with a zone comprising a diverse coastal forest community that was originally present. This permanent protective native forest buffer will be more resilient to the expected increased frequency and severity of storms expected with climate change and with restored frontal dunes cope with inland migration of the coastline with increasing sea levels.
2. ***Restoration of a native forest coastal sequence, Tuhaitara Coastal Park, North Canterbury*** – Te Kōhaka o Tūhaitara Trust and Coastal Restoration Trust are setting up a demonstration restored native coastal forest sequence that was typical of north Canterbury. The aim is to replace logged pines and marginal pasture with foredunes of sandbinders, mid-zone coastal shrublands, wetlands and lagoons, and landward coastal podocarp forest. There are no complete native coastal vegetation sequences in the Canterbury region, in fact in most regions of New Zealand. Only occasional remnants now exist and most of these are highly

modified and under increasing threat. This project is an iwi and community led project to initiate the restoration of a complete coastal sequence from foredunes to inland diverse native forest.

These are examples of where more research is required to provide coastal communities and managing agencies with the tools to restore our native coastal ecosystems that will mitigate the impacts of coastal hazards and climate change.

The Draft does not address the need to engage with and involvement of coastal communities in management of our coasts for mitigation of climate change effects. In a guide produced by trustees of the Coastal Restoration Trust for local authorities commissioned by the Climate Change Office in 2008, lessons from existing and successful dune care/restoration programmes in New Zealand were brought together to provide guidelines for councils wanting to initiate dune restoration programmes – both to mitigate coastal hazards, including climate change effects such as projected sea level rise, and to restore the beneficial natural and human use values associated with coastal dunes (Dahm, Jenks and Bergin 2008).

In the past, the management of coastal erosion in New Zealand has been dominated nationwide by an “engineering” paradigm, which has emphasized “holding the line” or “stopping” erosion with particular emphasis on the use of rock and other seawalls. This approach is costly, often involves significant environmental damage and adverse impacts on human use values and can reinforce inappropriate patterns of use and development. In the longer-term future, these shortcomings are likely to be further and quite severely exposed by accelerated sea level rise and other climate change effects. The challenge for the future is to manage these issues in a more cost-effective and sustainable manner, while also maintaining and restoring the natural, amenity, cultural and recreational values that we as New Zealanders attach to the coastline.

The report emphasised two aspects:

1. Firstly, successful dune restoration and natural management options are available and have the potential to play a significant future role in meeting the challenge of climate change. Coastal foredunes provide natural and cost-effective protection from coastal erosion and flooding, while maintaining and enhancing the natural, cultural and amenity values of our beaches. Dune systems can also protect communities from changing coastal hazards as sea level rise. In order to ensure this protection, a number of specific actions are required to restore and maintain a dune of adequate dimensions to accommodate normal shoreline changes and extreme sea levels, and to manage human use pressures so that natural dune building, and repair processes are maintained. The key elements involved in such work were outlined in this report.
2. Secondly, there are substantial advantages of adopting a community-based approach for restoring our coastal systems. In particular, this approach helps to develop a better dune care ethic, which is important given that the need for dune management primarily arises from human impacts. It also empowers communities to take ownership of environmental problems, provides a forum where different community interests and values can be resolved and strengthens the relationships between management agencies and their communities. Dune care restoration and management programmes can also raise awareness in the community of climate change impacts, and in particular the links between sea level rise and coastal erosion. Involving communities in the management and restoration of natural dunes

also has the potential to assist in the development of more resilient coastal communities - better able to understand and to live sustainably with natural coastal processes, and to adapt to future change.

The Coastal Restoration Trust collaborates with local coastal communities and managing agencies such as councils and the Department of Conservation in providing a forum for the free exchange of information on sustainable management of our coastal ecosystems with emphasis on the use of the functional native vegetation to restore natural character, form and function. The aim is to ensure that wherever possible, best-practice methods based on scientific principles are adopted in restoration of dunes that improve the degree of restoration success rather than a reliance on anecdotal information and untested procedures.

Involvement of end users at all stages ensures rapid transfer of research results to those involved at all levels of dune restoration and in forms that can be utilised by Coast Care and other interest groups. We believe community-based partnerships can empower local community and relevant stakeholder groups to have a more meaningful role in the management of beaches and coasts and this needs more recognition and support from local and central government. Quite simply, if we do not bring the local community along with us, then any hope of addressing impacts of climate change along our coasts will not happen.

Recommended actions

- 1) **Immediate and permanent protection of all coastal ecosystems**, including no further loss of mangrove forests, saltmarsh, seagrass beds and dunelands. Destruction of these ecosystems to become a prohibited activity, enforceable by law.
- 2) **Restoration and recreation** of the above ecosystems to be given the highest priority; identify and mitigate drivers of decline and actively re-create these ecosystems where they have been lost.
- 3) **Immediate cessation of further development on coastal and low-lying land** that will contribute to coastal squeeze and result in future homes being at risk of coastal inundation and flooding.
- 4) **Review of existing coastal and low-lying infrastructure and developments** with a goal of shifting these inland if possible. This will save lives and money.

Conclusion

Once again, the Coastal Restoration Trust of New Zealand would like to acknowledge the work the Climate Change Commission has invested in making a better future for New Zealand. We have been undertaking works that mitigate climate change for over 20 years and represent the interests of dozens of coastal communities throughout New Zealand. We would welcome the opportunity to contribute further on this initiative.

Yours sincerely,



Greg Bennett, Chairperson

Coastal Restoration Trust of New Zealand

References

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