Appendix 1 - Mapping methods

Landscape assessment criteria

The following criteria were used to identify Northland's outstanding natural landscapes (ONLs) as mapped in the Regional Policy Statement – Maps.

Natural science factors:	
This subsection evaluated and provided context for the natural science factors by determining their value in terms of representativeness and / or rarity at a regional or national level.	
Representativeness	Considered the level of importance of the landscape with regard to how clearly characteristic the landscape is of the area, district or region. This section included comment on the key components of the landscape, defined the character of the place and distilled its character and essence. It also considered any endemic associations that are present.
Rarity	Assessed whether the landscape or feature is unique or rare in the region or nationally, or has components that can be considered as unique or rare.
Aesthetic values:	
The aesthetic values subsection assigned value to the landscape using a series of factors.	
Coherence	Coherence was used to describe the patterns of land cover and land use and whether they are 'in harmony' with the underlying natural pattern of the landform of the area, and whether there are any significant discordant elements of land cover or land use. It assessed how 'natural', or unmodified the landscape is.
Diversity and complexity	This factor considered the extent to which elements contributing to overall landscape character are diverse and complex (particularly in ecological terms) without creating disharmony. For example, an area containing a collective of shoreline, saltmarsh, freshwater wetland, coastal shrubland and a backing of indigenous forest, which form a coherent sequence.
Vividness	Vividness, a distinctiveness or power which results in the feature or landscape being widely recognised across the community and beyond the local area, and remains clearly in the memory. Remarkable or striking landscapes can be symbolic of an area due to their recognisable and memorable qualities.
Naturalness	This factor evaluated the extent to which the feature or landscape appeared affected by human activity. It determined whether human activity intrudes on the landscape and included consideration of the following matters: • Presence of buildings and associated built development. • Presence of infrastructure services. • Extent of indigenous forest cover.

	• Homogeneity of exotic vegetation. • Presence / extent / nature of modified agricultural land use. • Strength of natural processes / ecological patterns. • Unmodified and legible physical relief and landform. • Presence of water.
Intactness	Focused on the intactness and aesthetic coherence of natural systems (being ecological, hydrological and geomorphological processes). It assessed whether these systems display significant visual signs of human modification, intervention or manipulation, and whether they are visually intact and highly aesthetic natural landscapes.

Experiential values:

The first four factors of this subsection assigned value using more subjective experiential factors, whilst the latter two evaluated the shared community values and associations of features or landscapes.

Expressiveness	Expressiveness described how clearly a feature or landscape demonstrates the processes by which it was formed – the 'legibility' of the landscape. Sea cliffs, river gorges and volcanic cones are examples of landscapes or features that are highly expressive, when they are unmodified by human activity.
Sensory qualities	These are landscape phenomena as directly perceived and experienced by humans, such as the view of a scenic landscape, or the distinctive smell and sound of the foreshore.
Transient values	The experience of landscape can be heightened by the consistent and repeated occurrence of transient features that contribute to the character, qualities and values of the landscape. This may include for instance the flowering of kōwhai, or pōhutukawa, bird migrations, or a more regular event such as tidal movement within an estuary, changes in light level or sun direction.
Remoteness / wildness	This evaluation considered whether the landscape displays a wilderness character that is remote from and untouched by human presence. For example: • Sense of remoteness • Accessibility • Distance from built development.
Shared and recognised values	Natural landscapes can be widely recognised and valued by the immediate and wider community for their contribution to a sense of place, leading to a strong community association with, or high public esteem for the place. Examples of this include Maunganui Bluff, Waipoua Forest or Whāngārei Heads / Manaia.
Spiritual, cultural and historical associations	This factor included both activities and associative meanings. These could be spiritual, cultural or social associations with particular landscape elements, features, or areas, whilst associative activities are patterns of social activity that occur in particular parts of

	a landscape, for example, popular walking routes or fishing spots.

Each of the evaluation criteria were ranked and the final determination of whether an individual feature or landscape merits being identified as an ONL was based on an evaluation and judgmental weighting of the 'ratings'. The ratings were not additive. A full copy of the assessment worksheets and methodology used for evaluating the region's landscapes: *Northland Regional Council Northland Mapping Project: Outstanding Natural Landscapes – Mapping Methodology Report,* is available from Northland Regional Council.

Natural character assessment criteria

The following attributes are to be used in any further assessment to identify Northland's outstanding and high natural character areas in the coastal environment (as mapped in the Regional Policy Statement – Maps). These attributes are based on Policy 13(2) of the NZCPS 2010.

Natural character attributes

Recognise that natural character is not the same as natural features and landscapes or amenity values and may include matters such as the following to identify a range of natural character from pristine to modified:

a) Natural elements, processes and patterns;
b) Biophysical, ecological and geomorphological aspects;
c) Natural landforms such as headlands, peninsulas, cliffs, dunes, wetlands, reefs, freshwater springs and surf breaks;
d) The natural movement of water and sediment;
e) The natural darkness of the night sky;
f) Places or areas that are wild or scenic; and
g) Experiential attributes, including the sounds and smell of the sea; and their context or setting.

As a guide

- **Outstanding natural character** generally means entirely natural (such as near to pristine indigenous land cover, negligible human features e.g. buildings, structures, paved surfaces, roading or vehicle tracks) and a very strong experience of naturalness.

- **High natural character** generally means a high proportion of indigenous vegetation cover, visually unobtrusive land management (e.g. low intensity pasture), few and visually subservient human features and a strong experience of naturalness.

- **Areas where natural character is less than high** generally means one or more of the following: Mostly modified land cover (e.g. pasture, plantations), limited remnant indigenous vegetation, obvious land management patterns, obvious or prominent human structures, and a modest experience of naturalness.

A full copy of the assessment worksheets and methodology used for evaluating coastal natural character: *Northland Regional Council Northland Mapping Project: Natural Character Methodology* is available from Northland Regional Council.

Coastal environment assessment criteria:

The following criteria were used to identify Northland's coastal environment as mapped in the Regional Policy Statement – Maps.

Areas / characteristics	Application / description
The coastal marine area and islands within it	Self-explanatory

Areas where coastal processes, influences or qualities are significant, including coastal lakes, lagoons, tidal estuaries, saltmarshes, coastal wetlands, and the margins of these	Key evaluation criteria / elements:
	  a) Landform and land contour.
	  b) Salt tolerant vegetation.
	
	Generally included:
	  a) Visible dune systems (vegetated or unvegetated).
	  b) Coastal lakes and wetlands occurring immediately behind dune systems.
	  c) Coastal lakes and wetlands occurring adjacent to dune systems, where these have identified coastal characteristics.
	  d) Contiguous natural sequences of regionally significant estuary / coastal wetland to freshwater wetland.
	  e) Margins of lagoons, estuaries and saltmarshes (using land contour or a set distance).
	  f) Land adjoining freshwater rush marsh areas behind mangroves and / or saltmarshes (using land contour or a set distance) except in upper estuarine areas and / or in areas where there is extensive coastal wetland present, in which case only the freshwater wetland is included (and no land margin).
	
	Did not include:
	  a) Modified wetlands captured under a), b), c) or e), that are partially drained and / or infilled and not potentially capable of restoration.
	Other considerations:
	  a) Land use classification (LUC) of 8e1 and 7e10 (i.e. young dunes).

Areas at risk from coastal hazards	Key evaluation criteria / elements:
	  a) Mapped information on coastal hazards.
	  b) Land contour
	Generally included:
	  a) Mapped coastal erosion and coastal flooding high hazard areas.
	Did not include:

	a) Full extent of mapped tsunami inundation areas.

Coastal vegetation and the habitat of indigenous coastal species including migratory birds	Key evaluation criteria / elements:
	  a) Plants associated with estuaries, sandy beaches and rocky shores.
	  b) Known habitats of coastal bird species.
	  c) Landform and land contour.
	
	Generally included:
	The following vegetation, where it is seaward facing or otherwise visible from the coast:
	  a) For estuaries:
	    o Mangroves
	    o Sea rush (wiwi)
	    o Jointed wire rush (oioi)
	    o Sellieria (remuremu)
	    o Glasswort (ureure)
	    o Giant umbrella sedge (toetoe upoko-tangata)
	    o Saltmarsh ribbonwood (makaka)
	    o Sea primrose (maakoako).
	  b) For sandy areas:
	    o Pingao, spinifex and marram
	    o Shore groundsel
	    o Ice plant
	    o Sand coprosma
	    o Beach spinach (kokihi)
	    o Shore bindweed (nihinihi)
	    o Coprosma repens (taupata)
	    o Cottonwood
	    o Wire vine (pohuehue).
	  c) For rocky / hard shores
	    o Pohutukawa
	    o Hebe elliptica (coastal koromiko)
	    o Coastal five finger (houpara)
	    o Coastal astelia (kowharawhara)
	    o Melicope ternata (wharangi)
	    o Flax (harakeke)
	    o Rock lily (rengarenga).

Elements and features that contribute to the natural character, landscape, visual qualities or amenity values	Key evaluation criteria / elements:
	  a) Land contour / visibility from coastal marine area
	  b) Landscape assessments
	  c) Coast landform type (e.g. harbour, estuary, beach, rocky shoreline)
	  d) Public access.
	Generally included:
	Areas within the first prominent ridge line or contour, especially where:
	  a) These are close to the coast

	(nominally within 2km); and
	b) The land rises directly from the coastline up to the ridgeline; and
	c) The ridgeline is:
	   o more or less parallel with the coast; or
	   o otherwise forms a contiguous visual backdrop and / or catchment area enclosing a coastal segment such as a beach or embayment.

Items of cultural and historic heritage in the coastal marine area or on the coast	Key evaluation criteria / elements: a) Areas of identified cultural and historic heritage associated with the coast. b) Land contour. Generally included: a) Clusters of recorded archaeological sites with a clear coastal association.
Inter-related coastal marine and terrestrial systems, including the intertidal zone	Key evaluation criteria / elements: a) Evidence of obvious physical and ecological relationships between the coastal marine area and adjacent land. Generally included: a) Visually prominent linkages between beaches, dunelands, coastal floodplains and / or coastal cliffs, and to intact sequences of indigenous vegetation, e.g. from mangroves to saltmarsh to freshwater wetlands and / or coastal forest.
Physical resources and built facilities, including infrastructure, that have modified the coastal environment.	Key evaluation criteria / elements: a) Evidence of obvious physical and / or operational connection with coast. Generally includes: a) All structures in the coastal marine area b) The landward component of marinas and ports c) In urban areas, properties that have direct access to the coastal marine area or are on cliff edges or ridgelines, where they have a significant and relatively unencumbered view of the coast.
Flat, low-lying areas without distinctive or discernible natural coastal features	Key evaluation criteria / elements: a) No evidence of distinctive or discernible natural coastal features. Generally included: a) In open coast areas, the land area

	within a 300 metre set back from mean high water springs
	b) In open harbour and estuarine, areas the land area within a 150 metre set back from mean high water springs
	c) In upper estuarine areas*, the land within a 20 metre set back from mean high water springs.
	* Upper estuarine areas are those areas where the channel is narrow (nominally 100 metres or less) and essentially riverine in shape.

A full copy of the assessment worksheets and methodology used to identify the coastal environment: *Northland Regional Council Northland Mapping Project: Coastal Environment Mapping Methodology Report* is available from Northland Regional Council.

Outstanding natural features

The following criteria were used to identify Northland's outstanding natural features (as mapped in the Regional Policy Statement – Maps).

The major source of information used to identify outstanding natural features (ONF) is the "Inventory (and maps) of Important Geological Sites and Landforms in the Northland Region", Geological Society of New Zealand, edited by J Kenny and B Hayward (1995).

The inventory provides a ranking of significance and vulnerability for each identified site. The significance ranking provides three levels:

      A International
      B National
      C Regional

A vulnerability classification (1 - 4) is also assigned to each feature, depending on its perceived susceptibility to human activities:

      1 = Vulnerable to complete destruction by human actions;
      2 = Vulnerable to significant modifications by human actions;
      3 = Probably not vulnerable to any likely human actions; or
      4 = Already destroyed by or immune to human actions.

The Regional Policy Statement maps have only included those features that:

- Are natural – the inventory includes a number of features that are the result of human activity (for example, mine relics). These are not considered outstanding *natural* features for the purpose of section 6(b) RMA and are not included in the RPS maps.

- Are not considered vulnerable to human activity. As an example, no feature with a vulnerability rank of 4 has been included; nor are those that are of regional significance, but have a relatively low vulnerability ranking and are unlikely to be damaged by humans (that is, features that rank C3).

- Have been mapped by the Geoscience Society – not all of the sites in the inventory have had their precise location or physical extent mapped. Method 4.6.4(3) of this Regional Policy Statement includes measures to address this through future assessment and potential mapping of the features listed in Appendix 4.

A number of the Regional Policy Statement Maps of volcanic cones differ slightly from the maps in the inventory. In these relatively limited cases, the ONF has been defined using the more dramatic contour change which more accurately identifies the important elements of the cone form.

In several other cases where volcanic cones are also subject to outstanding natural landscape (ONL), the ONF boundaries have been aligned with the ONL.

A full copy of the methodology used to identify outstanding natural features: *Northland Regional Council Northland Mapping Project: Outstanding natural features Mapping Methodology Report* is available from Northland Regional Council.