



Landscape response to Coastal Land

INTRODUCTION

With the continual increase in severe weather events and the combined effect of sea-level rise, the protection of assets along New Zealand's coastal land and whether or not seaside communities should remain in place have become pressing issues. In response to climate change and coastal adaptation, there is the potential in some areas for communities to shift inland. That raises the question of what will happen to the land left behind?

Sea-level rise and the protection of public and private land creates pressure on local government and private landowners to take a stand on what should be protected, and at what cost. To ensure decisions are adequately informed, an assessment of the coastal landscape is necessary where new activities and land use could be developed that protect and enrich the characteristics and values of the region. This think-piece considers the role of landscape architects in helping to determine land use in these areas, particularly where responses such as 'accommodate', or 'retreat' are promoted as viable options.

LANDSCAPE VALUES AND ASSESSMENT

In 2022, the New Zealand Institute of Landscape Architects (NZILA) published a guiding document: *Tuia Pito Ora New Zealand Institute of Landscape Architects Te Tangi a te Manu: Aotearoa New Zealand Landscape Assessment Guidelines* (July 2022). This outlines the process of landscape assessment within a statutory framework. It provides the methods and principles that need to be considered when providing expert landscape evidence to help guide decision-makers, with specific reference to the policies contained within the New Zealand Coastal Policy

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Statement 2010 (Ministry for the Environment *New Zealand Coastal Policy Statement 2010* <<https://environment.govt.nz>>) when working within the coastal environment.

When considering the effects of change, one of the first tasks of a landscape assessment is to describe the characteristics and values of the site, so that outcomes can be designed to integrate with their context and the likely effects of the change can be measured. This should include an understanding of those values that have the potential to be modified or lost through climate change; as well as helping guide potential opportunities for human-led change through a spectrum from nature-based solutions to 'harder', more engineer-led approaches. Landscape architects should provide a character and value description at the site and local scale which takes account of the wider regional scale when informing appropriate outcomes. Landscape values present in a coastal environment can relate to physical, sensory and associative attributes or dimensions. Te Tangi a te Manu (TTatM) recognises that within the coastal environment, landscape includes both land and sea; and extends below the water (*Te Tangi a*

te Manu: Aotearoa New Zealand Landscape Assessment Guidelines at 92-93). Management of effects must also preserve natural character in this context, in line with s 6(a) of the Resource Management Act 1991, which can be examined through understanding its abiotic, biotic and some experiential aspects.

Policy 1 of the New Zealand Coastal Policy Statement 2010 describes the coastal environment as “areas where coastal processes, influences or qualities are significant...” with landscape and natural character assessments relating to these coastal environments including the extent of territorial waters. The concept of “seascape” in *Te Tangi a te Manu* is simply landscapes that include the sea (*Te Tangi a te Manu: Aotearoa New Zealand Landscape Assessment Guidelines* at 94). The attributes present in the landscape and the associations that a community has with the landscape contribute to the character that is identifiable as ‘a sense of place’. The physical landform (such as the Pancake Rocks on the West Coast) may be strongly identifiable with an area, or it may be the presence of fauna (such as the royal albatross and blue penguin colony at Taiaroa Head in Dunedin) that also contributes to the value and associations of an area. The locations of such landscape features, values and attributes can be mapped and described. Such assessments can then be used to inform and compare against any natural or induced changes to the coastline over time, such as changes to the extent and areas of dunes, river deltas or extents of estuaries.

Landscape values can include cultural landscapes or sites that have wāhi tapu or significance for mahinga kai. It is also important to know where these areas are and the risks facing this aspect of the landscape to determine what responses are required.

CLIMATE CHANGE CONVERSATIONS

With climate change, sea inundation, flooding and coastal erosion are among the impacts that will increasingly occur in some areas. Changes to atmospheric conditions that may affect landscape character and value (i.e., weather changes may result in a drier, hotter or wetter climate) can also directly affect existing habitats and the species within them. The extent and potential speed of these changes needs to be understood, to the best of available knowledge. Once the extent and speed of change to the receiving environment which may result from climate

change is understood, and the landscape characteristics and values at risk are known, then decisions can be made about what parts of the landscape can be protected, where change is to be accommodated and where new opportunities that protect and enrich the characteristics and values of the region could be created. If the projected change has an adverse impact on any identified values, then the effect of this needs to be considered against the statutory framework and any other relevant guidelines or plans. If a landscape has high or outstanding natural character, but those values are not affected by the change to the environment, then they will remain as part of the landscape of that district or region. However, if the values are at risk of being lost, then decisions will need to be made as to whether or not there are opportunities through mitigation measures to avoid, protect or accommodate the change in a way that can reduce or prevent the loss of such values. This conversation is particularly important where communities are asked to, or have decided to, build a new settlement away from identified at-risk areas. The ability for communities to remain connected to the coastal environment that may have been home for generations will be critical in the ability to successfully adapt to change. This is especially relevant to iwi who have associations with coastal areas – often through shared community resources, but also through spiritual associations with the landscape.

TĀNGATA WHENUA PERSPECTIVE

As outlined in *Te Tangi a te Manu: Aotearoa New Zealand Landscape Assessment Guidelines* at 266 – 267, ‘tangata whenua’ is the appropriate term to use (rather than Māori) in matters relating to landscape. Tangata whenua relates to Māori who hold mana (authority) over and occupy an area of whenua (land) (at 60). An understanding of how to address tangata whenua values and associations with place is important, as this forms part of the recognised values of an area; however a landscape architect would not normally speak on behalf of tangata whenua unless delegated by the that iwi to do so (at 119). Tangata whenua values form part of the tangible and intangible attributes (and may be expressed through physical form, as well as associative and perceptual attributes of a landscape). Consultation with iwi on the physical changes to the land can be an important part of the role of a landscape architect. Often the mapping skills of a landscape architect can help to display information so Tangata whenua can establish what the change may mean to their relationship with the

whenua and can make informed choices on how to retain or protect knowledge and values. Changes to current land use and occupation (such as managed coastal retreat) may provide opportunities to re-establish lost mahinga kai areas or strengthen tangata whenua values that may have become lost or diluted over time. Opportunities of native regeneration on floodplains and adjacent to rivers, deltas or estuaries could lead to increases in food production and native biodiversity opportunities.

OPPORTUNITIES

Biodiversity values are one of the many attributes at risk from climate change. Landscapes with valuable ecosystems along the coast that are under threat may need to be recreated inland (where feasible) through the process of deliberately created habitats. Opportunities to (re)create these areas and/or link inland areas with wildlife corridors may provide connections needed for fauna and flora to shift inland in response to climate pressures.

Some coastal landscapes have been highly modified with stopbanks, roading, infrastructure and buildings. If these facilities and this land use is no longer viable, or needs to be moved, then decisions must be made about whether this can create opportunities: such as removing stopbanks and areas re-wetted, estuaries extended, and stormwater retention or detention areas created. If coastal land is flooded to the point of being too dangerous for habitation once every 50 or 100 years, it may still be highly productive, with the risk factor of flooding built into crop species selection and farm design.

Carbon farming is a land use opportunity that relates to coastal farmland including estuaries and wetlands. Most New Zealanders have heard of carbon farms that sequester carbon contained in forest ecosystems. This is known as green carbon farming. Blue carbon is a term that describes the carbon captured by coastal and marine ecosystems, whereas teal carbon describes the carbon captured by freshwater wetlands. Estuaries and wetlands can sequester large amounts of carbon, and while currently Australia is the only country with blue carbon included in their regulated carbon market, there is the potential for blue and teal carbon to be introduced into the New Zealand Emissions Trading Scheme. If it is, this would open the potential for landowners to make money by revegetating coastal land that is currently marginal for farming purposes, or no longer habitable. Carbon farming has the potential

to not only sequester and store carbon, but also slow down coastal erosion, capture suspended sediment and vegetative matter, support biodiversity values and help provide new opportunities for products such as honey or nutraceuticals.

Opportunities for re-imagining coastal or riparian areas as recreational areas could be worked into regional spatial planning and other land use activities including farming or forestry. Incorporation of improved and extended public access to and along the coast can improve connections with the coastal environment and enjoyment of these spaces.

CONCLUSIONS

Any decisions on whether or not to protect infrastructure or private property will depend on the speed and extent of change as it affects that property (whether directly through coastal erosion or inundation, or indirectly through loss of access or infrastructure) and the impact that such protection may have on other environmental values. Given the extent of change faced by some coastal communities, bold decisions to adapt and relocate communities may be the best way forward, rather than protecting infrastructure and property in ways that will only be effective for a relatively short period of time. To be effective, a landscape architect needs to be able to provide an effects-based assessment at a scale (including a time scale) that is relevant to the site and issues facing the area and have an understanding of the nature of the anticipated change to the environment. This level of change needs to be considered in relation to the statutory framework that relates to both the land and waters that may be impacted by the activity. Opening the dialogue on possibilities for protecting, enhancing, or re-imagining coastal environment is an important discussion for Councils and communities to have, as this will build new relationships and values within our landscapes, and focus on the potential for positive change which builds resilience and wellbeing.