NORTHLAND REGIONAL COUNCIL
NORTHLAND MAPPING PROJECT

OUTSTANDING NATURAL FEATURES

MAPPING METHODOLOGY REPORT

Decisions Version – February 2014

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Contents

1.0 Introduction

This report summarises the way that outstanding natural features (ONF's) have been identified on the Regional Policy Statement Maps and provides a list of those ONF mapped. It also categorises ONF on the basis of type and the values that these features important to assist in their management. This report is for information purposes only and does not form part of the Regional Policy Statement.

2.0 Background

Outstanding natural features and landscapes are a matter of national importance in Section 6(b) of the Resource management Act 1991 and are to be protected from inappropriate subdivision, use and development. This is reinforced in Policy 15 of the New Zealand Coastal Policy Statement.

In order to retain the scientific, educational and amenity values of outstanding natural features, those at risk have – where practicable - been identified on the Regional Policy Statement Maps. The major source of information has been the "Inventory (and maps) of Important Geological Sites and Landforms in the Northland Region", Geological Society of New Zealand unpublished report 95/2, edited by J Kenny and B Hayward (1995).

This inventory identifies the best examples of Northland's unique geology and landforms. Examples include fossil beds, volcanic cones and lava formations. It was compiled using the combined knowledge and advice of a large sector of the specialist geological, geomorphological, speleological and soil science communities of New Zealand.

3.0 Significance and Vulnerability

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 highly vulnerable to complete destruction or major modification by humans;
2 moderately vulnerable to modification by humans;
3 unlikely to be damaged by humans; and
4 could be improved by human activity.

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 (E.g. 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.
- Have been mapped – Not all of the sites in the inventory have had their precise location or physical extent mapped. Council did not include sites that have not been mapped due to the uncertainty that this situation would bring. However the Regional Policy Statement includes a method to address this circumstance by potentially mapping these features at a later date.

The intent is to manage outstanding natural features on the basis of their values and the risk of those values being compromised (as opposed to a "one size fits all" approach). A number of features on the inventory are not considered vulnerable to human activity and have therefore not been mapped. As an example, no feature with a vulnerability rank of 4 has been included; nor are those of regional significance but relatively low vulnerability ranking (I.e. features that rank C3) as these are unlikely to be significantly impacted by human activity.

The maps provided in the inventory were used as a basis for the Regional Policy Statement ONF mapping, however in some cases there will be differences as a result of evidence presented in submissions and at hearings on the Proposed Regional Policy Statement. This is the case in relation to a number of volcanic cones around the Whangarei District. The inventory maps were refined to more accurately reflect the physical extent of the cone landform on the Regional Policy Statement Maps (this means the ONF on Regional Policy Statement Maps for a number of volcanic cones is typically smaller than shown in the inventory and based around a contour line). In several other cases where the volcanic cones were identified as both outstanding natural landscape (ONL) and ONF, the two were aligned for pragmatic reasons – the ONF boundary being reduced to match the ONL.

In order to assist management and decision-making, outstanding natural features have also been categorised by type to provide an indication of the values that make them significant and potential risks to these values. The categories are described below.

4.0 Categories of ONF

A. Large landforms

These are landforms that are large and robust. The values of such features typically relate to the underlying geology which tells of the history of their formation and the resulting outstanding large-scale landforms, rather than or in addition to their visual amenity or landscape type factors. They can typically withstand moderate scale earthworks or constructions without significant impact. However major multi-storey developments, intense urban and industrial subdivisions or large scale earthworks (e.g., a commercial quarry or major motorway cuttings) can significantly detract from the integrity of these landforms and their geological features.

An example is Whatatiri Shield Volcano, which is of substantial scale, but whose form is relatively subtle without the accentuated peak found in the category below.

B. Volcanic cones

These features derive their values from their distinctive conical form and prominence in the wider landscape setting. These scoria cones and tuff cones are sufficiently robust to withstand small-scale, localised earthworks or constructions without significant impact. However structures in prominent positions, significant permanent earthworks such as farm roads across steep slopes, and rectangular exotic forest plantings can detract from or compromise these natural features, particularly where they protrude significantly into the skyline, alter the cone form or disguise the underlying landform.

Examples include Maungatapere and Maunu Volcanic Cones.

C. Dynamic landforms and features

The values of these landforms or features relate to the ongoing natural physical processes that have constructed them and in many instances are necessary to maintain the landforms. Because of this, these dynamic landforms or features are not only susceptible to direct damage, but to more distant actions that may impact the continuation of the natural processes (e.g. sand supply; dune stabilisation; groundwater levels; soil erosion in cave catchments). Permanent earthworks, building construction, vegetation plantings, extraction of nearby groundwater or other actions could adversely affect the functioning and appearance of these features.

The Te Paki sand dunes are an example of this category.

D. Smaller more fragile landforms

The values of these often spectacular, localised landforms relate to their visual and aesthetic appeal and/or scientific interest. These are small landforms or other features that could be damaged or destroyed by relatively small scale earthworks or construction. Most earthworks, buildings, constructions or plantings would adversely impact on the visual and aesthetic appeal or scientific value of these fragile features.

Examples include the Manaia stratovolcano breccia pillars and Waro karst.

E. Exposures of geological material

These natural exposures of rock have values that relate to the geological features that can be seen within the rocks and the information they contain about the history of their formation, the geological origins of the region in general or the fossil history of the biota of New Zealand. Most of these exposures are sufficiently large and robust that small extents of earthworks or rock sampling will have no significant impact. Large-scale earthworks, construction of buildings, vegetation plantings or constructions of walls or erosion barriers could adversely impact the visual, educational or scientific values of these exposures.

The Onemama Pt allochthonous sediments and Strawberry bay pillow lava are examples of Category E ONF's.

Appendix 1 - Schedule of Outstanding Natural Features for Northland Region

Schedule of Outstanding Natural Features for Northland Region

Feature name	Category	Significance statement	Brief description	Location	Importance	Vulnerability	RPS Map No.
Ahipara Tangihuas basal melange	E	Basal melange of the Tangihua obducted ophiolites.	Exposures of complexly faulted and sheared basaltic lavas and dolerites.	Mokorau Beach, east of Tauroa Point, Ahipara.	**B**	**3**	**168**
Aurere Beach sediments and nappes, Taipa	E	One of the best exposed sequences showing relationships within the Northland Allochthon.	Here Tangihua Volcanics nappe is sheared over folded Arowhanan Awapoko Formation sandstone overlying a thick sheared melange dominantly of late Cretaceous conglomerate and mudstone (Ngatuturi Siltstone).	From 50 m inside Awapoko River mouth, around Aurere Beach to Puketutu Island.	**B**	**3**	**206**
Bayly's Beach dune sands	E	Dunesands preserving history of rises and falls in sea level since the Pliocene.	Lignites and dunesands.	Northern end of North Kaipara barrier.	**B**	**3**	**93**
Coppermine Island copper mineralisation	E	Good example of a porphyry copper deposit.	Pyrrhotite-chalcopyrite hydrothermal mineralisation in pyroxene diorite and dacite breccia.	West end of Coppermine Island, Chickens Group.	**B**	**2**	**9**
Coppermine Island diorite intrusion	E	Only diorite plutons in Whangarei Heads region.	A dark coloured, coarse grained, pyroxene diorite, roughly elliptical in shape, with weak foliations parallel to the margins.	Coastal cliffs on the western end of Coppermine Island.	**C**	**2**	**9**
Glenbervie (Maruata) volcanic cones	B	A well preserved young volcanic centre with two scoria cones.	There are two cones approximately 650 m apart. The older farm covered cone lies to the W, Q06/319143, of the main cone Maruata, Q06/327147. Maruata shows two eruption points with the youngest, largest crater being breached to the S. The centre is approximately 2-3 km in diameter and its height is 200 m ASL, rising 80 m above the surrounding area. Maruata cone has a distinct volcanic form and is bush covered. On the north side a small forestry settlement has been established.	This centre lies between Maruata Road and Puketotara Road, approximately 5 km NE of Kamo.	**C**	**2**	**30**
Hokianga sand dunes	C	A large area of active sand dunes reaching heights of 200 m. Provides spectacular vista from Omapere Hill on Sth side of harbour.		North side of entrance to Hokianga Harbour.	**B**	**1**	**119**

Feature name	Category	Significance statement	Brief description	Location	Importance	Vulnerability	RPS Map No.
Hurupaki scoria cone	B	One of three scientifically interesting scoria cones. A quarry exposes an eruption sequence showing that magma variation occurred during eruption. The best such exposure in a young Whangarei centre.	A steep sided, partly bush covered cone, 1-2 km in diameter, breached to the SE, that stands 350 m ASL and is extensively quarried on the W side. This is the E most cone of a group of three centres: (E to W) Hurupaki, Rawhitiroa and Ngararatunua.	This centre lies between Three Mile Bush Road and Dip Road, approximately 1.5 km W of Kamo township.	**C**	**1**	**31**
Kai Iwi dune-dammed lakes	A	An extremely well defined landform of scientific/educational and scenic value.	Several large dune-dammed lakes, including the two deepest dune lakes in New Zealand, Lake Taharoa at 37 m and Lake Waikeri at 30 m. None have any surface inlet or outlet.	Taharoa Lake, Waikere Lake, Shag Lake, 10 km SW of Kaihu, 30-35 km north of Dargaville of State Highway 12.	**B**	**3**	**99 100**
Lake Ohia Pleistocene fossil forest	D	Well preserved and now partly exhumed buried Quaternary kauri forest. 30,000 years old.		On south east fringe of Lake Ohia, often partly submerged. Visitor area is one kilometre along road to Whatuwhiwhi from Highway 10 turnoff, on west side of road.	**C**	**2**	**205**
Manaia stratovolcano breccia pinnacles	D	Most prominent exposures of Miocene volcanic breccia and the best of two areas of ridge top tors in the Whangarei Heads area.	Weakly stratified andesite breccia forming bluffs and spectacular pinnacles along Manaia ridge - remnants of cone facies of a stratovolcano.	Forming Mt Manaia and ridge to north, Whangarei Heads.	**B**	**3**	**14**
Mangonui Miocene coconut beds	E	Best preserved fossil coconuts in New Zealand. Of historical and paleoclimatic importance.		Subtidal outcrops and low cliffs behind Coopers Beach.	**B**	**2**	**206**
Marble Bay Permian fusulines, corals, spilite and melange	E	Of national importance in paleoGeoInventgraphic reconstructions. Important association of pillow lava with Permian Tethyan facies and melange. Best of only a handful of Permian localities in the North Island. One of only three known New Zealand localities.	Spilitic basalt, Tethyan fossils and marble in complicated melange association. Melange exposed in the coastal rocks from Te Anina Point, between Tauranga Bay and Marble Bay, south of Whangaroa.	In shore platform and maritime zone, at east end of Marble Bay, East of Whangaroa Harbour entrance.	**A**	**3**	**200**

Feature name	Category	Significance statement	Brief description	Location	Importance	Vulnerability	RPS Map No.
Matai Bay beaches	C	One of the most scenic gems in Northland, the beach and bay setting is unspoiled by development, in a near pristine condition.	A 2 km by 1 km bay with narrow entrance to the open sea. The Bay is divided into two semicircular beaches by a central headland.	On the NE coast of Karikari Peninsula, 6 km NE of Whatuwhiwhi.	**C**	**2**	**221 226**
Maungakaramea scoria cone	B	A well preserved scoria cone with a distinct from that has not been quarried. The southernmost Quaternary Volcanic centre in Northland.	A steep sided, forested scoria cone standing approximately 150 m above the surrounding plateau. Mostly covered with native bush, however some pines have been planted. A large flow to the SE (4-5 km) ends in an 8 m rock face, approximately 200m before Omana Road. A disused quarry site in the flow is now used as a rubbish tip. There is a small flow to NW of cone.	Lies between O'Carrol Road and Crawford Road, approximately 1 km W of Maungakaramea township.	**C**	**1**	**17**
Maungakawakawa scoria cone	B	A very good example of breached scoria cone, breaching clearly as a result of 'rafting' during cone formation.	A complex elongate scoria cone 60 m high, 340 m ASL; breached to the NE, and twice on the southern flank; covering an area of 2.2 square km. The cone is centrally located with flows running radially from the vent. This land is farmed but is scrub covered in places. There is some evidence of Maori fortifications.	2 km E of Lake Omapere; 2 km S of Te Ahuahu on Hariru Rd.	**C**	**2**	**145**
Maungaraho Dike	D	An extremely well defined land form of scientific / educational and scenic value. Very good example of the unusual mineral harmotome	Forms a huge dike-like intrusion with harmotome occurring in crystals on and in andesite of Maungaraho Rock. Forms a prominant ridge (200 m high) of the resistant dike surrounded by erosioned softer sedimentary rocks.	Maungaraho peak and ridge, 500m south-east of the end of Sills Road, Mititai and 10km South of Dargaville.	**B**	**2**	**91**
Maungatapere volcanic cone	B	An almost perfect, steep sided volcanic cone, not farmed or quarried. Largest and best preserved in Whangarei field.	A steep sided cone, approximately 1-1.5 km diameter, with scrub and native bush cover and a farm on the flank. Small crater on top. Around 3.5 km ESE of the Whatitiri centre, the peak is 359 m (ASL) but the cone stands 185 m above the surrounding plateau.	E of the intersection of Snooks Road and State Highway 14, approximately 3 km SSW of Maungatapere township.	**B**	**2**	**22**
Maungaturoto volcanic cone	B	Well preserved volcanic form typical of the younger centres in Northland.	A small cone 100 m high, 285 m ASL, 500 m in diameter, with a circular, unbreached central crater 10 m deep. Flows cover 6.5 square km, overlying the older Tarahi lava field in places. This cone is a well preserved volcanic land form, at present being farmed. Slightly altered by Maori terracing.	3 km South of Ohaeawai (Off SH12).	**C**	**2**	**145**

Feature name	Category	Significance statement	Brief description	Location	Importance	Vulnerability	RPS Map No.
Maunu volcanic cone	B	A relatively well preserved cone near Whangarei, which has been modified a little by farming, minor quarrying and roading.	A 1-2 km diameter cone, which stands 395 m ASL and is breached to the West. The cone is very steep sided, particularly in the S. A TVNZ relay is located on the summit. Access to the summit is via Millington Road. There is a small quarry on the toe of the breached material which has been worked for private and for farm use. The W side is farmed but E and S slopes are covered with bush and pines. The cone rises 150 m above the surrounding plateau, while flows extend approximately 6 km E from the centre, almost to Whangarei City.	Just SW of Pukenui State Forest and NE of the intersection of Kara Road and State Highway 14, approximately 2.5 km NE of Maungatapere township.	**C**	**1**	**27**
Motukokako (Piercy) Island scarn with babingtonite and ilvaite	E	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.	Northern half of Motukokako (Piercy) Island, a steep rocky island northeast of Cape Brett in the Bay of Islands.	**A**	**2**	**180**
Ngararatunua volcanic cone	B	Distinct scoria cone breached to south.	The centre is a horseshoe-shaped scoria cone, breached to the S with small flows to the S and NE. It is a composite cone; an early cone to the N and a second higher cone to the S, which buried most of the first one before being reached. It is farmed on the W side and the E side is bush covered. The height of the cone is 325 m ASL and it rises 125 m above the lava field. The composite cone is approximately 1.2. in diameter. It is the western most cone of a group of three centres: (E to W) Hurupaki Rawhitoria and Ngararatunua.	This centre lies between Three Mile Bush Road, Church Road and Rotomate Road, approximately 3.5 km W of Kamo.	**C**	**1**	**31**
Ngunguru Sandspit	C	An excellent example of an unmodified sand barrier beach and dune field developed between a tidal estuary and a broad open bay. Significant example of a rapidly disappearing coastal feature.	Partially vegetated undeveloped barrier spit approximately 2.5km long and 300-600m wide. Dunes and spit relatively undisturbed.	Ngunguru sand spit, Ngunguru, 28km North east of Whangarei. ,	**C**	**2**	**29, 34, 35**
North Cape ultramafic/gabbro complex	E	Only ultramafic/gabbro ophilite complex in northern New Zealand.			**B**	**3**	**249**

Feature name	Category	Significance statement	Brief description	Location	Importance	Vulnerability	RPS Map No.
One Tree Point interglacial beach and dune deposits	E	Well exposed Late Pleistocene regressive coastal sand sequence. Only remaining exposures in the area that are not obscured by coastal foreshore protection works, and should be left in their unmodified state.	Coastal cliff and foreshore exposures show a shallowing upwards regressive sequence from shallow marine sand through beach sand to coastal foredune, with overlying swamp deposits in interdune hollows.	Southern shore of Whangarei Harbour west of Marsden Point, from One Tree Point southwestwards for 1 km.	**B**	**1**	**15**

Feature name	Category	Significance statement	Brief description	Location	Importance	Vulnerability	RPS Map No.
Onemama Point allochthonous sediments, Whangarei Harbour	E	Excellent exposures documenting earliest allochthon emplacement in this region.	Allochthonous olistostromes within Waitakian shallow water bioclastic sandstone facies.	From tip of Onemama Point to 1.5 km to NW.	**B**	**3**	**21**
Pakaurangi-Puketi shelf sediments and fossils	E	Most complete sequence through Hukatere Subgroup, and richest fossil locality in New Zealand; type locality of many species.	Complete exposure of shelf sequence of volcaniclastic fossiliferous sandstone and siltstone of the Pakaurangi Formation and marginal marine to non-marine Puketi Formation.	Pakaurangi Point to Puketi, southeast corner of Hukatere Peninsula. Fossil locality runs along west side of Pakaurangi Point.	**B**	**2**	**71 72**
Parengarenga - Te Pokere Miocene fossils	E	Diverse, warm-water molluscan fauna (see Parengarenga record).		North shore Parengarenga Harbour.	**B**	**3**	**244 245**
Parengarenga silica sand	C	A sand barrier spit being the largest unvegetated spit in New Zealand. The most extensive and highest grade silica sand deposit in New Zealand.	Sand very high in silica (in excess of 95%).	Parengarenga Peninsula/Kokota Spit, northwest coast, Great Exhibition Bay.	**B**	**3**	**238 241**
Parengarenga-Paratoetoe Miocene sequence	E	Best exposed sequence through most of the upper Parengarenga Group: Type Paratoetoe Formation. Diverse, warm water molluscan fauna (see Parengarenga record).	Dipping fossiliferous siltstones and fine sandstones of shelf origin.	North Parengarenga Harbour coastline from Porutu Stream to Paramatetaha Point.	**B**	**3**	**244 245**

Feature name	Category	Significance statement	Brief description	Location	Importance	Vulnerability	RPS Map No.
Parua Bay basal allochthon melange	E	One of the classic localities in Northland showing the base of the allochthon sitting on early Miocene rocks and greywacke	Melange overlying decollement cut into c.5m of Miocene Waitemata Group bioclastic limestone and flysch, upon greywacke basement.	At eastern end of Parua Bay extending along foreshore North of Nook Road	**B**	**3**	**19**
Pouerua (Pakaraka Mountain) scoria cone and lava fields	B	A distinctive volcanic centre with well preserved crater and volcanic form, clearly visible from SH1. Surrounded by the best preserved lava flow field in Northland.	A scoria cone, 750 m in diameter, which stands 135 m high, 275 m ASL and has a 10 m deep summit crater breached to the SW. Rafting of part of the cone has resulted in debris mounds below the SW side of the cone P05/948467. Stoney rises, 1-10 m high, are distributed over much of the field and W of the cone sub-circular mounds 0.5 to 1.5 m high and 2 m in diameter, called tumuli, are abundant. Explosion mounds to the E of the centre reach 18 m high. The longest flow, 4 km long flowed to the NE. The lava field covers an area of 13.5 square km. The largest pa and stone fields prehistoric site remaining in New Zealand.	2 km SW of Pakaraka, just past the intersection of SH1 to Kaikohe and SH10 to Kerikeri.	**B**	**2**	**135 136 145 146**
Pouto sand dunes	C	An excellent, unmodified example of the North Kaipara Head active dunelands system.	Extensive area of mobile, consolidated and old sand dunes at dynamic north head of Kaipara Harbour with associated wetlands and numerous small shallow dune lakes.	Sand dunes at southern end of North Kaipara Head.	**B**	**1**	**59 60 61**
Pukepoto basalt cone	B	A young centre with a breached multivented cone, which shows good volcanic landform.	A steep sided bush and farm covered cone. Remnants of the first eruption form a boulder covered hill on the W flank of the younger Pukepoto cone. Pukepoto cone, covers the vent of the original hill, is steep sided and breached by rafting of lava to the S. The Waitangi stream flanking the lava field to the S has exposed basalt at locality QO6/368145. The cone stands 60 m above the surrounding lava field Two periods of cone building resulted in three separate flows.	Adjacent to and N of Ngunguru road, 7.5 km ENE of Kamo township.	**C**	**1**	**30**

Feature name	Category	Significance statement	Brief description	Location	Importance	Vulnerability	RPS Map No.
Puketotora Peninsula Miocene sediments	E	Most complete sequence through Waitemata Group and lower Waitakere Group in Kaipara region.	Almost complete exposure from Timber Bay distal flysch through Matapoura Conglomerate, large slump horizon, and into Pakaurangi Foramation.	Section for 2 km on either side of Timber Bay, Puketotara Peninsula, Kaipara.	**B**	**3**	**66 67 72**
Puketutu (Puketona) volcanic cones	B	A group of cones, now largely quarried.	A group of cones and mounds (Ferrar, 1925) overlying a more massive flow. Now extensively quarried and the volcanic landforms are difficult to distinguish. There were two small cinder cones one on each side of the road as mapped. (Fig 8, Kear and Waterhouse, 1961).	10 km W of Paihia near intersection of SH10 with Blackbridge - Paihia Rd.	**C**	**2**	**154**

Feature name	Category	Significance statement	Brief description	Location	Importance	Vulnerability	RPS Map No.
Putahi rhyolite dome with associated halloysite	B	Easily accessable rhyolite dome in contact with (overlying) a Quaternary basalt flow. Distinct volcanic form. One of only two crystalline peralkaline rhyolite domes of Quaternary age in Northland. Excellent halloysite deposit.	Craterless dome (381 m ASL) rising 90 m above underlying basalt plateau. Several small (<6 m dia,) vents are noted (Letelier 1979). Covers an area of 4 square km. Halloysite derived from rhyolite and andesite by hydrothermal alteration. Clays are found around the Putahi Dome.	Putahi Trig, 1.6 km SE of Lake Omapere.	**B**	**4**	**144**
Rawhitiroa scoria cone	B	One of three scientifically interesting scoria cones.	A low multivented cone with crater lake forms a small grass-covered knoll less than 150 m high, on which a few houses stand, approximately 400 m E of Hurupaki scoria cone.	This centre lies between Three Mile Bush Road, Dip Road and Rotomate Road, approximately 3 km W of Kamo township.	**C**	**1**	**31**
Reserve Point nephenite flows and garnet andesite	E	Only known nephelinite flow in northern New Zealand, adjacent to garnet andesite intrusion rich in mantle xenoliths.	Up to 4m thick columnar jointed nephenelite flow lens with Runangan shallow water sediment sequence sitting uncomformably on greywacke. This sequence is intruded by garnet hornblende andesite rich in unusual mantle xenoliths.	Whangarei Harbour, coastal rocks and low cliffs on South side of Reserve Point, 1 Km east of tip	**B**	**2**	**19**
Strawberry Bay pillow lava	E	Best example of pillow lavas in Kaipara region.	Sequence of well developed pillow lava flows repeated over a syncline and anticline, overlying fossiliferous flysch. Intruded by a younger dike.	Exposed around the coast of Strawberry Bay and Pupuia Island on Hukatere Peninsula in low cliffs and intertidal rocks.	**B**	**2**	**71**
Tarahi scoria cone	B	A breached scoria cone thought to be the highest centre in the Kaikohe area.	The cone is breached to the NNW, stands approximately 85 m above the surrounding flows, 390 m ASL, and is thought to be highest centre in the Kaikohe area. The complex covers an area of 14.5 square km, extending W of Ohaeawai, to the N of Kaikohe.	1.5 km NW of Te Pua; 4-5 km E of Lake Omapere.	**C**	**2**	**145**

Feature name	Category	Significance statement	Brief description	Location	Importance	Vulnerability	RPS Map No.
Tauanui scoria cone and lava flows	B	A well preserved cone in Kaikohe area with a distinct volcanic land form.	A circular scoria cone, 150 m high, 355 m ASL, located at the SE end of the lava field with a small lake at the S edge. The conical summit crater is approximately 12 m deep. A subsidiary cone is located at P06/874346 forming a 0.7 km long, 75 m high scoria ridge with associated explosion craters and lava channels. A large flow extends from the main cone W for 19 km to Taheke. The flow averages 1.5 km in width and covers approximately 23 square km in area. Volcanic features of this centre and flow include: stoney rises PO6/889356, pressure ridges, tumuli and collapse features or depressions (Muhlheim 1973). A 0.7 km long collapsed lava tube is noted at PO5/882351.	7 km SE of Kaikohe in old E-W trending Punakitere river valley. Flow occupies the Taheke valley and can be traced 19 km W to Taheke.	**B**	**2**	**124 129**
Taurikura Bay natural jetty	E	Best natural jetty formed by a dike in New Zealand.	Two metre wide andesite dike intruding Northland Allochthon and forming a 50m long jetty into bay. Fifty cm wide zone of baked muddy limestone on either side.	Foreshore of Taurikura Bay, adjacent to Ody Road junction.	**B**	**1**	**14**
Te Ahuahu volcanic cone	B	A well preserved volcanic cone. Basaltic bombs can be found in a small quarry at this site.	A single circular cone, 500 m in diameter, with an E-W trending flow covering a total area of 1.5 square km. The cone stands 100 m above the surrounding plateau, 380 m ASL, but the small crater is shallow, 10 m deep, and is 'breached' to W by erosion. A very well preserved volcanic landform. There is a small farm quarry near summit (Fig 6, Kear and Waterhouse 1961).	1.5 km E of Lake Omapere.	**C**	**2**	**145**
Te Kopua Point, Hukatere Miocene volcaniclastics and sedimentary structures	E	Well exposed Puriri Formation within the top of the Northland Allochthon. Volcaniclastic sequence with good sedimentary structures, in deep marine environment.	Synclinally folded sequence of tuffaceous foraminiferal micrite and intercalated volcaniclastic mass flow deposits (volcaniclastic sandstone, liquefaction structures, ripples, etc), unconformably overlying Northland Allochthon.	Te Kopua Point and coast south, Kaipara.	**B**	**3**	**72**
Te Paki sand dunes	C	Best preserved area of active dunes on Aupouri Peninsula.		Approximately 2000 hectares of dunes at the northern end of Ninety Mile Beach.	**B**	**1**	**236 239 240**

Feature name	Category	Significance statement	Brief description	Location	Importance	Vulnerability	RPS Map No.
Te Puke scoria cones	B	Three well preserved scoria cones and craters in a non-residential area of the Bay of Islands.	A group of cones is present (Fig.5 Kear and Waterhouse 1961). The main cone is 140 m ASL and stands 90 m above the surrounding plateau. Two flows were emitted from this centre, a 5 km long flow extended N down an existing valley, expanding laterally towards the Kerikeri inlet, and a 4 km long valley filling flow extending E forming the Brampton Reef. K/A dating of material from this locality gives an age of c. 17,000 years BP.	5 km NW of Waitangi Treaty House.	**C**	**2**	**164 and 165**
Titoki Natural Bridge	D	Best natural bridge formed in lava in New Zealand.	Stream flows through tunnel in basalt lava flow with natural bridge above. Tunnel is about 15m wide, 30m long and 10m high. Valley in regenerating bush	On Waitomotomo Stream, 500m west of Pipiwai - Titoki Road / McCardle Road, 2km North of Tittoki.	**B**	**2**	**28**
Tokatoka andesite plug	D	A prominant conical peak, 180 m high, formed by resistant volcanic plug and erosion of softer surrounding rocks. Largest and best exposed of numerous Miocene plugs in the Tokatoka area	Andesite plug.	Forms Tokatoka peak and exposed in the ridge extending west to Tokatoka Hotel and along esat bank of Wairoa River, 15km south of Dargaville.	**B**	**2**	**89**
Waikuku tombolo dunes and dune-dammed swamp	C	Unusual tombolo with a set of active sand dunes built up on west and east sides trapping swampland between. Largely unmodified by human actions.	Includes extensive dune areas with subfossil flax snail and bone deposits.	North Cape, all dune and swamp area between Tom Bowling bay and Waikuku Beach.	**C**	**2**	**249**
Waimimiti scoria mounds	B	One of two localities where abundant large, 1-10 cm, gabbroic inclusions can be found.	A segmented scoria ring, surrounding a cluster of approximately fifteen small scoria mounds, breached to the SE and NW, overlying Tarahi lavas in places. Inclusions may be found at a locality to the E of the centre.	Located between Telva & Tarahi, 4 km ESE of Lake Omapere. Covers an area of c. 1km x 1km on the south side of Remuera Settlement Rd.	**C**	**2**	**145**
Waiwhatawhata Coast sediments and basalt flows, Hokianga	E	Excellent exposures of marine deltaic conglomerate and terrestrial volcaniclastic sequence. Best Miocene sequence in Hokianga region. Well exposed section through Waipoua Basalt.	Lowermost distal flows of Waipoua Basalt interbedded with marine Omapere Conglomerate and overlain by freshwater deposits of Pukorukoru Formation. Marine to non-marine regressive sequence. Shows all typical features of flows: chilled margins, baked contacts, columnar jointing.	South of Hokianga Harbour mouth, along 1.5 km of coastline, 3 km north of Waimamaku River mouth.	**B**	**3**	**114 115**

Feature name	Category	Significance statement	Brief description	Location	Importance	Vulnerability	RPS Map No.
Waro karst, Hikurangi	D	Excellent example of karst pinnacles close to highway.	In Oligocene limestone.	North side of Hikurangi.	**C**	**2**	**42**

Feature name	Category	Significance statement	Brief description	Location	Importance	Vulnerability	RPS Map No.
Whakatetereki a Stream Eocene sediments	E	Type section of Mangapa Mudstone, and possibly the thickest in situ Eocene in Northland.	Nearly complete exposure of ca 300 m of in situ greensand and calcareous siltstone resting on greywacke and beneath the allochthon.	From just above road bridge, east of Mangapa upstream to concrete ford atop high falls on forestry road.	**B**	**3**	**173**
Whangaroa North Head ring plain deposits	E	Best exposures of Miocene ring plain deposits in northern New Zealand, including several paleogullies and their walls.	Laharic breccias, reworked breccias, minor fluvial sediments and a flow confined in paleogullies eroded in breccias.	In cliffs from Whangaroa Harbour entrance for 1.5 km to the west.	**B**	**3**	**200 209**
Whatitiri shield volcano	A	Only example of a large (4.4 cubic km), almost concentric shield volcano with gentle slopes in Northland. Best example in New Zealand of a small shield volcano.	A large concentric shield volcano with very gentle slopes and a diameter of 5-6 km; not breached. Reaches a maximum height of 351 m (ASL) and stands 154 m above the surrounding landscape. Completely covered by farming and forested areas. Several houses and farm roads, but no quarries. The Titoki flows originate from this centre. They follow a valley to the N and then to the SW.	3.5 km WNW of Maungatapere Mountain, approximately 5 km WSW of Maungatapere township.	**B**	**2**	**22 23 27 28**