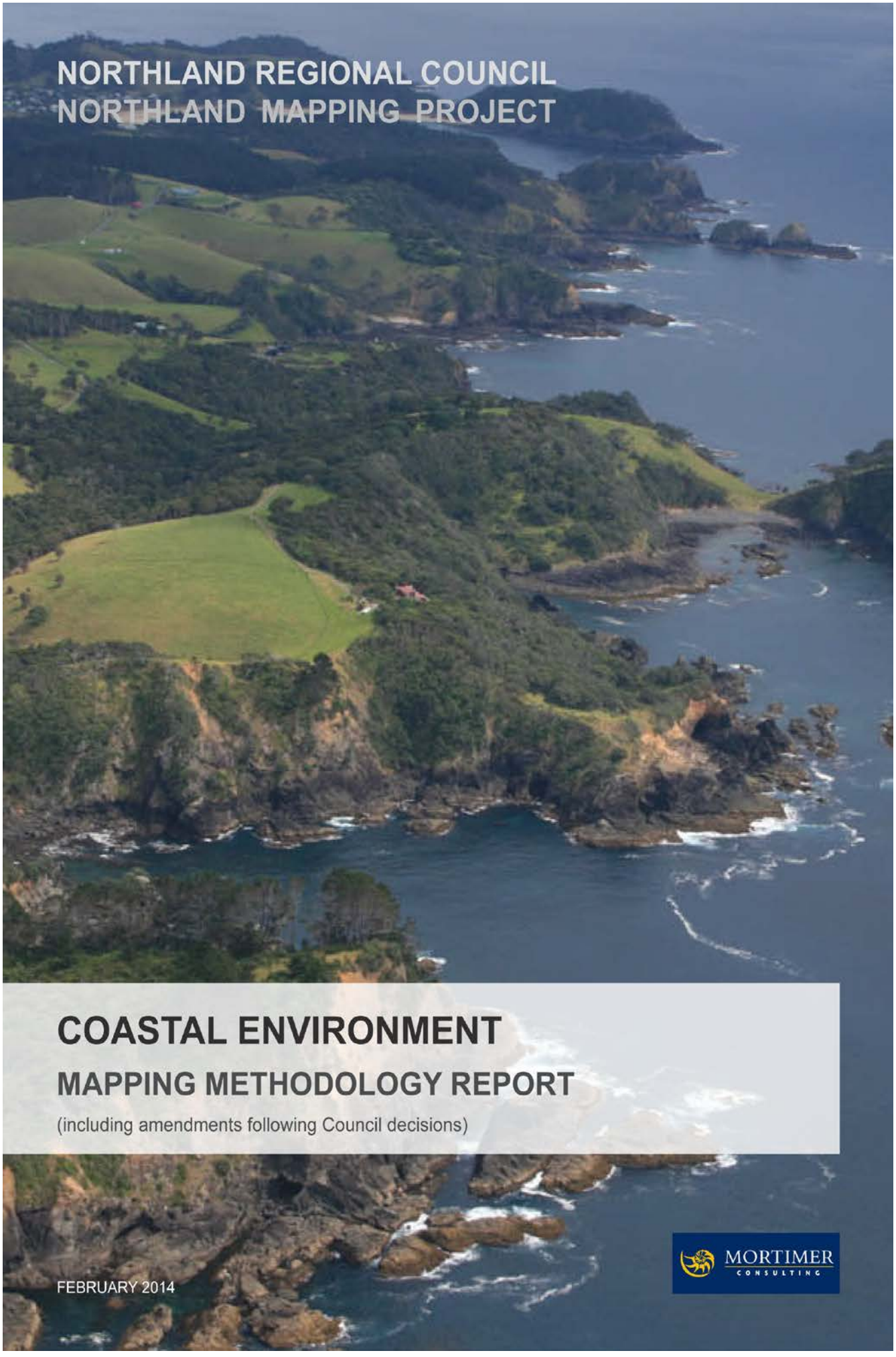

NORTHLAND REGIONAL COUNCIL
NORTHLAND MAPPING PROJECT

COASTAL ENVIRONMENT

MAPPING METHODOLOGY REPORT

(including amendments following Council decisions)

FEBRUARY 2014

MORTIMER CONSULTING

Northland Regional Council

Northland Mapping Project

Coastal Environment

Mapping Methodology Report

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REVISION SCHEDULE

Rev No	Date	Description	Prepared By	Reviewed By	Approved By
1	10/11/11	First consultation draft	GM	NRC Technical Steering Group	NRC RPDC
2	31/1/12	Methodology in application (draft)	GM	NRC Technical Steering Group	
3	30/4/12	Final for draft map consultation	GM		NRC RPDC
4	26/9/12	Final for map notification	GM		
5	2/2014	Final following Council decisions	GM	Justin Murfitt NRC Policy Programme Manager	

Northland Mapping Project

Coastal Environment Mapping Methodology

Contents

Introduction

The Northland Regional Council (NRC) has undertaken a mapping project to define the spatial extent of the coastal environment in Northland.

The Resource Management Act (the Act) includes specific provisions relating to the subdivision, use and development of the coastal environment. However, the term "coastal environment" is not defined in the Act and so is open to differing interpretations by individual regional and district councils in implementing the Act's coastal management requirements. As a result, each of the three district councils in Northland have used varying approaches to defining coastal land for their existing district plan land zoning and management.[1]

The recently reviewed New Zealand Coastal Policy Statement 2010 (NZCPS) sets in place new and revised national policies for the management of the coastal environment. These include, in NZCPS Policy 1, guidance on extent and characteristics of the coastal environment. Policies 13 and 15 also require councils to identify and manage natural character and landscape values within the coastal environment.

Under s55 of the Act, Regional Policy Statements (RPS) must be amended to give effect to these new and revised NZCPS provisions. While there is no express NZCPS requirement to map the coastal environment, the Northland Regional Council, as part of the review of the RPS for Northland, considered there were significant benefits and efficiencies to be gained by doing this using a consistent methodology at a regional scale. Among others things, the intention is to make it clear where the NZCPS provisions apply and equally where they do not.

The seaward boundary of the coastal environment is already known. NZCPS Policy 1 states that the coastal marine area and any islands within it are part of the coastal environment (NZCPS Policy 1(2)(a) and (b)). The seaward boundary of the coastal marine area is defined in Section 2 of the Act as being the outer limits of the territorial sea. As a consequence, this is also the seaward limit of the coastal environment for the purposes of the Resource Management Act.

The key task for the Northland mapping project was therefore the spatial identification of the landward boundary of region's coastal environment. This mapping process required a clear and legally robust methodology based on the guidance provided in NZCPS Policy 1 and caselaw and on consultation with key stakeholders including iwi authorities.

This report sets out the methodology used by the Northland Mapping Group in carrying out this task.

[1] It needs to be noted however that defining the coastal environment is different from coastal land use zoning. While this can and should be used to inform the zoning process, the coastal environment line does not in itself re-zone land and any number of different land use zones can be used within the coastal environment.

General Approach

Planning Tribunal (pre-1991) and Environment Court decisions have resulted in an accepted general definition of the coastal environment that it is "*an environment in which the coast is a significant part or element*". However, the Courts have also cautioned that "*what constitutes the coastal environment will vary from place to place and according to the position from which a place is viewed.*"[2]

A simple formulaic approach to the spatial delineation of the landward boundary of the coastal environment is therefore unlikely to stand up to legal challenge. This includes both where the delineation is based on fixed criteria (e.g. set land elevation and/or distance inland from the coastline) or on a simple checklist of coastal landforms, features or characteristics - the presence of any one of which would mean the land involved must be included within the coastal environment.

A criteria-based approach, backed by field-testing, is required with a clear emphasis on determining whether the coastal influence on the land area in question is "significant". As noted above, this needs to be informed by caselaw and the guidance provided in NZCPS Policy 1. The key elements of these which were used in the mapping process are summarised in the following sections.

Caselaw

The Waikato Regional Council[3] and Quality Planning[4] websites both contain summaries of relevant cases dealing with the issue of defining the coastal environment. For the mapping project, a search was also undertaken of the Brookers database for other more recent cases.

On the basis of this information, caselaw to date appears to have provided only limited generic guidance on defining the landward boundary of the coastal environment including that quoted above. In terms of potential mapping criteria, in the same case (Northland Regional Planning Authority v Whangarei County Council [1976] A63/76) the Court determined that:

> *Where there are hills behind the coast,* (the coastal environment) *will generally extend up to the dominant ridge behind the coast.*

This 'dominant ridge' criterion is often used as a frame of reference in coastal subdivision and landuse cases including in a more recent local Environment Court case focused on the McLeods Bay area in the outer Whangarei Harbour. In that case, the Court stated:

> *The whole locality from the foreshore to the highest ridge of the Mt Manaia Range undoubtedly qualifies as "coastal environment" as described…in Northland Regional Planning Authority v Whangarei County Council.*
>
> Dudin v Whangarei District Council [2007] A22/07

[2] *Northland Regional Planning Authority v Whangarei County Council* [1976] A63/76
[3] http://www.waikatoregion.govt.nz/Environment/Natural-resources/coast/Natural-character/Natural-Character-Concept-Development-in-New-Zealand-Planning-Law-and-Policy/3/
[4] http://www.qp.org.nz/plan-topics/coastal-land-development/defining-coastal-environment.php

In that locality, the land rises progressively from the foreshore to the top of the range, approximately a kilometre back from the harbour's edge. The range also runs parallel with the coast providing a clear visual backdrop to the McLeods Bay settlement and harbour margin.

However, other caselaw states that the dominant ridgeline criteria should not be applied in a blanket manner and reinforces the need to consider each coastal situation on a case-by-case basis, e.g.:

> *If we applied the broad definition given in the Whangarei County Council case then all of the land between the sea and the skyline surrounding the Littleton Harbour Basin would be part of the coastal environment…... It is one of those theoretically difficult questions which will usually yield to the facts and a liberal dose of common sense. A variety of matters must be taken into account, including on the facts of this case the significant residential development between the foreshores at Governors Bay and the proposed building site.*
>
> *We are satisfied that it was not part of Parliament's intention in enacting s.3(1)(c)* (of the Town and Country Planning Act) *to apply that provision in a blanket way to an area the size of those parts at Lyttelton Harbour which have some (albeit distant) vista of the sea.*
>
> Hay v Banks Peninsula District Council [1990] C44/90.

Similarly, in a more recent case *Mainpower NZ v Hurunui District Council [2011]* NZEnvC 384, the Court held that:

> *….where a dominant ridge may be a useful means to identify a coastal environment boundary, such a boundary should be relevant to the coastline and coastal environment. There is no necessity to identify a dominant ridge in each case, particularly one that may be kilometres away from the coast.*

Notwithstanding this finding, there are cases where the coastal environment has been adjudged to extend some distance inland. For example, in *Coutanche v Rodney DC [1993] W94/93* the zoning of three areas of land between Kaipara South Head and Bethells Beach in the Auckland region was at issue. The areas included:

- land extending back from the coast for a distance of between 1.5 and 2.5 kilometres which was "*moderately rolling and mostly in improved pasture*."
- another area of sand hills extending back approximately 2 kilometres and planted in pine forest.
- an area described as "*a complex and fragile environment comprising ...in-land lakes, in-land dunes, and a significant wetland area all contiguous with or close to the actual coastline*.".

All three areas were deemed by the Court to be within the coastal environment as each had unique features considered representative of situations where the coast was a significant part or element. The reference to natural features being "contiguous with or close to the coastline" provides helpful additional guidance in this regard but obviously the geographic context needs to be carefully considered.

The degree of modification of the environment and the relationship of existing landuses to the coast can also have an influence in the evaluation of landward coastal boundaries. In *Canterbury Regional Council v Waimakariri District Council [2002] C5/02*, the subject land was not considered to be within the coastal environment because:

> *It is set back from the sand dunes which we consider form the limit of the coastal environment and is largely rurally modified land with little affinity to the coastal environment other than physical proximity.*

In summary, each coastal area needs to be assessed based on the characteristics of the area. The dominant ridgeline criteria can be applied where the elevated land is near the coastline but more care is needed when this is some distance inland and/or the land has been significantly modified.

Caselaw also indicates that where natural features such as bush areas, dune lakes and wetlands are present, contiguity with or proximity to the coastline is a factor in determining whether these features are influential in defining whether land is within the coastal environment.

NZCPS Policy 1

NZCPS Policy 1 provides a list of characteristics to be considered in defining the coastal environment. This reads:

Policy 1: Extent and characteristics of the coastal environment

1. *Recognise that the extent and characteristics of the coastal environment vary from region to region and locality to locality; and the issues that arise may have different effects in different localities.*

2. *Recognise that the coastal environment includes:*
    a. *the coastal marine area;*
    b. *islands within the coastal marine area;*
    c. *areas where coastal processes, influences or qualities are significant, including coastal lakes, lagoons, tidal estuaries, saltmarshes, coastal wetlands, and the margins of these;*
    d. *areas at risk from coastal hazards;*
    e. *coastal vegetation and the habitat of indigenous coastal species including migratory birds;*
    f. *elements and features that contribute to the natural character, landscape, visual qualities or amenity values;*
    g. *items of cultural and historic heritage in the coastal marine area or on the coast;*
    h. *inter-related coastal marine and terrestrial systems, including the intertidal zone; and*
    i. *physical resources and built facilities, including infrastructure, that have modified the coastal environment.*

The word “includes” in (2) means the listed coastal characteristics is not exhaustive. The list does however contain a sufficient number of different characteristics to provide the basis for a general set of boundary criteria.

For the purposes of the Northland Mapping Project, as a first step the landward boundary (or alternative landward boundary options) for a particular coastal area have been assessed in relation to the presence and extent of these characteristics. Using Clause 2 of Policy 1 as a frame of reference both ensures that the Regional Policy Statement gives effect to NZCPS Policy 1 and provided a clear reference point for consultation over this methodology and subsequent mapping.

It is relevant to note here that Policy Characteristic (2)(i) does not contribute to boundary criteria, but is rather seen as a reminder that although an area or site may be modified this does not necessarily mean it should be excluded from the coastal environment. It would be illogical to exclude a marina or port facility from the coastal environment even though the construction and presence of these "physical resources and built facilities" generally result in highly modified coastal environments.

However, modification in the form of historic in-filled coastal wetland areas on harbour or estuary margins, for example, may mean that the areas, or part thereof, no longer exhibit sufficient coastal characteristics to warrant inclusion within the coastal environment.

Information Sources and General Criteria

With 3200km of coastline involved, the regional landward coastal boundary assessment is necessarily largely a desktop exercise and therefore relies on existing aerial photographs, satellite imagery, and mapped information pertaining to Northland's coast. Combinations of this information are used to examine the qualities of coastal areas against the characteristics listed in NZCPS Policy 1.

For example, aerial photography supplemented by information from topographic maps and databases such as the national Land Cover Database (LCDB2), can be used to identify coastal landforms and vegetation in specific areas where the CE landward boundary is being mapped. This addresses NZCPS Policy 1 characteristic (2)(c).

In relation to Policy Characteristic (2)(d)), coastal hazards - erosion, tsunami and flooding - have been mapped in Northland including as part of the regional land use classification (LUC) and these can be directly applied to the area concerned. Tsunami maps are available for the whole region. Other available coastal hazard mapping is for priority coastal areas only.

For other characteristics, more care is needed. Policy Characteristic 2(e) needs to be based on both areas of vegetation visible on satellite or aerial imagery and on documented evidence of the coastal characteristics (if any) of these such as the Department of Conservation's Protected Natural Areas Programme (PNAP) reports. The use of vegetated and non-vegetated (e.g. dune lakes) coastal habitats by coastal bird species also needs to be considered and again relies on published information.

For some characteristics, there is a direct link with the other components of the Northland Mapping Project (e.g. Policy Characteristic (2)(f) - natural character, natural features, and landscape assessment) and/or consultation with other parties to gain the required information (e.g. Policy Characteristic (2)(g) – cultural and historic heritage). The latter includes identification of coastal land under Maori ownership and reference to information within iwi management plans lodged with Northland councils.

The primary information sources and general mapping criteria used in the mapping assessment are as follows:

a. the coastal marine area;

Information sources: operative Regional Coastal Plan for Northland Appendix 1.

Mapping criteria: none required while noting the implication that all land adjacent to the defined CMA including upper estuarine areas requires consideration in the coastal environment assessment.

b. islands within the coastal marine area;

Mapping criteria: none required – automatic inclusion of all land on islands as coastal.

c. areas where coastal processes, influences or qualities are significant, including coastal lakes, lagoons, tidal estuaries, saltmarshes, coastal wetlands, and the margins of these;

Information sources: aerial photography, LCDB2, Protected Natural Area Programme (PNAP) reports, Land Use Capability (LUC) maps, NRC database of wetlands of regional significance.

Mapping criteria: Define landward coastal boundary to encompass any such areas or features that are either contiguous with or close to the CMA.

Though not listed, geologically recent and/or presently active dunefields are relevant to include under this characteristic and also under 2(h). Where these occur, mapped areas classed as LUC 8e1 and 7e10 (young dunes with little or no soil) in Northland landuse capability maps are used to assist in landward boundary determination[5].

The use of these LUC classes also addresses in part coastal hazard (erosion) risk - see d below.

Dune lakes, where present, are considered on a case by case basis taking into account the level of any evident coastal qualities or influences. Those within or immediately adjoining dunefields are included. In contrast, perched dune lakes some distance inland from the coastline will generally not be included unless they are part of a matrix of natural ecosystems stretching from the coastline and to the lake.

d. areas at risk from coastal hazards;

Information sources: NRC coastal hazard and tsunami maps, LUC maps.

[5] Due to the poor accuracy of the LUC mapping units, these have been used to assist the coastal environment mapping rather than being determinative.

Mapping criteria: Include risk areas defined on NRC coastal hazard maps. Consider inclusion of mapped areas of tsunami risk where other criteria are limited or absent but noting that these generally represent relatively rare and extreme events.

Inclusion of all or part of areas classed as LUC 8e1 (dunelands) and 8e2 (coastal cliffs) depending on accuracy of information. Consider inclusion of LUC 7e10 based on characteristics of the area. Land classed in this latter category can extend several kilometres inland with no outward sign on aerial imagery that it differs from other LUC classes.

e. coastal vegetation and the habitat of indigenous coastal species including migratory birds;

Information sources: aerial photography, LCDB2, PNAP reports, NRC database of wetlands of regional significance.

Mapping criteria: Include identified areas of coastal vegetation and identified habitats of coastal species including migratory birds where these are contiguous with or in close proximity to the CMA.

f. elements and features that contribute to the natural character, landscape, visual qualities or amenity values;

Information sources: Northland Mapping Group natural character and landscape assessments, aerial photography, LCDB2, PNA reports, District Plan maps.

Mapping criteria: Link to natural character and landscape mapping components. Use the first dominant ridgeline where present as an accepted visual boundary unless the affinity with the coast is not significant by virtue of distance from the coastline, complexity of the coastal land contour, or other reason.

g. items of cultural and historic heritage in the coastal marine area or on the coast;

Information sources: iwi authorities, Historic Places Trust, aerial photography, NZAA database, District Plan maps (Sites of Significance to Maori), Maori land database[6].

Mapping criteria: Consider inclusion of recorded sites of significance to Maori and historic heritage value in close proximity to, and with a direct association with, the coastal marine area.

h. inter-related coastal marine and terrestrial systems, including the intertidal zone;

Information sources: aerial photography, LCDB2, PNA reports, topographic maps

[6] Using http://www.tpk.govt.nz/en/services/land/mlib/

Mapping criteria: Covered in part by c, e and f. Include terrestrial systems formed by recent and current coastal processes.(e.g. dunelands, coastal floodplains, coastal cliffs, some dune lakes and lagoons). Also include intact sequences of coastal vegetation, e.g. forest, freshwater wetland, saltmarsh and/or mangrove.

i. physical resources and built facilities, including infrastructure, that have modified the coastal environment.

Information sources: aerial photography, topographic maps.

Mapping criteria: Consider degree to which the coast remains a significant part of the modified environment. Include port facilities and related maritime industry areas.

Methodology in Application

In application, the desktop nature of the mapping exercise means that initial emphasis is placed on relevant macro-scale coastal landforms/features that are clearly visible on aerial and/or satellite imagery. Those features are predominantly:

- landform/land contour (with particular reference to coastal land catchment boundaries and dominant ridgelines)
- dunefields
- coastal lakes, lagoons, saltmarshes, and coastal wetlands

Large areas of native scrubland or forest are also clearly visible but can be difficult to categorise as coastal or otherwise other than by reference to their proximity to the coast and/or reference to PNAP reports (in finer scale evaluations - see below).

For most coastal areas, land contour (and ridgelines in particular) is the principal broad screening criteria used. While not expressly referred to in NZCPS Policy 1, land contour has a direct relationship to the NZCPS criteria in that an elevated land contour/ridgeline:

- provides a clear visual boundary in relation to coastal landscape and visual qualities (NZCPS 2(f))
- acts to physically enclose, if not encompass, coastal lakes, estuaries and wetlands (NZCPS 2(c))
- acts as a natural barrier to (and therefore delimiter of) coastal hazards such as coastal flooding and tsunami. (NZCPS 2(d))
- generally encompasses items of cultural and historic heritage in that coastal pa sites, for example, tend be located on headlands or promontories and historic European settlements and structures tend to be located on flat land within coastal embayments or adjoining harbour margins (NZCPS 2(g))
- if the contour rises from the foreshore sufficiently steeply, e.g. as coastal escarpments or cliffs, it can act to limit access to the coastline and therefore reduce local amenity values. (NZCPS 2(f))

For the Northland mapping project, in sandy coastal areas which have visible dune systems (vegetated or unvegetated) and where the adjoining land is essentially flat or of low contour, the landward boundary is generally drawn to follow the back of the hind dune.

In other areas, prominent ridgelines/land contour are used to delineate the landward CE boundary especially where:

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

Special consideration is needed where there are coastal cliffs and the land immediately behind these has a zero or negative slope. Using the dominant ridgeline criteria in these situations might exclude land in close proximity to the coastline that is influenced by salt winds or has amenity values closely associated with the coast. In some cases where there are relatively low cliffs (10 -20m), the base of the negative slope behind is used.

In many areas the complex geology and geography of Northland's coastline means that ridges are often at oblique angles to the coast rather than being parallel with it, for example where river valleys intersect with the coast. Where this occurs but the hilly backdrop to the coast is still prominent, the CE line has been drawn to include those hill slopes closest to and clearly visible from the coast but using lateral 'spurs' (also visible from the coast) off the ridgeline. Less commonly, cadastral boundaries may be used to delimit the boundary where there is no practical natural alternative and such property boundaries are so located as to facilitate a consistent (in distance terms) lateral progression of the landward boundary along the coast.

Where coastal ridgelines are absent and/or there are flat areas with no clear natural indicator of coastal influence e.g. alluvial plains, or infilled or reclaimed land, arbitrary distances from MHWS need to be used. These distances vary to take into account the reducing level of coastal influence on adjacent land from the open coast to upper estuaries, the latter of which can be many kilometres inland from the open coast.

The setback distances used are:

Open coast	300 metres
Open harbour and estuarine areas	150 metres
Confined upper estuarine areas	20 metres

In application, the distinction between open harbour/estuarine areas and upper estuaries is dependent on the extent of open water and/or intertidal space. Upper estuaries are generally defined as those upper areas where the channel becomes narrow (nominally 100 metres or less) and essentially riverine in shape.

The distance chosen for the open coast is informed by mapping in similar locations in Northland where natural indicators of coastal influence are present. The distance used for

open harbour and estuarine areas is arbitrarily half that used for the open coast. The 20m distance used for confined upper estuarine areas is consistent with the riparian management zone width in the Regional Water and Soil Plan for Northland and with the esplanade reserve provisions of the Resource Management Act.

Application of Specific NZCPS Policy 1(2) 'Criteria'

2(a) and (b) Coastal marine area and islands within it

The coastal marine area and islands within it are automatically included. It is noted, however, that the coastline as delineated on the NRC GIS database does not accurately follow the actual line of MHWS. Within harbour and estuaries, there are also instances where the digitised coastline does not match the location of negotiated cross-river CMA boundaries.

Amongst other things, the former circumstance requires that where setback distances are used, the CE boundary line is drawn with reference to visible indicators of the MHWS/saline influence rather than the mapped coastline. These indicators are:

(a) for rocky shorelines, the edge of the rocks
(b) for beaches, the edge of the wetted sand area
(c) for estuarine areas, generally the back of the mangroves though in cases where this is not clear the edge of the visible wetland has had to be used.

For the mapping project, it is clearly critical that the agreed cross-river boundaries of the CMA are used. A check is made of the location of each negotiated cross-river boundaries[7] when the CE landward boundary line is being drawn and the boundary line adjusted accordingly.

2(c) Areas where coastal processes, influences or qualities are significant, including coastal lakes, lagoons, tidal estuaries, saltmarshes, coastal wetlands, and the margins of these

The appropriate evaluation and use of land contour, coastal land form and salt tolerant vegetation generally ensures that most areas where coastal processes, influences and qualities are significant are included. Judgements in relation to coastal lakes and freshwater wetlands are however required, with particular regard to proximity to the coast and/or continuity with estuarine or dunefield systems.

As a general rule, where coastal lakes and wetlands occur immediately behind dune systems, the CE line is drawn to encompass these also. Conversely where there is a separation, these features will generally not be included unless there are identified characteristics that warrant them to be categorized as coastal. Reference is made here to the NRC lake and wetland databases and to the Department of Conservation's Protected Natural Area Programme (PNAP) reports.

[7] Electronic copies are accessible via http://www.nrc.govt.nz/Resource-Library-Summary/Plans-and-Policies/Regional-plans/Regional-Coastal-Plan/

CE boundary judgements are also required where there is a contiguous natural sequence of estuary/coast wetland to freshwater wetland which extends some distance inland. Caselaw on CE definition indicates that such intact sequences should be included but this still requires a degree of examination of local coastal processes, qualities or influences. Information is not always available to make these judgements so reference to other criteria is required including the distance the wetland sequence extends inland and the relative distance from MHWS of the CE boundary line on either side of this.

A judgement is also required on the extent to which the margins of coastal lakes, lagoons, and estuaries are included. For lagoons, estuaries and saltmarshes, the margins are captured by either use of the contour criteria or use of a set distance. Land adjoining freshwater rush marsh areas behind mangroves and/or saltmarshes is similarly captured. However, in upper estuarine areas and/or in areas where there is extensive coastal wetland areas present, the line is drawn around the edge of the wetland. This is because these areas are at the upper extent of the coastal/saline influence in the coastal marine area.

For coastal lakes and wetlands behind dunes or close to the coast, the CE line is drawn around the edge of the lake or wetland. In effect, while the feature (lake or wetland) is included where this is an extension of a contiguous coastal sequence, the landward margins are generally considered to not be where coastal processes, influences or qualities are significant.

In regard to mapping in dunes areas, the inclusion of areas with a land use classification (LUC) of 8e1 and 7e10, i.e. young dunes, is not feasible. In application, this map information is too inaccurate to use for the CE boundary delineation though it is of some limited use when considering where the line should be drawn.

2(d) Areas at risk from coastal hazards

Available mapped information on coastal hazards in Northland is of areas of:

(a) coastal erosion and flooding risk; and
(b) tsunami hazards.

Areas of coastal erosion and flooding risk have been mapped for discrete coastal settlements only and are depicted as coastal hazard lines on the NRC website and in District plan maps. These hazard lines occur on land immediately adjacent to the coastal marine area and therefore inevitably included within the CE landward boundary line.

Tsunami risk maps have been produced for the whole of Northland and could be included under this criterion. However, the tsunami risk areas are not considered appropriate to use to define the landward boundary of the coastal environment as these are rare and potentially extreme events with effects that reach far inland. To use them would quite literally push the boundary of what may be considered coastal under normal circumstances.

2(e) Coastal vegetation and the habitat of indigenous coastal species including migratory birds

Coastal vegetation includes those plants associated with estuaries, sandy beaches and rocky shores. Native plant species considered in defining the coastal environment boundary include:

For estuaries:

Mangroves
Sea rush (Wiwi)
Jointed wire rush (Oioi)
Sellieria (Remuremu)
Glasswort (Ureure)
Giant Umbrella Sedge (Toetoe Upoko-Tangata)
Saltmarsh Ribbonwood (Makaka)
Sea primrose (Maakoako)

For sandy areas:

Pingao, spinifex and marram
Shore Groundsel
Ice Plant
Sand coprosma
Beach spinach (Kokihi)
Shore bindweed (Nihinihi)
Coprosma repens (Taupata)
Cottonwood
Wire vine (Pohuehue)

For rocky/hard shores

Pohutukawa
Hebe elliptica (Coastal Koromiko)
Coastal five finger (Houpara)
Coastal astelia (Kowharawhara)
Melicope ternata (Wharangi)
Flax (Harakeke)
Rock Lily (Rengarenga)

Sand species are closely associated with beach frontages and dune areas so the presence of these does not add significantly to the CE landward boundary delineation process.

Other than for mangroves and saltmarsh areas, when viewed on aerial imagery native coastal trees and shrubs are usually indistinguishable from ‘non-coastal' vegetation.

In application, during mapping note is made of the presence of bush or other vegetated areas contiguous with or close to the coastal marine area. These areas are then checked against PNAP reports to ascertain if there is anything distinctively coastal within them that merits inclusion within the defined coastal environment.

It is relevant to note here that a consequence of using the land contour as the primary criteria is that, for hard shore vegetation, generally only those areas that are seaward facing

or otherwise visible from the coast are included even though the vegetation may well extend further inland (sometimes for several kilometres) beyond the ridge.

Drawing the line at the ridge is analogous to drawing the line across wetland sequences which extend well inland. It needs to be recognised that the scrub or forest (or wetland) gradually transitions out of the coastal environment to become 'inland' vegetation. That transition is usually not visible at all on aerial imagery and may even be very difficult to distinguish ecologically. Accordingly, a CE boundary line generally needs to be drawn using other criteria, e.g. land contour although it is acknowledged that some coastal vegetation may be excluded from the coastal environment because of the approach used.

Indigenous coastal fauna including birds will generally be directly associated with harbours, estuaries, or beaches or their margins, e.g. shags, herons, oyster catchers, dotterels. There is no known native bird or invertebrate species whose habitat is confined to coastal forests or shrubland. Accordingly, the general approach of using land contour and landform captures most if not all areas utilised as habitat by indigenous coastal species including migratory birds.

2(f) Elements and features that contribute to the natural character, landscape, visual qualities or amenity values

In application, assessment against this criterion requires specialist input. For the Northland mapping, initial draft mapped CE lines were closely considered in the subsequent landscape and natural character assessment processes. There was reasonable accord with the line drawn and few changes made based on additional information gained from site visits to coastal areas.

Amenity values are more problematic to assess as these have to do with the types of recreational and commercial uses of the coast and individual preferences for particular coastal settings and situations. In as much as these values are related to coastal type (harbour, estuary, beach, rocky shoreline, etc.) and the level of accessibility of the specific coastline in question from adjacent land, the general mapping approach includes an element of consideration of amenity values. This includes consideration in determining appropriate setback distances for the open coast in particular.

2(g) Items of cultural and historic heritage in the coastal marine area or on the coast

In the context of the mapping exercise (and indeed the implementation of the NZCPS policy generally) the use of the term "items" is problematic. The wording could be interpreted as deliberately excluding consideration of places of cultural and historic heritage value as iwi Maori, archaeologists and historians might be expected to view these (rather than a spatial array of 'items'). However notwithstanding this, the commentary from the NZCPS Board of Inquiry and the wording of NZCPS Objectives 3 and 6 clearly indicate that the intention is to recognise and include relevant cultural and historic heritage associations with the coast.

In application for the Northland mapping project, this term has been interpreted to include identified sites and structures of cultural and historic heritage value as indicators of places where there was historically a close association with the coast. In practice, this means

drafting the CE line referencing the NZHPT ARC Site database to see if and where there are clusters of recorded sites which indicated the past association and to consult with iwi/hapu over this information.

If there are clusters of archaeological sites in specific coastal areas and some are outside the draft CE line drawn using other criteria then the records for those sites examined to ascertain what the sites are comprised of and what this tells about the past coastal activity. If there is a clear coastal association then the CE line may be moved to accommodate one or more of the sites outside it. However, consultation with Maori to date has not identified instances which warrant the CE line being adjusted.

2(h) Inter-related coastal marine and terrestrial systems, including the intertidal zone

This characteristic is very broad but is interpreted to require express consideration of the physical and ecological relationships between the coastal marine area and adjacent land. For the mapping project, these interrelationships generally include visually prominent linkages between beaches, dunelands, coastal floodplains and/or coastal cliffs, and intact sequences of indigenous vegetation, e.g. from mangroves to saltmarsh to freshwater wetlands and/or coastal forest.

2(i) Physical resources and built facilities, including infrastructure, that have modified the coastal environment.

As noted above, this is not considered a defining characteristic of the coastal environment as such but rather a statement of recognition that while some coastal areas have been modified these should not necessarily be excluded from the coastal environment as a result.

As stated elsewhere in this paper, physical resources and built facilities such as ports and marinas generally merit inclusion within the coastal environment as they are by design shore-based.

Two types of modified coastal area do, however, require express consideration in the mapping process. These are:

(a) impounded, drained and/or reclaimed coastal margins and wetlands; and
(b) urban areas.

In practice, the physical landward boundaries of impounded, drained or reclaimed land are not used for the coastal environment determination unless there are significant natural elements still present, e.g. watercourse(s) and/or coastal vegetation.

Urban areas require careful consideration in that natural indicators of the coastal environment are often absent or discontinuous. The implications of assessing the boundary wrongly can also be more significant as a far larger number of properties/property owners are involved than for rural areas.

Where possible and consistent with other criteria, roadways and properties boundaries are used for urban areas, particularly where these define properties which have direct access to the coastline or where the housing occurs on a coastal cliff edge or ridgeline.

Setback distances are required to be used where urban areas occur on flat land. These setback distances are necessarily consistent with those used in rural coastal areas as the degree of modification does not alter whether or not the subject land is within the area of coastal influence - rather the effects are on the land's natural character and/or landscape values.

Summary of Mapping Issues and Solutions Used

For the sake of completeness, the following is a brief summary of problematic mapping situations encountered and the solutions used.

1. Coastal cliffs with flat or negatively sloped land behind

   For high cliffs, use cliff top as CE boundary unless other information requires otherwise. For low cliffs (less than 20m), consider use of base of slope behind unless other information requires otherwise.

2. Coastal areas of contiguous native shrubland or forest extending inland

   Include only that portion which is visible from the coast unless ecological assessment information requires otherwise.

3. Contiguous saltmarsh/brackish water to freshwater wetland sequences extending inland

   Include all of wetland if identified by NRC as regionally significant. Otherwise extend CE line across wetland from that defined on land on either side.

4. Margins of lakes and wetlands

   As for 3.

5. Modified wetlands

   Include where only partially drained and/or infilled and significant natural watercourses or coastal vegetation are still present (potentially capable of restoration).

6. Flat, low-lying areas without distinctive or discernible natural coastal features

   Use of default setback distances. Use progressively lesser distances from open coast to harbour areas to upper estuaries to reflect diminishing coastal influence.

7. Areas with subtle contour especially modified areas

   Where possible, link visible land contours (as opposed to mapped contour lines) and/or other natural coastal reference points (e.g. isolated knolls, dune forms or vegetation). Alternately, use appropriate default setback distances.

Mapping Project Worksheets

For the purposes of the Northland project, coastal environment mapping worksheets have been produced for each NRC mapping tile. This segmentation provides a convenient geographic spread to use in recording a summary of the analysis undertaken.

As well as listing the main criteria used and other relevant factors, the worksheets provide an indication of areas where identification of the coastal environment boundary was complex and also of any boundary adoption alternatives used where there were no suitable natural features to use, e.g. cadastral lines, roads, or standard setback distance.

A copy of the worksheet template is attached. The completed worksheets are available in a companion volume to this methodology report.

NORTHLAND MAPPING PROJECT

COASTAL ENVIRONMENT MAPPING WORKSHEET

NRC Map Reference:

District Plan Map Reference(s):

Coastal area covered:

Dominant Coastal Criteria:

Dominant ridgeline/land contour:

Presence and extent of dunefields:

Presence and extent of coastal lakes, lagoons, tidal estuaries, saltmarshes, or coastal wetlands:

Other Relevant Factors:

Defined areas of coastal hazard risk:

Presence and extent of coastal vegetation:

Presence and extent of habitats of indigenous coastal species including migratory birds:

Existing landscape assessment:

Sites of cultural and historic heritage value:

Presence of interrelated coastal and terrestrial systems:

Special Considerations *(e.g. complex areas where judgment is required):*

Boundary Adoption Alternatives Used:

Cadastral:

Road or railway:

Other: