I TE KŌTI TAIAO Ō AOTEAROA IN THE ENVIRONMENT COURT OF NEW ZEALAND	**ENV-2019-AKL-117 ENV-2019-AKL-127**
UNDER	the Resource Management Act 1991 (the Act)
IN THE MATTER OF	appeals pursuant to Clause 14 of the First Schedule of the Act against decisions of the Northland Regional Council on the proposed Northland Regional Plan
BETWEEN	**Bay of Islands Maritime Park Incorporated** ENV-2019-AKL-117
	The Royal Forest & Bird Protection Society of New Zealand Incorporated ENV-2019-AKL-127
	Appellants
AND	**Northland Regional Council**
	Respondent

STATEMENT OF EVIDENCE OF DI LUCAS
ON BEHALF OF TE URI O HIKIHIKI HAPU

7 April 2021

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Evidence of Di Lucas ONZM

1. My full name is Diane Jean Lucas. I am a landscape architect with Lucas Associates, established in 1979 and based in Christchurch.

2. I hold the qualifications of BSc in Natural Sciences (Otago), a post-graduate Diploma and Master in Landscape Architecture (Lincoln). I am a registered NZILA Landscape Architect and Life member of the NZILA (2020).

3. I confirm that I have read the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note 2014 and that I agree to comply with it. I confirm that I have considered all the material facts that I am aware of that might alter or detract from the opinions that I express, and that this evidence is within my area of expertise, except where I state that I am relying on the evidence of another person.

4. I have previously undertaken landscape assessments in the Northland Region, including to the north and south but not of this particular locale. I have had korero with and visited sites with kaumatua, and I have read background documentation.

5. I have not previously been involved in RMA plan drafting within the Northland region.

6. Whilst I chaired the government's Nature Heritage Fund (1990-2017) we produced the Northland Protection Strategy (Conning, 2001) and were involved in assessing numerous terrestrial sites as to the appropriateness of proposed protection management, including a number within the associated Ngunguru Ecological District.

7. I have been involved in characterising and assessing marine landscapes in various regions. I have provided natural landscape and/or natural character assessments in marine areas of Southland, Canterbury, Marlborough, Hawkes Bay, Waikato and Bay of Plenty regions, including in the latter for the Motiti Rohe Moana Trust.

8. I am providing this statement of overview evidence addressing natural character, natural landscape and marine protected area overlays and provisions with respect to the Proposed Northland Regional Plan (**PNRP**) for Te Uri o Hikihiki, a hapū of Ngāti Manaia / Ngāti Wai.

9. My evidence is focussed on Mimiwhāngata Rāhui Tapu (A), Mimiwhāngata Rāhui Tapu Buffer Area (B), and Te Au o Morunga Protection Area (C), the Proposed Marine Protection Area (MPA) – Te Uri o Hikihiki. The MPA areas A, B and C involve a suite of marine protection methods complementarily sought in the Ngāti Kuta rohe around Rakaumangamanga (Cape Brett) and westward.

SUMMARY

10. The proposed MPA include Te Au o Morunga, Area C, which embraces the Mimiwhāngata Areas A and B and the marine landscape seawards and northwards to Rakaumangamanga (Cape Brett). Inshore waters from Pararaunui Point south to Paparahi Point, including Whangaruru Harbour and south to Helena Bay, are not included in the proposed MPA (attachments sheets 7 – 11).

11. The proposed MPA location comprises a concentration of natural marine characteristics and values that contribute importantly to the natural character and natural landscape of this coastal environment.

12. A nationally important attribute of the natural character, natural landscapes and natural features of this MPA is the rich diversity, interplay and concentration of marine elements, patterns and processes. To preserve the natural character and protect the natural landscapes requires methods to sustain the marine ecosystems of the delineated areas.

13. To sustain the natural character and natural landscapes of the MPA, provisions need to be added to the PNRP, including Objectives, Policies and Methods including mapping and scheduling of Characteristics and Values of natural character and natural landscape areas across the proposed MPA.

14. From experience, discussion and documented information, adverse effects on the natural character, natural features and natural landscapes of this CMA are considered could be addressed through the preclusion of extractive practices and seafloor habitat damage in Marine Protected Area provisions in the PNRP.

NATURAL CHARACTER

15. The PNRP does not include assessment, mapping or other means of identifying areas of at least high natural character beyond estuaries and harbours[1], contrary to NZCPS Policy 13. However, extensive areas of at least high natural character are considered to be present, as also recognised in evidence by Dr Froude.

16. Natural character needs to be assessed, mapped and scheduled through addressing the biophysical characteristics, particularly the natural biotic and abiotic parameters, as well as experiential characteristics, including contemporary cultural associations and perceptions.

17. The biophysical attributes of natural character need to be recognised through both western science and mātauranga.

18. Experiential attributes addressed need to include the wildness and scenic marine qualities, including those enjoyed in the less than pristine environs. As a locale of strong bi-cultural associations, the natural character as perceived and experienced in the Rakaumangamanga – Mimiwhāngata marine context and setting by Te Ao Māori, and that perceived and experienced by Te Ao Pākehā, both need to be addressed.

19. Due to the national significance of this marine locale as the recipient of major currents from the north, as a consequent hub and focus of marine elements, processes and patterns, the full range of natural character needs to be recognised so that adverse effects can be avoided, remedied or mitigated through plan provisions.

20. To preserve from inappropriate use the important natural character associated with the delineated areas, to avoid, remedy and mitigate adverse effects on that natural character, involves drafting adequate PNRP provisions that include an enforceable marine management regime.

[1] Justin Murfitt. 2017. *Defining natural character areas in the Proposed Regional Plan*.

NATURAL LANDSCAPES AND FEATURES.

21. To ensure provisions enable the natural landscapes and natural features to be protected as per NZCPS Policy 15 requires assessments addressing the biophysical, perceptual and associative attributes of these coastal and marine landscapes, identifying their characteristics, qualities and values.

22. A landscape might include both terrestrial and marine areas of the coastal environment. A landscape or feature may or may not emerge above sea level at low tide. That is, a landscape or feature may be entirely sub-tidal.

23. As recognised by tangata whenua, the whenua continues beneath the sea. Algal forests on shallow reefs and diverse rock encrusting biota on deeper reefs, with depositional habitat interspersed, these together form the surface of the lands below. They provide the setting for the marine landscape.

24. A landscape or feature might centre on a deep reef, caves, chasms, pinnacles, bluffs, springs or other sub-tidal features that have resulted over eons in a concentration of ecological, associative and/or perceptual marine richness. They may or may not have surface expression, for example as ‘boil-ups’ from concentrated fish and bird activity, or marine mammal frequency.

25. As for biotic and abiotic physical aspects, the perceptual and associative attributes that variously contribute to this bicultural natural landscape, and/or natural features, need to be addressed. The methodology used needs to respond to the context and the purpose.

26. Addressing the various attributes, outstanding natural landscapes and outstanding natural features (ONFL) are anticipated would be identified with assessment and mapping of the MPA.

27. To protect the natural features and natural landscapes of the MPA, adverse effects can be avoided, remedied and mitigated through adequate PNRP provisions that include an enforceable marine protection management regime.

LOCATION

28. Mimiwhāngata Rāhui Tapu Protection Areas A and B adjoin the Mimiwhāngata Coastal Park, a crown-owned reserve managed by DOC. Areas A and B include the Mimiwhāngata Marine Park waters. These are encircled by the Te Au o Morunga Protection Area (C), excepting the inshore waters northwards from Mimiwhāngata, including Helena Bay to the Whangaruru Harbour, are excluded. (sheets 28, 4 and 7)

29. Located south of Pēwhairangi (Bay of Islands) and north of Tutukaka and Tāwhiti Rahi (Poor Knights Island), the Mimiwhāngata – Rakaumangamanga marine landscape involves a concentration of diverse coastal formations emerging above low tide, plus richly diverse ecosystems across the maritime shelf below. Above the seafloor environs, the currents, winds and birds are dynamic contributors. The landscape is within the rohe of Ngāti Wai.

CONTEXT

30. A series of submarine volcanic ridges including the Norfolk Ridge, the Three Kings Ridge, and the Colville and Kermadec volcanic ridges with intervening troughs and basins, almost converge around the north-eastern North Island. (refer attachment cover)

31. Following the Colville and Kermadec Ridges from the northeast, Te Tai Marangai, the East Auckland Current, flows down the Havre Trough and Te Akau Roa, the 1,350 km long Kermadec Trench, carrying warm waters and fertile biota including subtropical fish species.

32. The current traditionally known as Te Tai Whakararo (WAUC) flows down through the Norfolk Basins and around the Three Kings Ridge. The cool waters of Te Tai Whakarunga, the South Current, flow up from the Chatham Rise. These major currents eddy offshore. (refer cover and sheet 2, inset right)

33. As recounted by kaumātua Hetaraka, the natural links and pathways across Te Moana Nui a Kiwa, the Pacific Basin, have long been known. The currents, the marine species and the birdlife that move between these places have long been

known in mātauranga and tikanga, and more recently somewhat recognised in western science.

34. Aotearoa NZ belongs on a submarine platform that typically slopes gently down away from the shore to depths of around 150 – 180 m at the edge of the platform, the continental shelf, and the top of the continental slope. This shelf is a marine cut plain. Historic fluctuations in sea levels mean there are different levels; it steps down offshore. (sheet 4)

35. The east coast of Te Tai Tokerau, Northland, involves a large area of greywacke rock that has been significantly inundated by sea level change, resulting in a complex coast of headlands, inlets, islands and islets as erosion relics protruding above marine terraces (sheets 30 - 32).

36. The major subtropical currents provide the nutrients and biotic richness that feed the marine landscape associated with Rakaumangamanga (Cape Brett) and Mimiwhāngata. Arriving off the coast of Te Tai Tokerau, the warm current eddy reputedly results in an ‘orgy’ of reproductive activity much of which moves with the flows into the sheltered shores and reef niches west of Motu Kōkako and south to Mimiwhāngata.

37. Much of Northland bedrock country elsewhere is of volcanic rock. As shown on the geology map the block of land that adjoins this marine landscape is old greywacke country. (sheet 13)

38. With changing sea levels, the greywacke has been variously inundated, with bluffs and cliffs carved around mainland shores and the numerous islands and islets that have endured. For a characteristic of greywacke coastal surfaces is their hardness, cracking but resisting wave attack, thus most inter-tidal wave cuts are fairly narrow and cliffs rounded and low. However, on the very exposed coast of Rakaumangamanga there are very high seacliffs.

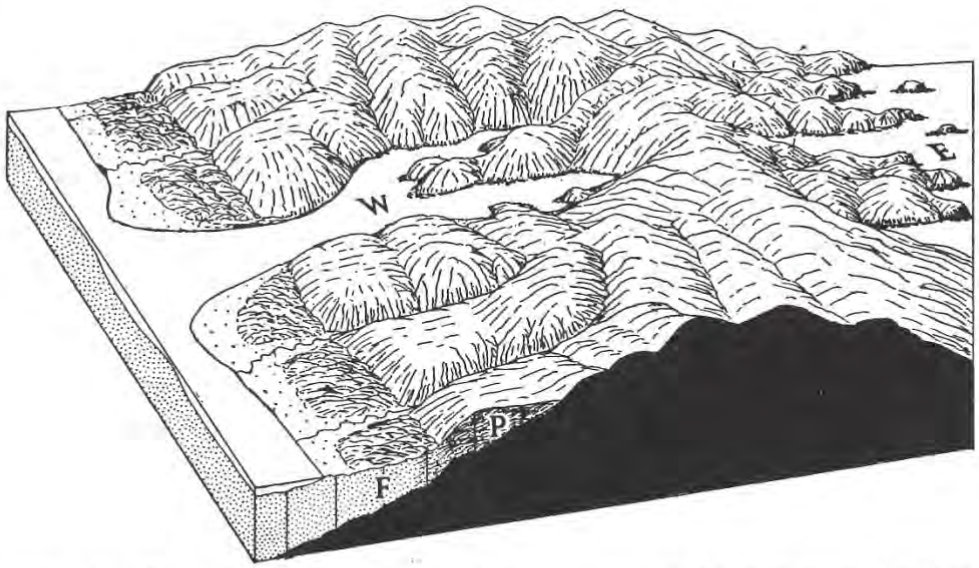


FIG. 5.4 — Diagram to show the contrast between western and eastern coastal forms in North Auckland (Northland). *W* is a western harbour embayment; *E* is the Bay of Islands type of drowned eastern coast; *P*, Pleistocene sandstone; *F*, recent sand accumulations.

C A Cotton. Accidents and Interruptions in the Cycle of Marine Erosion. Geographical Journal Vol 117 (1951)

39. Several notable coastal greywacke features are recognised in the NZ Geopreservation Inventory, including the Motu Kokako Sea Arch, Whangamumu Harbour, and the Taupiri Bay rugged coast. (sheet 12) Records of marine biota in the area frequently refer to the rock cracks as important habitat. (for example, Moran & Enderby. *Diving New Zealand.* pages 28-33*)*

40. The Mimiwhāngata Coastal Park includes both marine and terrestrial areas including Paparahi Point, Mimiwhāngata Bay, the headland out to Ngataura Rock, Kaituna Bay, Okupe Beach and on south past Te Ruatahi Island. A significant number of islands and associated reefs are also included, including Rimariki Island. (sheet 28) The complex of headlands, bays, islands and reefs demonstrates the fundamental natural character of the enframing east coast under consideration.

41. The delineated locale, the MPA, involves a hub of marine activity at the meeting of the warm subtropical East Auckland current from the north-west Tasman Sea with a complex coast sheltered from the westerly providing diverse and extensive habitat. (sheets 3 – 6; sheets 22 - 23)

42. Inland, the catchments associated with this marine landscape involve hill country involving generally high naturalness in the Ngunguru Ecological District (Appendix 1 page 36; sheet 29). Considering the centuries of occupation, the extent of indigenous cover, including of secondary forest, is considerable. (sheet 14; sheets 15 – 19; Appendix 1, page 10). There are extensive protected lands (Appendix 1 pages 33 -34) and Outstanding Natural Landscapes (sheet 26).

NATURAL CHARACTER ASSESSMENT METHOD

43. As stated in the s 42A report of 3/7/2018 to the council hearing on Significant natural and historic heritage (page 8), the High Natural Character (HNC) and Outstanding Natural Character (ONC) mapping was undertaken as part of the development of the RPS (sheet 25). The PNRP then incorporated the natural character mapped in the CMA to address NZCPS Policy 13. (sheet 21)

44. In reviewing documentation regarding the natural character mapping in and for the RPS, I understand NRC selected to include only high and outstanding natural character overlays "*for areas of the open coast where there was sufficient information to draw precise boundaries."* Perceived as lacking such boundaries, the open coast was largely not mapped for natural character. In contrast, areas of estuaries and harbours with evident topographic boundaries were assessed and mapped with respect to natural character. (Froude 2014 p. 24)

45. I have read the report of Justin Murfitt of July 2017 "*Defining natural character areas in the Proposed Regional Plan".* Addressing the CMA, he stated "*The RPS natural character assessment included all harbours and estuaries but did not assess or map all of the remaining areas of the coastal marine area (i.e. large areas of the coastal marine area beyond estuaries and harbours remain unclassified). These areas remain unclassified in the proposed regional plan.*" (sheet 21 for PNRP; with RPS at sheet 25)

46. However, as per NZCPS Policy 13 1. c. the coastal environment of the region is required to be assessed and, "*by mapping or otherwise identifying at least areas of high natural character*". I note the CMA extends seaward of land by 12 nm. (sheet 22)

47. As identified in the Council's 42A report (para 29) "*The mapping of outstanding and high natural character was largely driven by biophysical criteria and this has been factored into the mapping assessment.*(Froude 2014) *There are other elements of natural character, such as amenity* (NZCPS Policy 13) *however for practical purposes (i.e. it was hard to physically identify them) these 'experiential' elements were not explicit factors in the mapping of natural character."*

48. I have read the evidence of Dr Froude and the attached 2021 natural character assessment of the marine areas under consideration. Whilst scales can vary I agree that division into natural character units is useful. The assessment of their biophysical aspects is necessary along with assessment of their experiential attributes, to identify whether each unit is of at least high natural character and /or of outstanding natural character. Dr Froude has undertaken this, mapping units (Froude report Figure 1, page 5) and quantitatively evaluating particular attributes. Whilst our methods differ, I agree with her conclusions that all of the units have at least high natural character.

49. I have been involved in undertaking and reviewing natural character assessments in various locations. A lack of marine experiential and tangata whenua attribute assessment is evident in the PNRP, however it is increasingly professionally recognised as necessarily included and not merely ignored or 'clipped on'.

50. Considering the natural character of the MPA (Areas A, B, C), from my knowledge of iwi relationships to these areas, I recognise that mātauranga and tikanga are important contributors to both the biophysical and the experiential attributes to natural character. Briefed by kaumatua, I recognise that the mana of Te Uri o Hikihiki comes from the sea. The relationship of the Hapū with the rohe moana is understood to be fundamental to their well-being.

51. Whilst, as he's stated, Mr Kerr has incorporated mātauranga into his ecological understandings, I understand natural character assessment methodologies undertaken for the Council have not as yet addressed such aspects.

52. With incorporation of mana whenua assessment of biophysical and experiential attributes of the Te Uri o Hikihiki delineated areas, assessment of all as of at least high natural character (HNC) would be appropriate.

53. In advancing the PNRP provisions to address NZCPS Policy 13 1. a., it is likely also appropriate to assess areas with outstanding natural character (ONC). As shown at sheet 21, for the MPA only an area seaward of Rakaumangamanga (Cape Brett) and around Motu Kōkako is identified in the PNRP as ONC. Dr Froude has assessed the adjoining natural character marine unit numbered 00/25 east of Rakaumangamanga as ONC (Froude Figure 7 page 32 and chart page 38).

54. From preliminary assessment undertaken, I anticipate that including mana whenua experiential and biophysical attributes will increase the ratings on other natural character units in the MPA as proposed by Te Uri o Hikihiki.

NATURAL LANDSCAPE ASSESSMENT METHOD

55. To address NZCPS Policy 15, whilst ONL were mapped across the Region as part of the RPS development, due to methodological limitations, no assessment was undertaken of the landscapes of the CMA and hence no ONL identified in the PNRP. (sheet 26)

56. From the s.42A report it appears the council did not comprehend what a landscape is, whether that landscape is terrestrial and/or marine. "*Mapping outstanding natural landscapes in the coastal marine area was not considered necessary given that almost all activities in the CMA with the potential to result in adverse effects on landscape values require resource consent …"* (S.42A pp.25-6) The council report stated that "visual effects" is the primary concern for outstanding landscapes.

57. According to best practice, landscape is however widely recognised to include biophysical, associative and perceptual attributes. These attributes are not necessarily visual, nor necessarily only visually vulnerable.

58. Associative attributes such as heritage associations, aesthetic attributes such as the smell and sound of the sea, and biophysical attributes such as particular bird calls, are not necessarily visual or visually vulnerable but can be fundamental attributes contributing to a natural coastal landscape.

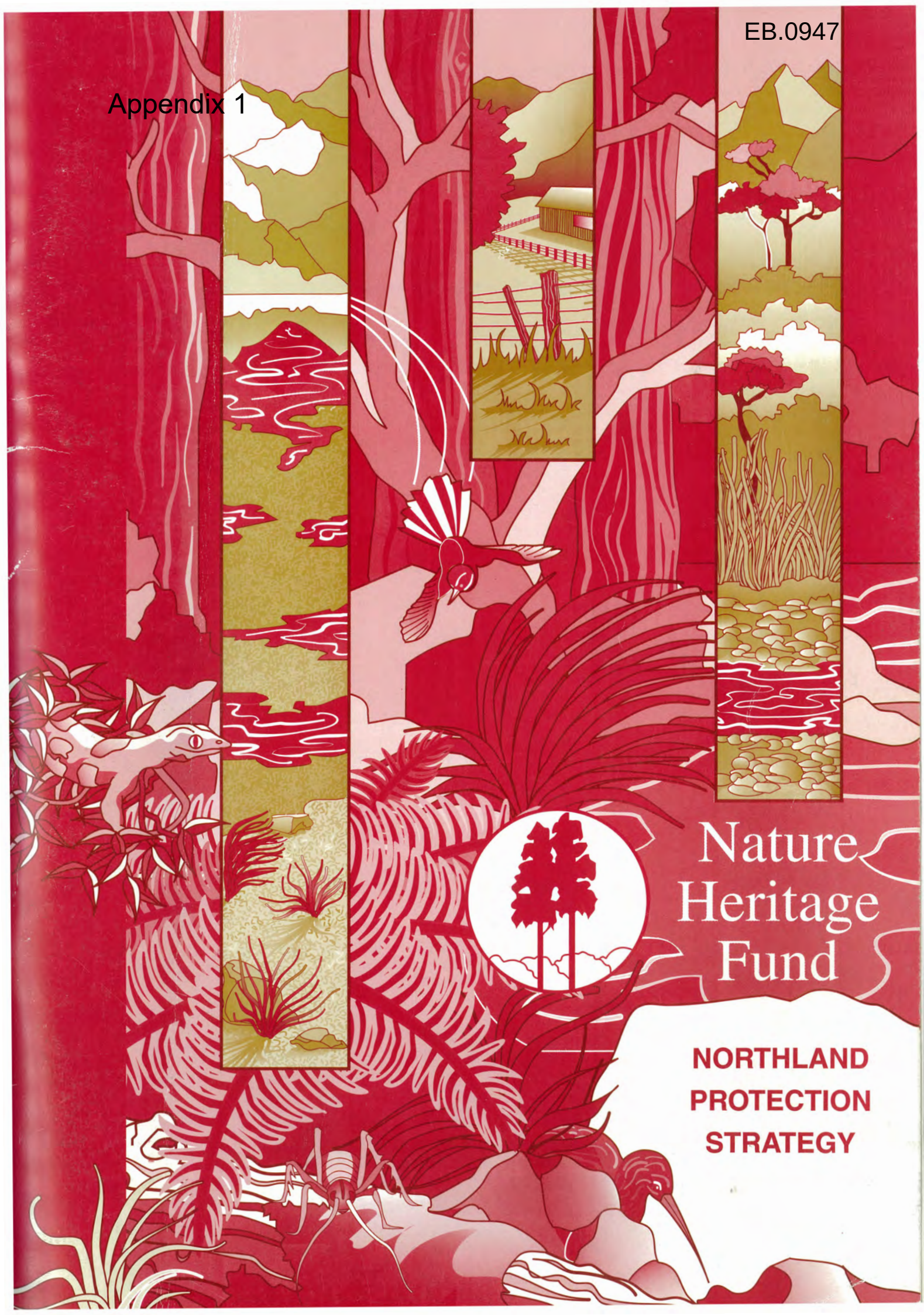
59. Addressing mātauranga and tikanga, it is evident the Mimiwhāngata marine landscape has for centuries exhibited outstanding landscape attributes to tangata whenua.

60. Whilst assessment of ONFL is to be undertaken separately, as per Topic 17, I anticipate seaward extension from ONL identified in the PNRP (sheet 26) would include much of MPA Areas A, B and C. I also anticipate other ONFL may be identified within or associated with the MPA.

61. With additional time, and as part of Topic 17, I anticipate that I will have developed a more refined position on the assessment and mapping of natural character and natural landscape as relevant to the proposed areas.

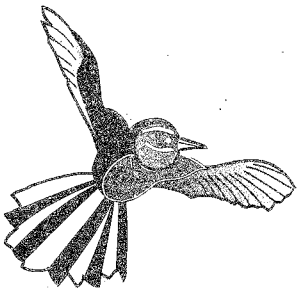
EB.0947

Appendix 1



Nature Heritage Fund

NORTHLAND PROTECTION STRATEGY

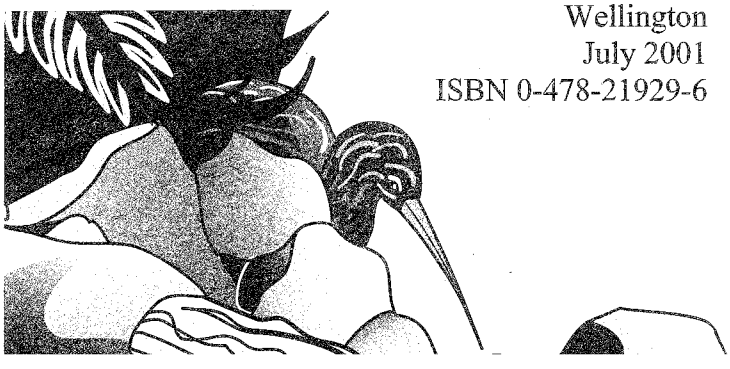


NORTHLAND PROTECTION STRATEGY

A REPORT TO THE NATURE HERITAGE FUND COMMITTEE

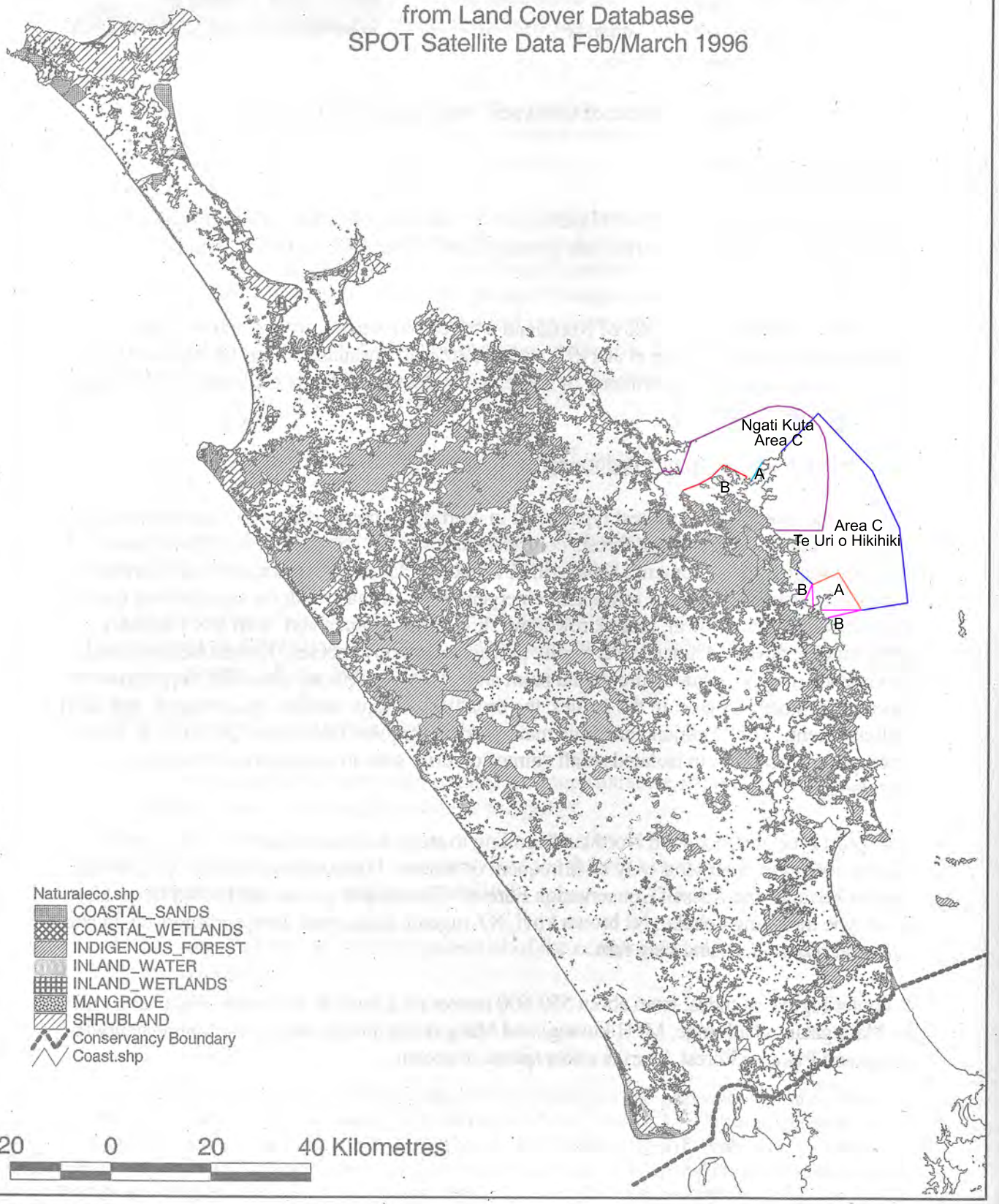
Linda Conning

Northland Protection Strategy
Published by the Nature Heritage Fund
PO Box 10-420
Wellington
July 2001
ISBN 0-478-21929-6



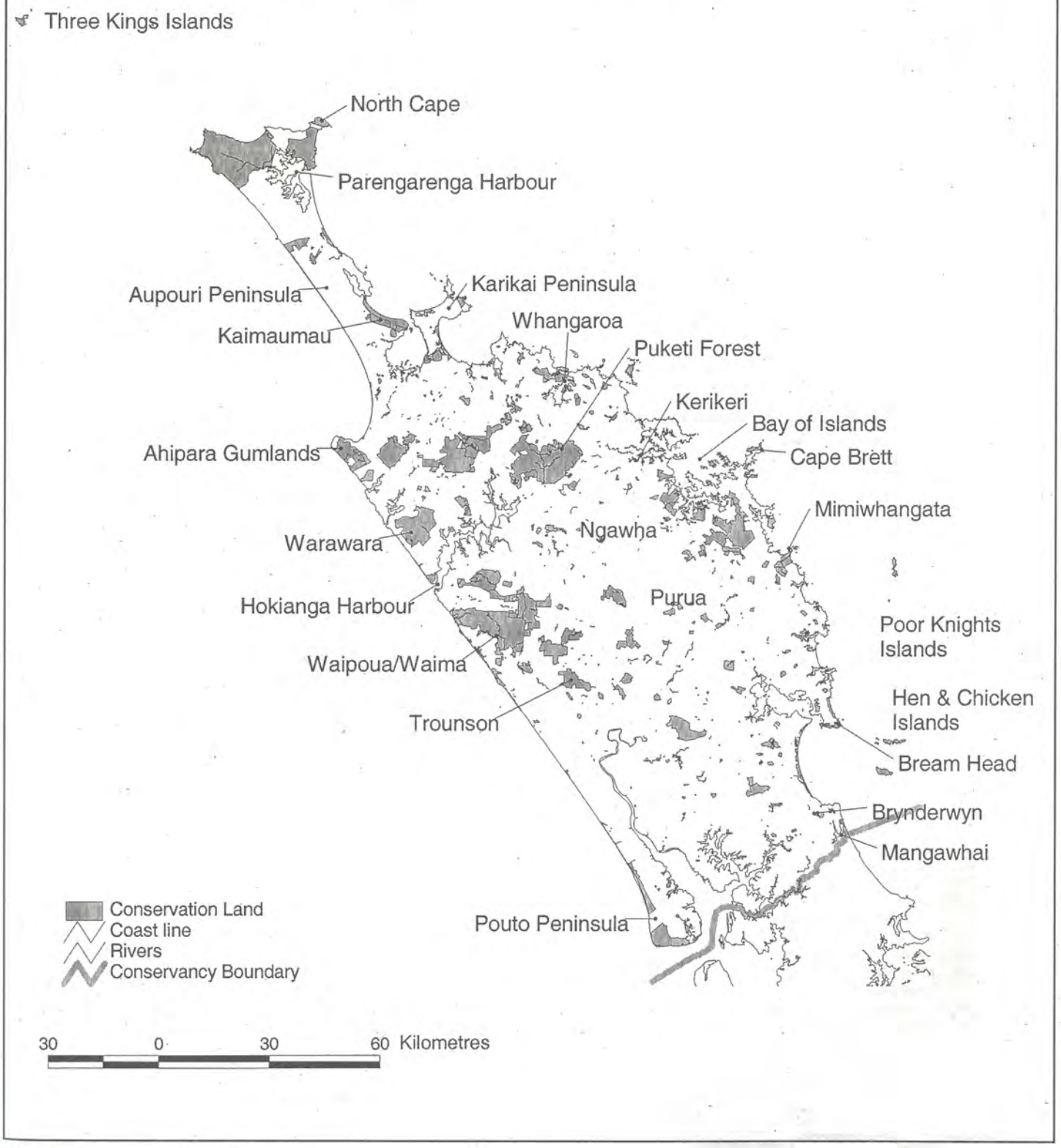
Indigenous Ecosystems in Northland

from Land Cover Database
SPOT Satellite Data Feb/March 1996



Map ArcView G.I.S. by T Conaghan

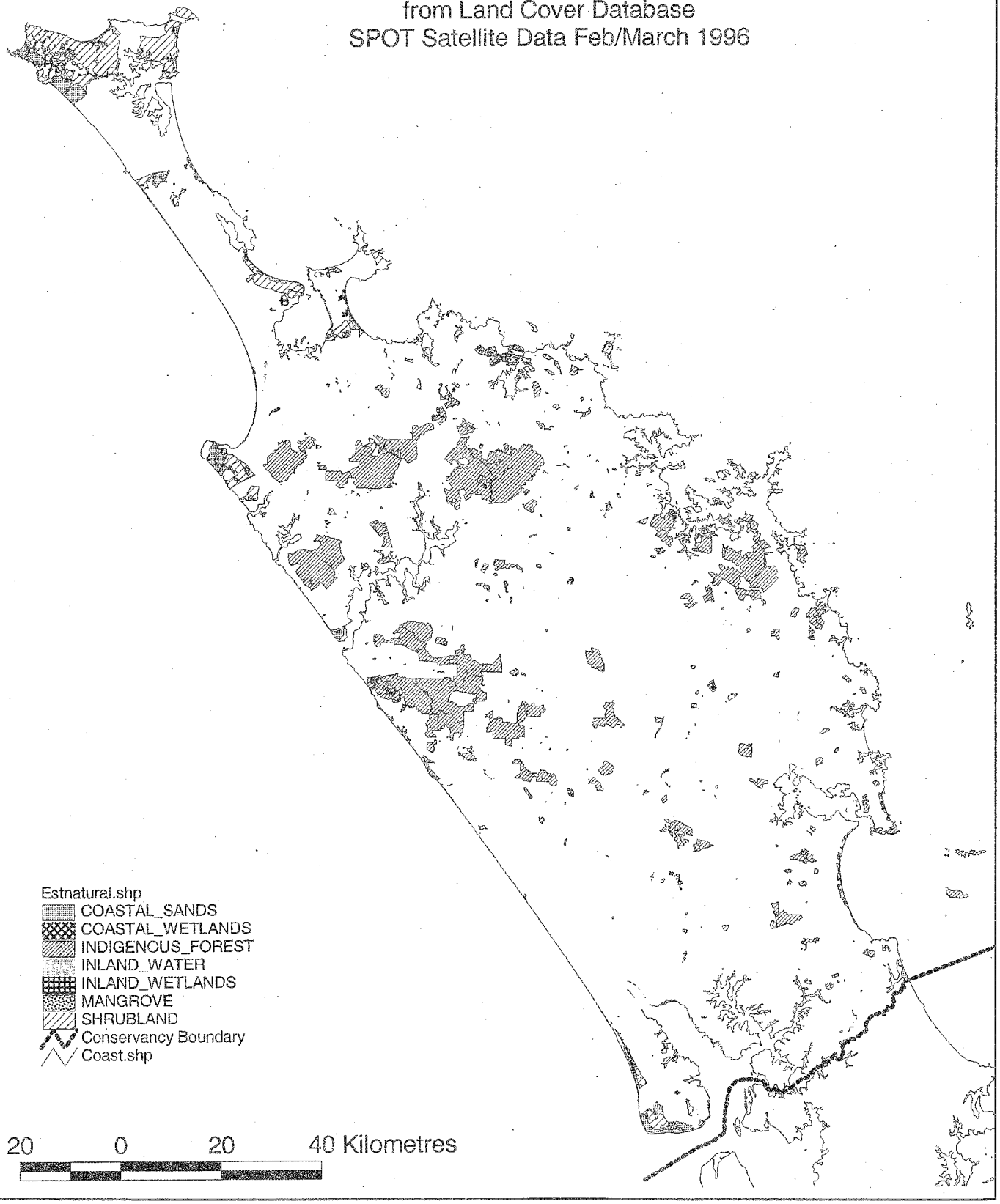
Key Sites
Administered by the Department of Conservation



Map ArcView G.I.S. T Conaghan

Indigenous Ecosystems in Northland on Land Administered by The Department of Conservation

from Land Cover Database
SPOT Satellite Data Feb/March 1996



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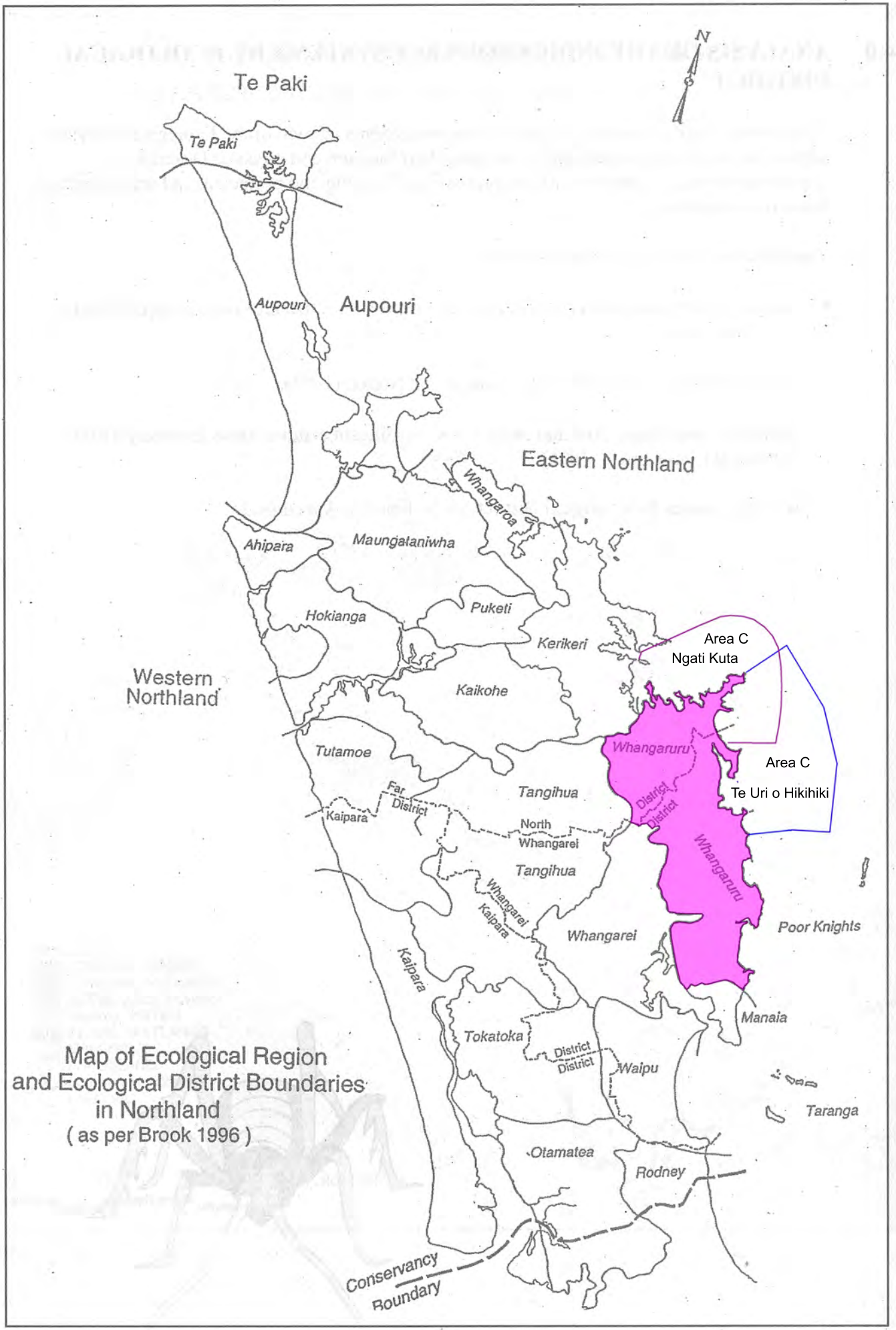


Map of Ecological Region and Ecological District Boundaries in Northland
(as per Brook 1996)

EB.0953

Te Tai Whakararo Current

Eddy mixes currents

Te Tai Marangai, East Auckland Current

Te Tai Whakarunga, South Current

Ngāti Wai Rohe

Te Ākau Tokatoka (rocky coastline) / Tā Tahi (seashore)

SOUTH FIJI BASIN

NORTH NORFOLK BASIN

SOUTH NORFOLK BASIN

LORD HOWE RISE

NEW CALEDONIA TROUGH

NORFOLK RIDGE

WEST NORFOLK RIDGE

THREE KINGS RIDGE

COLVILLE RIDGE

HAVRE TROUGH

KERMADEC RIDGE

KERMADEC TRENCH

LOUISVILLE SEAMOUNT CHAIN

LORD HOWE SEAMOUNT CHAIN

DAMPIER RIDGE

RAUKUMARA PLAIN

HIKURANGI PLATEAU

HIKURANGI CHANNEL

HIKURANGI TROUGH

CHALLENGER PLATEAU

BELLONA TROUGH

GILBERT SEAMOUNT

CHATHAM RISE

Norfolk Island

Lord Howe Island

Balls Pyramid

Three Kings Islands

Raoul Island

Macauley Island

Curtis Island

L'Esperance Rock

Chatham Island

AUCKLAND

HAMILTON

Lake Taupo

NORTH ISLAND

WELLINGTON

GOOD STRAIT

SOUTH ISLAND

CHRISTCHURCH

BATHYMETRIC TINTS

0 m
250
500
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000 m

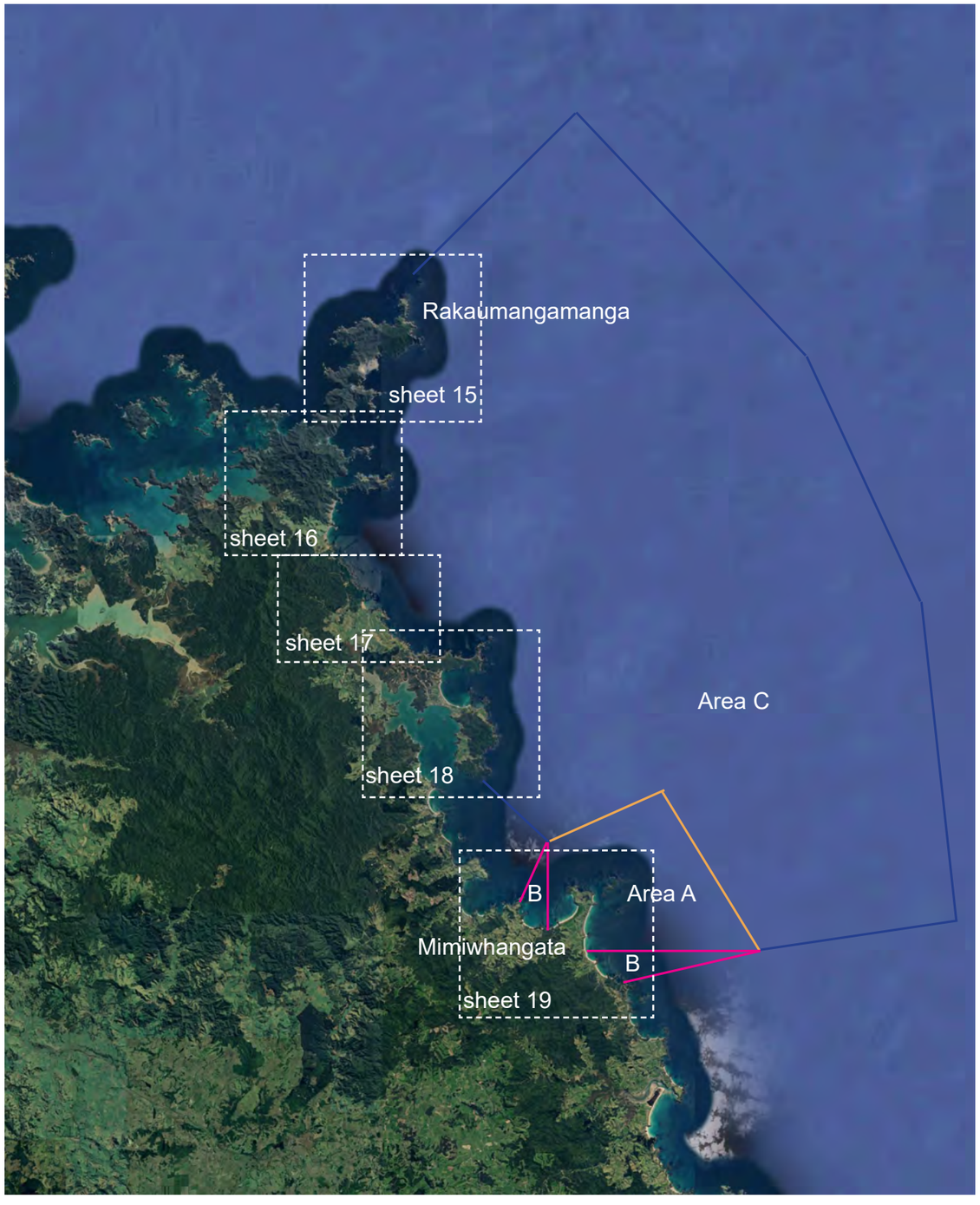
(Print @ A3 size, double sided and bind on left)

attachments

to the evidence of Di Lucas Registered NZILA Landscape Architect

TE URI O HIKIHIKI, Northland, March 2021

Contents



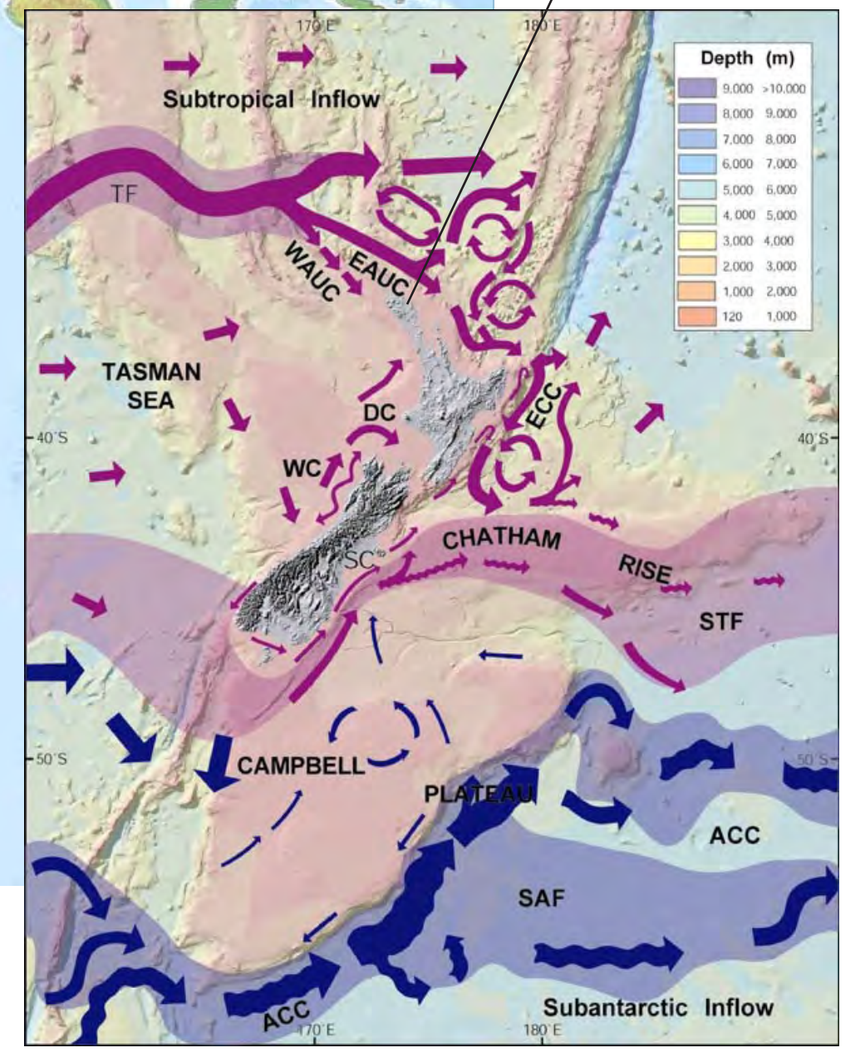
sheet 1

EB.0955

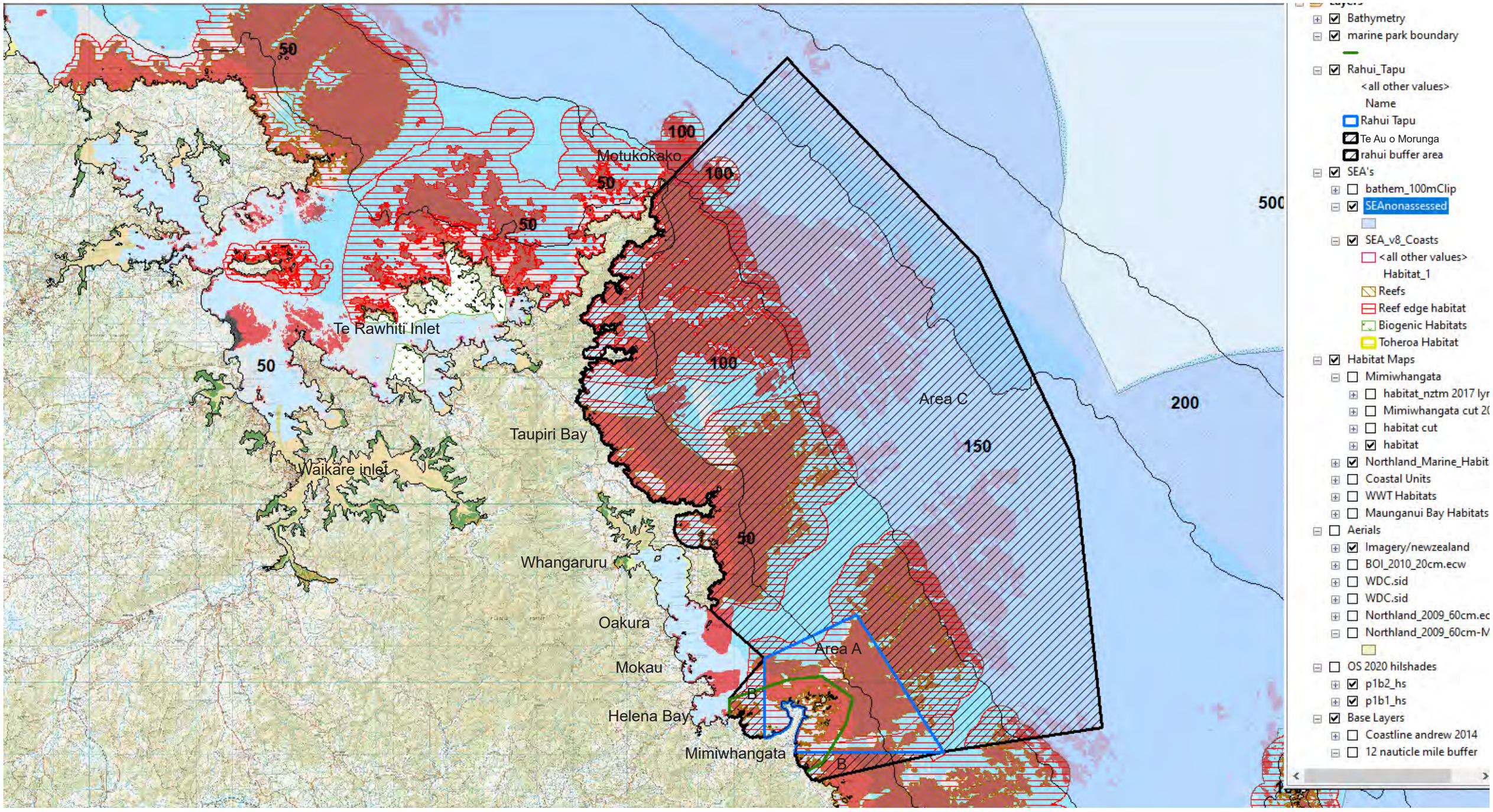
Attu

Japan

Te Uri o Hikihiki

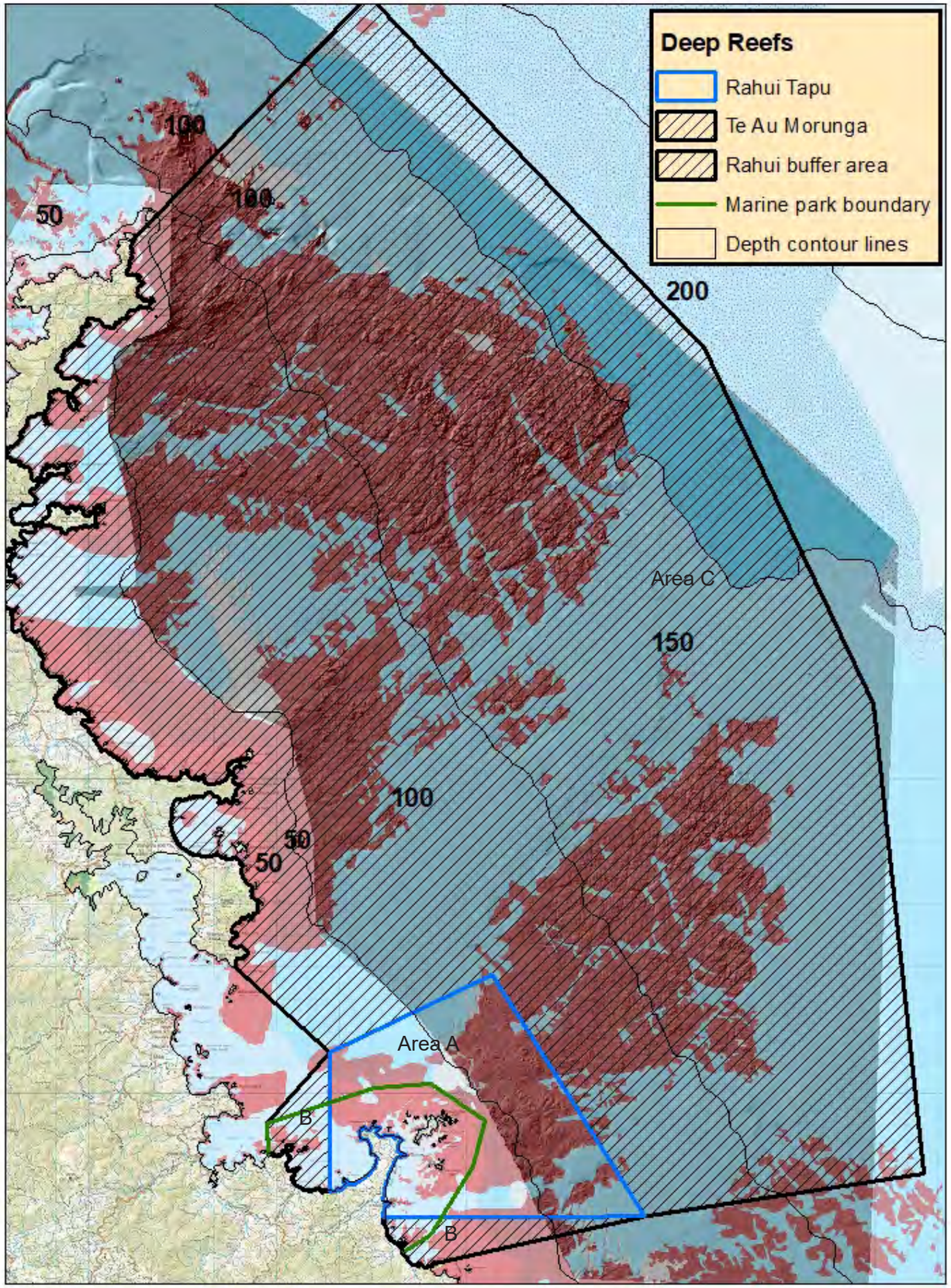


sheet 2 Te Moana Nui a Kiwa / Pacific Ocea



Source: Vince Kerr, Kerr & Associates

sheet 3 Reefs with soft sediment buffer



Source: Vince Kerr, Kerr & Associates

Area C

Area A

Area B

50

100

Area B

0 0.5 1 2 Kilometers

2005 Habitat Map

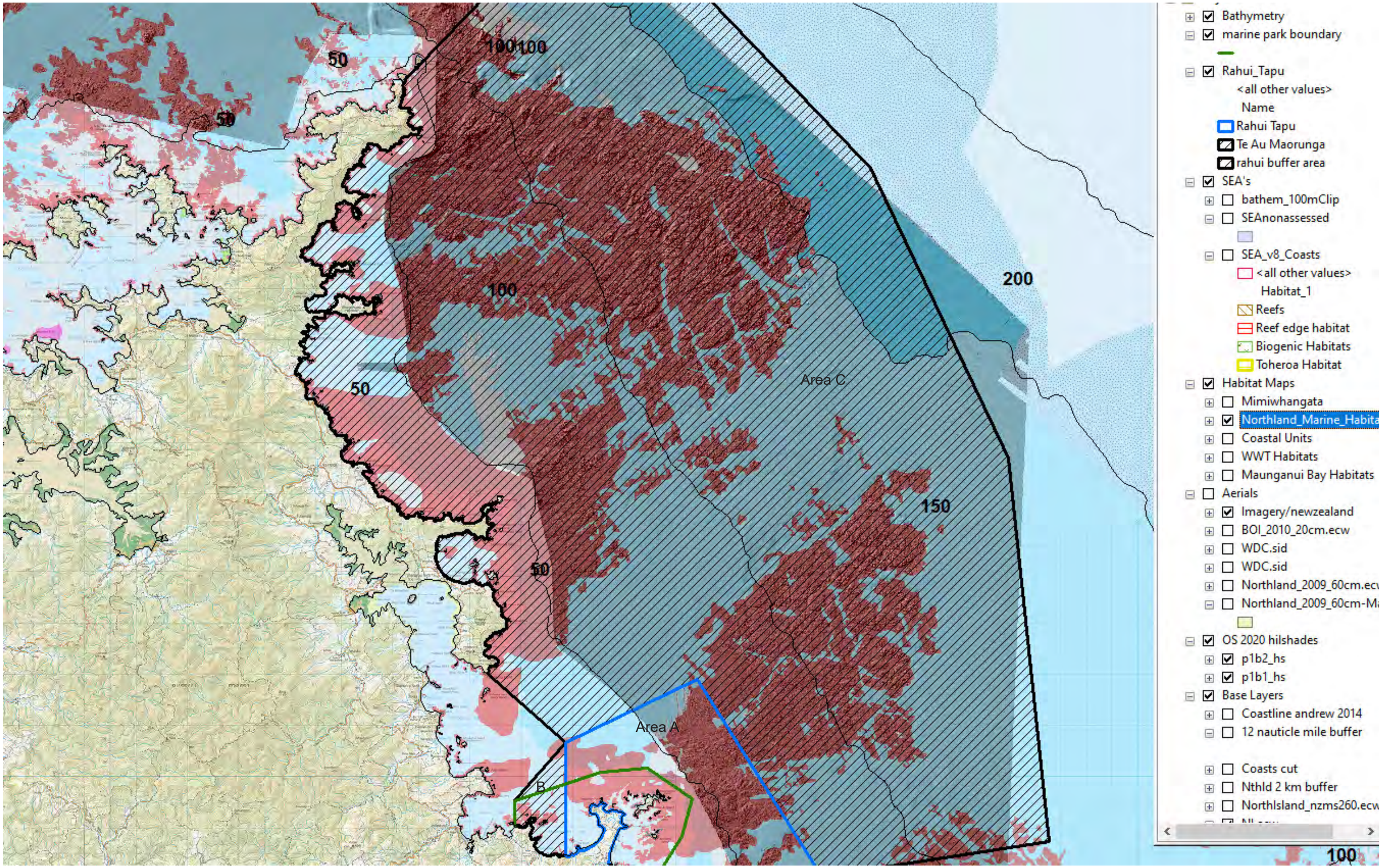
- Rahui Tapu
- Te Au Morunga
- Rahui buffer area
- Marine park boundary
- Depth contour lines

Habitat

- intertidal, gravel
- intertidal, rock
- intertidal, sand
- subtidal, Ecklonia kelp forest
- subtidal, deep mixed reef
- subtidal, deep reef high relief
- subtidal, deep reef low relief
- subtidal, gravel/cobble
- subtidal, kina barrens
- subtidal, mixed reef
- subtidal, sand and mud
- subtidal, shallow mixed weed
- subtidal, tangle weed kelp forest

sheet 5

Source: Vince Kerr, Kerr & Associates



Source: Vince Kerr, Kerr & Associates

3D layer of bathymetry contour lying under the deep reef layer which provides a different view of these deep reef

EB.0960

Te Uri o Hikihiki Proposed Marine Protection Area (MPA)

Legend: Seaward extent

- Mimiwhangata Rahui Tapu Protection Area (A)
- Mimiwhangata Rahui Tapu Buffer Area (B)
- Te Au o Morunga (C)

Area A

Area B

Area C

sheet 7 locator map

sheet 8

sheet 9

sheet 10

10 Kilometres

0 2 4 6 8 10 km

N

EB.0961

Mimiwhangata Rahui Tapu Buffer Area
Area B coastline

Mimiwhangata Rahui Tapu Protection Area A coastline

Mimiwhangata Rahui Tapu Buffer Area
Area B coastline

Area A-B coastline Mimiwhangata

sheet 8

EB.0962

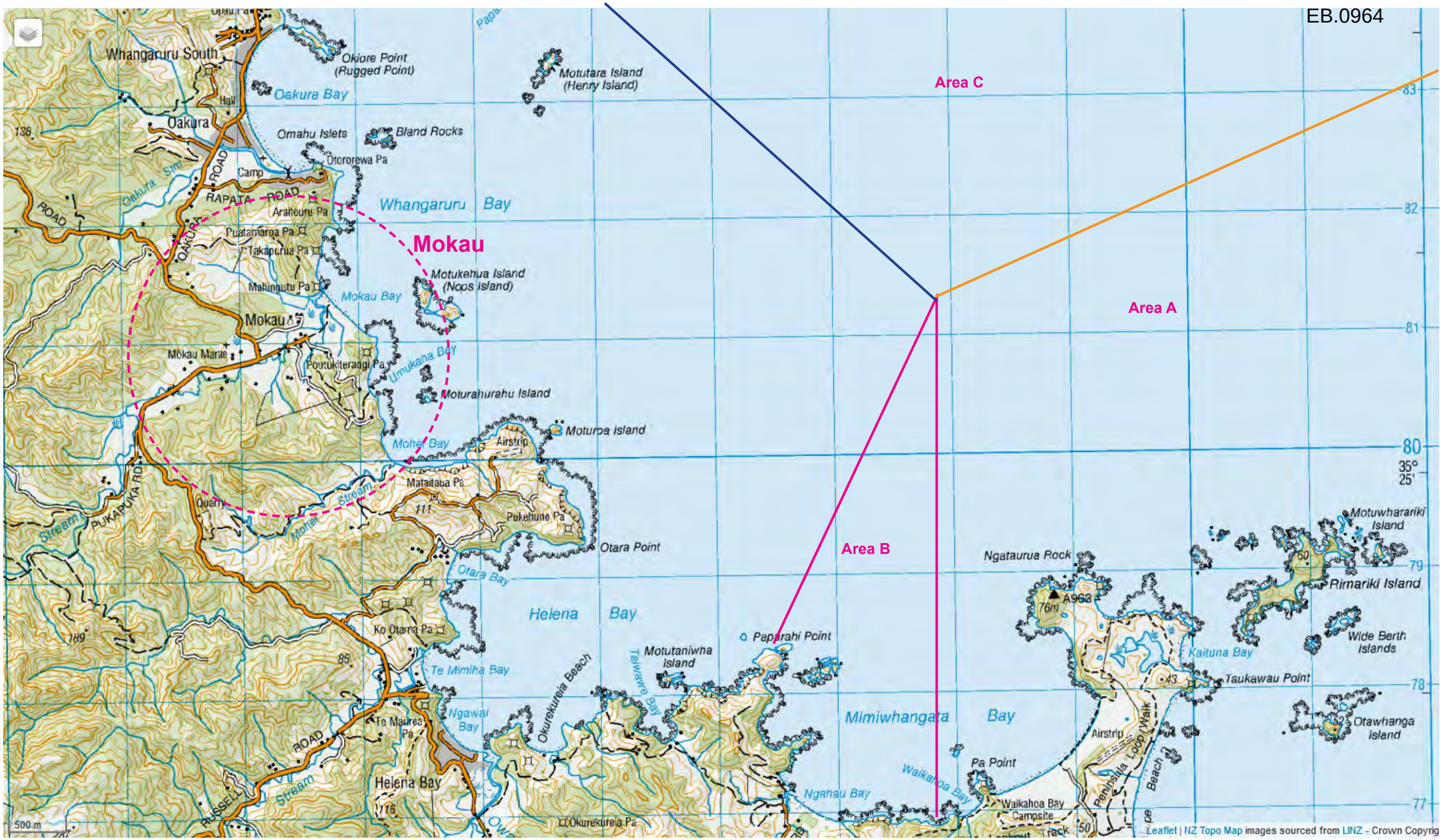
Area C coastline
Eliott Bay to Pararaunui Point

sheet 9

EB.0963

Area C coastline
Rakaumangamanga / Cape Brett
sheet 10

EB.0964



Legend: Seaward extent

- Mimiwhangata Rahui Tapu Protection Area (A)
- Mimiwhangata Rahui Tapu Buffer Area (B)
- Te Au o Morunga Area (C)

sheet 11 Mokau locator map

Motukokako (Piercy) Island skarn with babingtonite and ilvaite
Well exposed example of Pb-Zn skarn. New Zealand's best ilvaite exposure occurs with the best of three babingtonite occurrences. Large crystals (3-5 mm) of babingtonite in a Pb-Zn skarn in Tertiary limestone with associated ilvaite, garnet, hedenburgite, epidote and axinite.

Motukokako (Piercy) Island sea arch
One of New Zealand's most spectacular and most visited sea arches. Sea arch with deep water passage that tourist boats pass through.

Whangamumu Harbour and peninsulas, Cape Brett Peninsula
Unusual narrow, sinuous deep-water harbour with two elongate peninsulas jutting out into sea on either side. Shape reflects origins by drowning of deeply incised small valley. 3 km long, 500-800 m wide deep-water harbour, being the drowned deeply incised head of a small valley eroded into greywacke rocks that form the two finger-like peninsulas, one on each side

Taupiri Bay rugged coast, east of Bay of Islands
Example of one of the most rugged and most easily accessible and viewed sections of greywacke coastline on Northland's east coast. Greywacke has been eroded into high cliffs, hea - lands, stacks, reefs and the small pocket bay of Taupiri. (see photo sheet 31_

Te Ruatahi dune sequence, Mimiwhangata
Occurrence of rich Holocene terrestrial fossil faunas in eroding dune sand. Dune field containing late Holocene fossil land snail assemblage

Opito Bay
Waipapa
Rahui Islands Point
Kerikeri
Rawhiti
Te Rawhiti Inlet
Whangamumu Harbour and peninsulas, Cape Brett Peninsula
Parekura Bay
Russell
Haruru
Paihia
Te Haumi
Opua
Waikare Inlet
Northland Region
Pouerua Pouerua toric (Pakaraka rk Mountain) scoria cone and lava fields
Moerewa
Kawakawa
Oakura
Area C
Area A
B
Helena Bay
B
Towai
State Highway 10
Puketona Road
Great North Road
Paihia Road

Legend: Seaward extent
- Mimiwhangata Rahui Tapu Protection Area (A)
- Mimiwhangata Rahui Tapu Buffer Area (B)
- Te Au o Morunga Area (C)

2km

Geopreservation sites

EB.0966

ROCK TYPE DESCRIPTIONS (LITHOLOGIES)

The map unit symbols are listed alphabetically within the two major rock type categories - sedimentary and igneous. The first letter of each symbol indicates the major lithology, and the second letter (where present) a significant interbedded lithology. The numeral indicates the typical hardness (see Physical Characteristics table) of the unweathered rock material, and the subscript numeral indicates variation.

The description for each map unit may include common name, distinctive landform, colour, hardness, grain size, bedding, fracturing and chemical composition. Major and minor lithologies are described and also the weathered material in terms of changes in colour, hardness and grain size. Range of depth of the weathered mantle is also given. (See also "Definition of Descriptive Terms").

SEDIMENTARY ROCK TYPES

ALLUVIUM

$A1_1$ Undifferentiated intertidal deposits: very fine to coarse grained mud, sand, shell and gravel; unconsolidated.

$A1_2$ River bed and flood plain alluvium: very fine to coarse grained, mud and sand, some gravel and peat; unconsolidated to very soft; unweathered.

$A1_3$ Terrace alluvium: up to 10 m above stream or sea level, mainly mud and sand; very soft to soft; moderately to slightly weathered to a very soft clay to depths of 2 m.

PEAT

C1 Organic swampy deposits usually less than 4 m in depth, some mud, and sand; very soft.

GRAVEL AND CONGLOMERATE

G1 Beach and stream gravel: coarse to very coarse rounded rock fragments, some sand; unconsolidated to partially cemented; unweathered.

MUD AND MUDSTONE

M1 Intertidal mud: very fine to fine grained; unconsolidated.

SAND AND SANDSTONE

$S1_1$ Beach sand: mostly quartz and feldspar, medium grain size 150–380 microns; unconsolidated; unweathered.

$S1_2$ Active sand dunes: mostly quartz and feldspar, fine grain size. Unconsolidated; unweathered; moving dunes, some areas partially fixed.

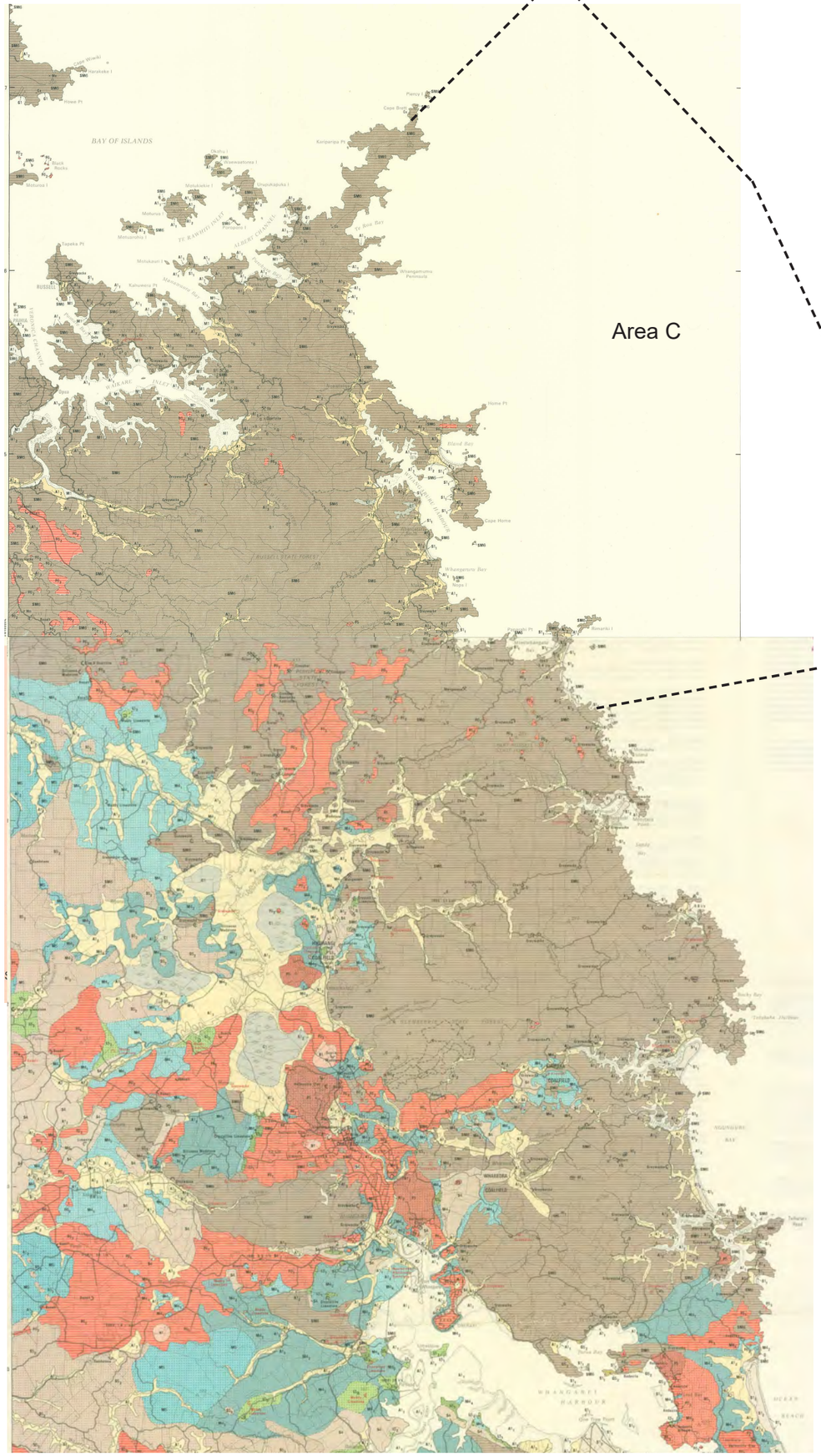
SMG Sandstone and mudstone (greywacke and argillite): Medium to dark grey, fine to medium grained sandstone interbedded with grey to black mudstone and minor siliceous, igneous and calcareous rocks, thinly to thickly bedded with some massive units, closely fractured and veined; moderately hard to very hard. Weathered to yellow-brown soft sandy clay to depths of 30 m.

IGNEOUS ROCK TYPES

EXTRUSIVE ROCK

FS Rhyolite and dacite: light coloured finely crystalline, massive; moderately hard to very hard. Weathered to whitish clay, with silica fragments.

FG_2 Basalt: dark grey to black, locally red, fine to medium grained crystalline flows and remnant cones, intruded by minor more coarsely crystalline basaltic plugs and dikes; hard to very hard, massive, widely fractured. Weathered to reddish brown friable clay to depths of 30 m.



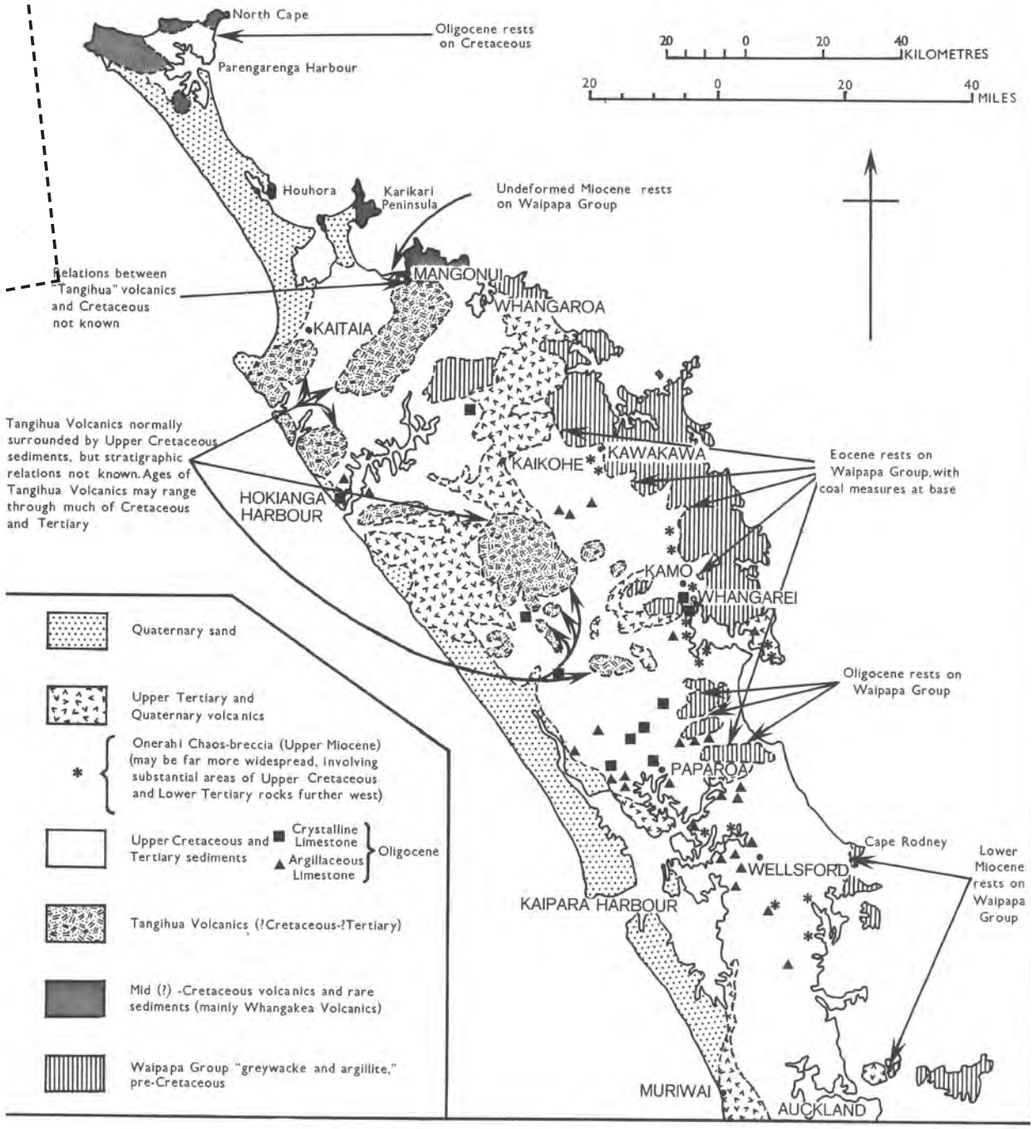


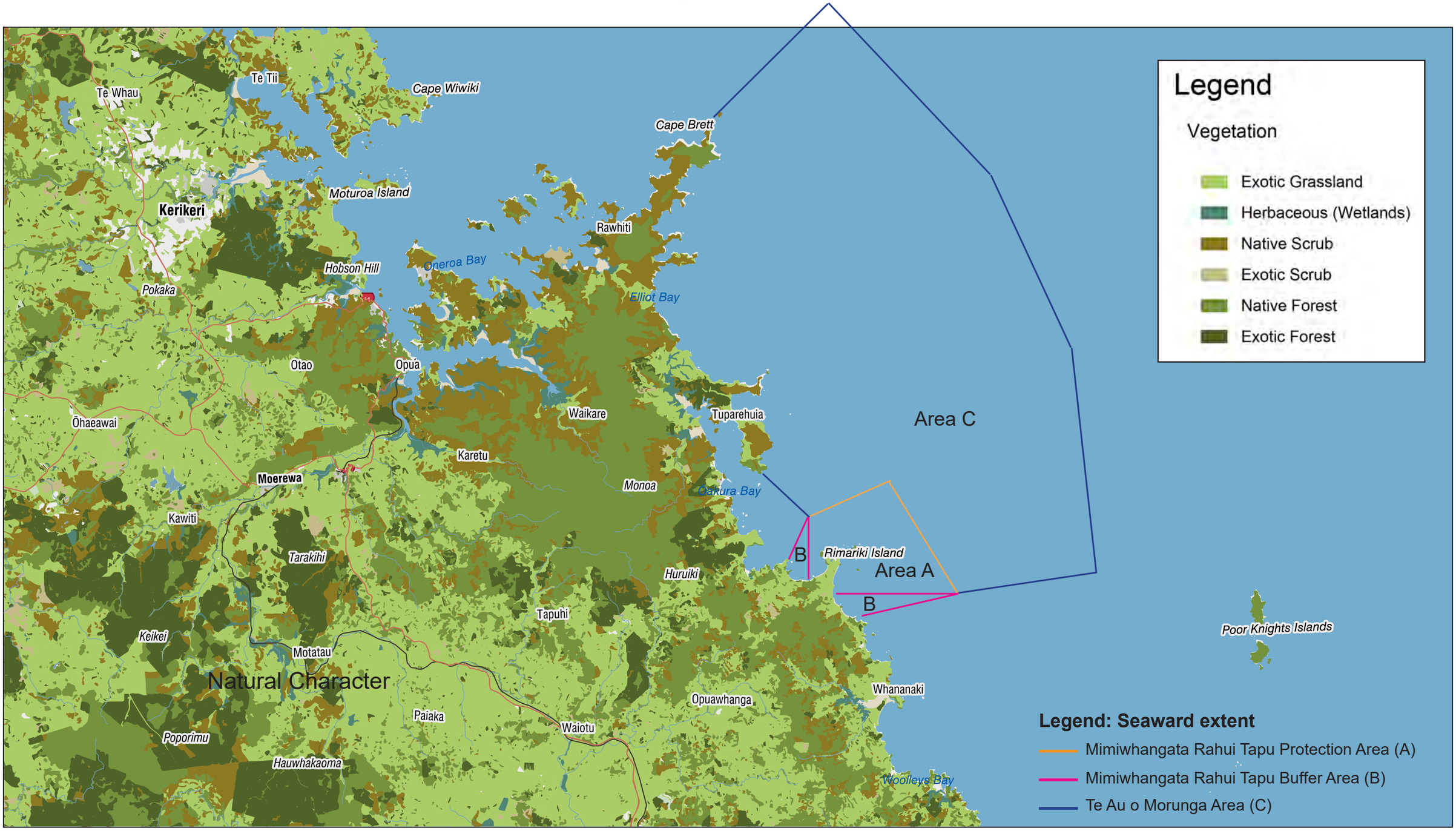
FIGURE 7.16 *Stratigraphic relations of major rock groups of Northland.*

Suggate, 1978

sheet 13 Rock Types

EB.0967

Vegetation Map



OURENVIRONMENT

Manaaki Whenua
Landcare Research

Scale: 1:250,000

0 5 10 15 20km

Land Cover Database Version 5 (LCDB5)

The information depicted in this map has been derived from numerous sources. It may not be complete, correct or up to date. This map is licensed by Landcare Research on an "as is" and "as available" basis and without any warranty of any kind, either express or implied.

Landcare Research shall not be liable on any legal basis (including without limitation negligence) and expressly excludes all liability for loss or damage howsoever and whenever caused to a user of this map.

sheet 14

Printed: 16:58:57 PM Wed, 31 Mar 2021

EB.0968

Motukokako

Hole in the Rock

Cape Brett

Otuwhanga Island

100

50

Rakaumangamanga

Walwiri Rock

30

20

Net Rock

Motukorari Island

Google Earth

Rakaumangamanga / Cape Brett
Area C coastline

sheet 15

N

1 km

EB.0969

Motukorari Island

100

50

Motukumara Rock

Whangamumu Point

Pillar Rock

Pahi Bay

20

30

Elliot Bay

N

1 km

Google Earth

Rakaumangamanga / Cape Brett

sheet 16 Area C coastline

EB.0970

Elliot Bay

Taupiri Bay

100

50

30

20

Ngaiotonga

Ngaiotonga Bay

Okoromai Point

N

1 km

Google Earth

Elliot Bay to Okoromai Point coastline, Area C **sheet 17**

EB.0971

Ngaiotonga

Home Point

Area C

Whangaruru

Punaruku

30

50

Cape Home

Pararaunui Point

Oakura Bay

20

Whangaruru Bay

Mokau Bay

N

2 km

sheet 18 Home Point to Cape Home , Area C coastline

EB.0972

Mohei Bay

Area A

Area B

Helena Bay

Te Mimiha Bay

Paparahi Point

Mimiwhangata Bay

Rimariki Island

30

20

Area B

Pareparea Bay

N

1 km

Mimiwhangata Bay to Pareparea Bay, Area A & B coastline

sheet 19

DEPTHS IN METRES

WGS 84 DATUM
(see Note)

SEE RELATED PUBLICATIONS: NOTICES TO MARINERS (annual, recent, imminent and temporary), SAILING DIRECTIONS (local conditions; directions, regulations and port information), NZ NAUTICAL ALMANAC (tide tables, light list, weather transmissions, radio beacons), ADMIRALTY LIST OF RADIO SIGNALS (navigational warnings, pilot and port operations services, traffic management), MARINERS HANDBOOK (general information), ADMIRALTY CHART 5011 (symbols and abbreviations). **ENSURE THAT CHARTS AND PUBLICATIONS ARE KEPT CORRECTED.**

Adjoining Chart NZ 512

Legend: Seaward extent

- Mimiwhangata Rahui Tapu Protection Area (A)
- Mimiwhangata Rahui Tapu Buffer Area (B)
- Te Au o Morunga Area (C)

Area C

Area A

B

B

Area to be Avoided (see Note)

NZ 5125

NZ 5111

NZ 5216

Source Data

A. Land Information New Zealand 2010 1:25 000
B. PORTS OF AUCKLAND 2009 1:1000 and 1:2000
C. Land Information New Zealand 2008-2009 1:20 000
D. Land Information New Zealand 2008 1:25 000
E. Land Information New Zealand 2008 1:100 000

Legend: Seaward extent

- Mimiwhangata Rahui Tapu Protection Area (A)
- Mimiwhangata Rahui Tapu Buffer Area (B)
- Te Au o Morunga Area (C)

Area C

Area A

B

B

Legend

Natural, Historic and Cultural Heritage - Fresh and Coastal Waters

High (Subject to Appeal) Natural Character

- Within CMA — Within CMA
- Unit spans CMA — Unit spans CMA

Outstanding (Subject to Appeal) Natural Character

- Within CMA — Within CMA
- Unit spans CMA — Unit spans CMA

Outstanding Natural Features

- On Land — On Land
- In Water — In Water

sheet 21

Northland REGIONAL COUNCIL

Natural Character & ONFs

Proposed Regional Plan - Appeals Version June 2020

Projection NZTM. Datum NZTM2000.
DISCLAIMER:
The Northland Regional Council cannot guarantee that the information shown is accurate and should not be reused in any manner without proper consultation with its owner.

N

0 2 4 8 12 16 20 km

March 7 2021

174°45'

175°00'

Legend: Seaward extent

- Mimiwhangata Rahui Tapu Protection Area (A)
- Mimiwhangata Rahui Tapu Buffer Area (B)
- Te Au o Morunga Area (C)

Area C

Area A

B

B

Legend

Coastal

- Significant Marine Mammal and Seabird Area
- Significant Bird Areas

sheet 22

Northland REGIONAL COUNCIL

Coastal

Proposed Regional Plan - Appeals Version June 2020

Projection NZTM. Datum NZTM2000.
DISCLAIMER:
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N

0 2 4 8 12 16 20 km

March 7 2021

174°45'

175°00'

Legend: Seaward extent

- Mimiwhangata Rahui Tapu Protection Area (A)
- Mimiwhangata Rahui Tapu Buffer Area (B)
- Te Au o Morunga Area (C)

Area C

Area A

B

B

Legend

Coastal

- Significant Ecological Areas

sheet 23

Northland REGIONAL COUNCIL

Significant Ecological Areas

Proposed Regional Plan - Appeals Version June 2020

Projection NZTM. Datum NZTM2000.
DISCLAIMER:
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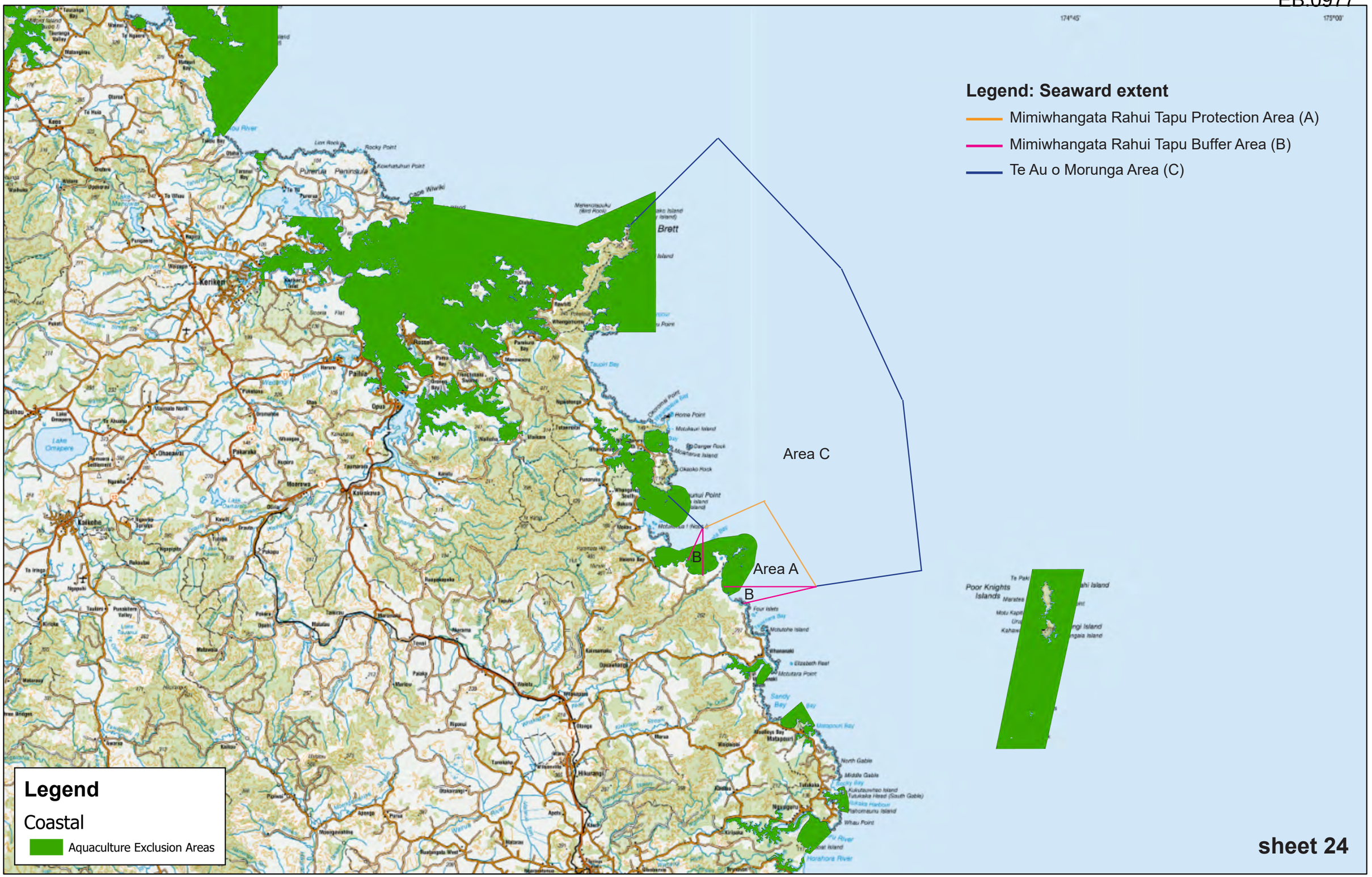
N

0 2 4 8 12 16 20 km

March 7 2021



Northland REGIONAL COUNCIL

Aquaculture Exclusion Areas

Proposed Regional Plan - Appeals Version June 2020

Projection NZTM. Datum NZTM2000.
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N

0 2 4 8 12 16 20 km

March 7 2021

EB.0978

Legend: Seaward extent

- Mimiwhangata Rahui Tapu Protection Area (A)
- Mimiwhangata Rahui Tapu Buffer Area (B)
- Te Au o Morunga Area (C)

Area C

B

Area A

B

Legend

- Coastal Environment

Natural Character

- High Natural Character
- Outstanding Natural Character

sheet 25

Northland REGIONAL COUNCIL

Natural Character

Regional Policy Statement

Projection NZTM. Datum NZTM2000.
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N

0 1.5 3 6 9 12 15 Kilometers

March 31 2021

EB.0979

Legend: Seaward extent

- Mimiwhangata Rahui Tapu Protection Area (A)
- Mimiwhangata Rahui Tapu Buffer Area (B)
- Te Au o Morunga Area (C)

Area C

B

Area A

B

Legend

- Outstanding Natural Landscapes
- Outstanding Natural Features
- Coastal Environment

sheet 26

Northland REGIONAL COUNCIL

Outstanding Natural Landscapes & Features

Regional Policy Statement

Projection NZTM. Datum NZTM2000.
DISCLAIMER:
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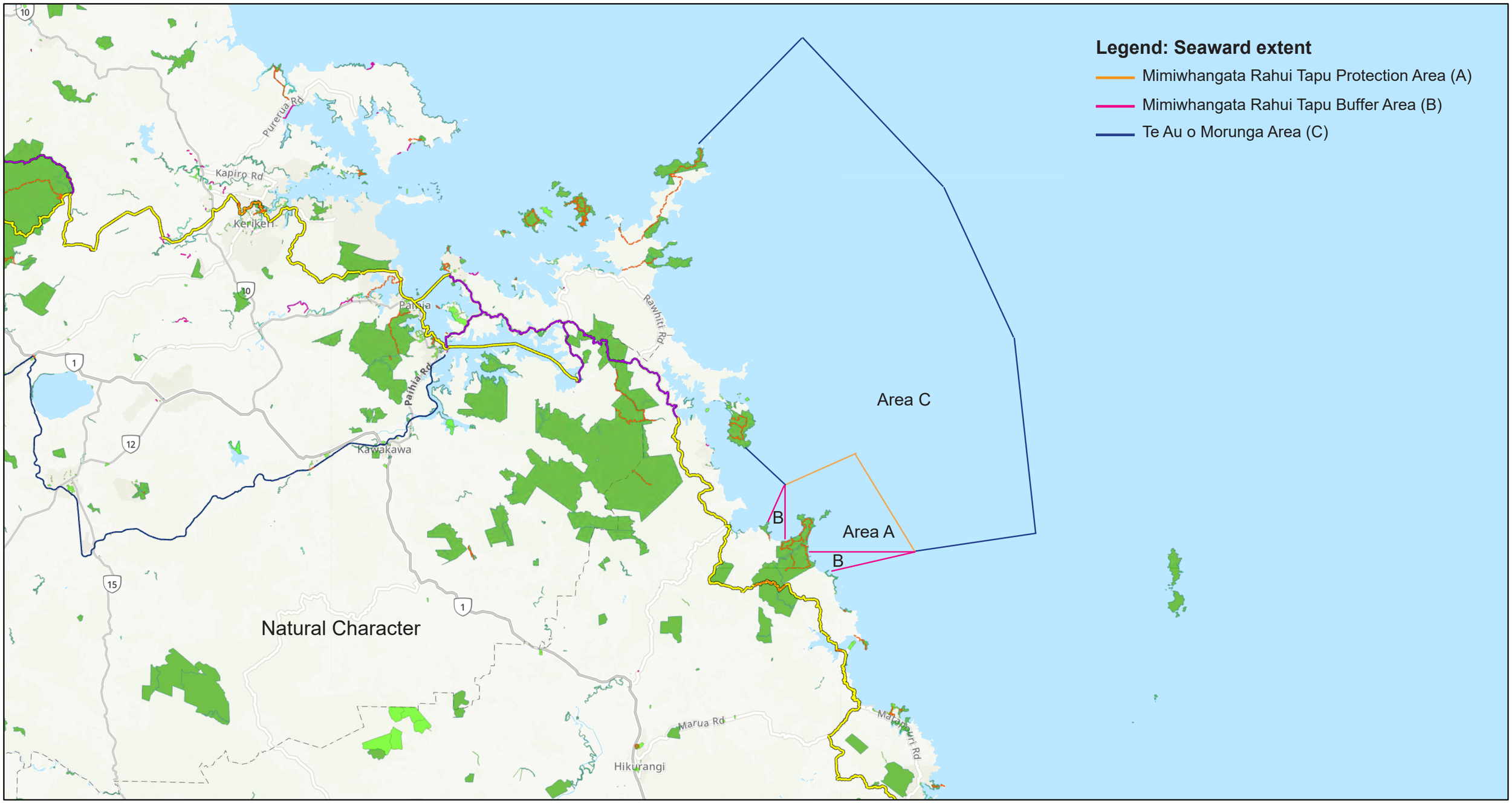
N

0 1.5 3 6 9 12 15 Kilometers

March 31 2021

EB.0980

Outdoor Access Map



March 31, 2021

Walking & Tramping

Te Araroa Trail

Main Trail

Bypass

New Zealand Cycle Trail

Great Ride

Reserve Land

Esplanade Strip

Esplanade Reserve

DOC Public Conservation

1:288,895

0 3.5 7 14 mi

0 5 10 20 km

sheet 27

https://www.doc.govt.nz/parks-and-recreation/places-to-go/northland/places/mimiwhangata-coastal-park/?tab-id=50578

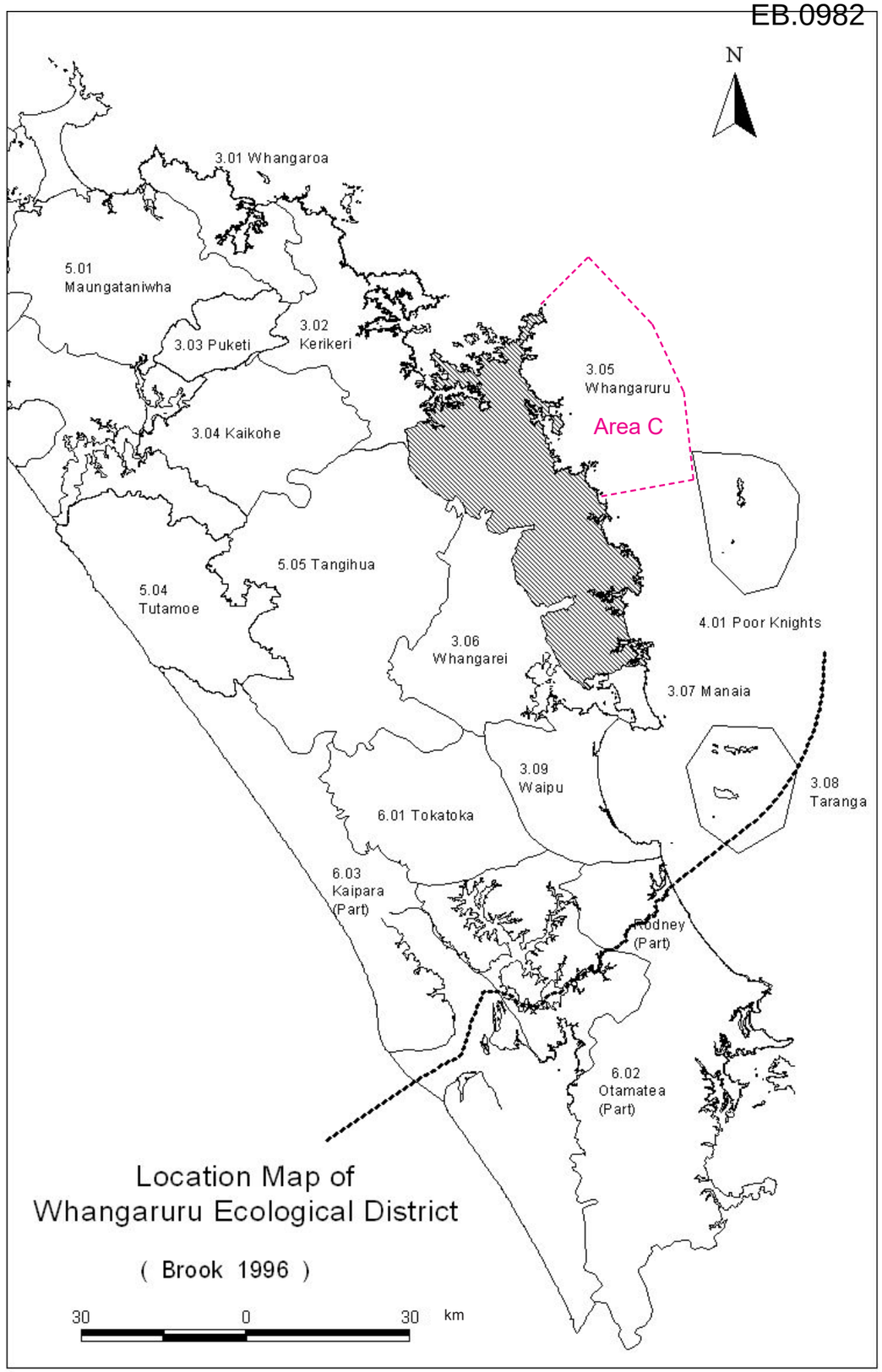
Natural areas of Whangaruru Ecological District

Reconnaissance Survey Report for the Protected Natural Areas Programme

2005

https://www.doc.govt.nz/globalassets/documents/conservation/land-and-freshwater/land/whangaruru-ecological-district/whangaruru-ecological-district-report.pdf

sheet 29 Whangaruru



Map 1. Location map of Whangaruru Ecological District.

Oakura Bay
sheet 30

EB.0984

sheet 31 Taupiri Bay Geopreservation site

EB.0985

sheet 32 Elliot Bay

Lucas Associates

REGISTERED LANDSCAPE ARCHITECT