PAKIHI TRADING COMPANY

WHAKATOHEA MARINE FARM

Assessment of Environmental Effects

Sptember 2017

Table of Contents

LIST OF FIGURES

APPENDICES

1. INTRODUCTION

1.1 BACKGROUND

This Assessment of Environmental Effects ("**AEE**") has been prepared in support of resource consent applications under the Resource Management Act 1991 ("**RMA**") by Pakihi Trading Company ("**PTC**") to enable the construction, operation and maintenance of a 4,043 ha marine farm ("**proposed marine farm**"). The proposed marine farm contains a total farmed area of 2,471 ha. The proposed marine farm site ("**the site**") will be located approximately 4.8 km offshore of Ohiwa Harbour in the Bay of Plenty (Figure 1).

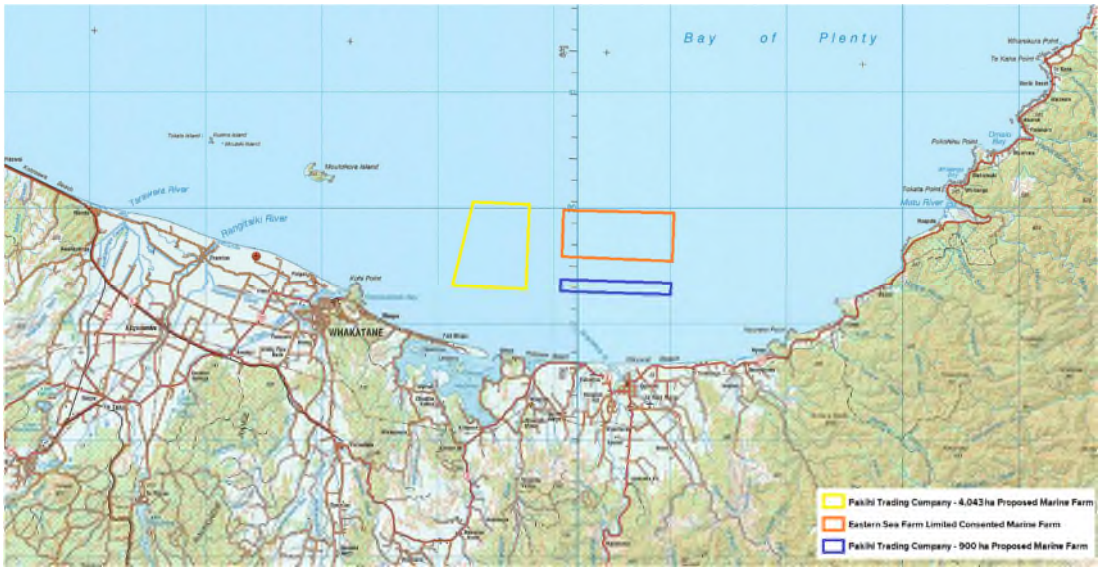

Figure 1: Proposed Marine Farm Site.

1.2 THE APPLICANT – PAKIHI TRADING COMPANY

The Pakihi Trading Company was established in December 2016, and is solely owned by the Whakatohea Māori Trust Board ("**WTMB**").

WTMB was established in 1952 and is constituted under the Maori Trust Board's Act 1955 ("**the Act**"). The purpose of the WTMB is to administer its assets in accordance with the Act for the benefit of its members. The WTMB is made up of 12 members elected from the six hapū of Whakatohea.

2. DESCRIPTION OF THE PROPOSAL

2.1 INTRODUCTION

This section of the AEE contains a description of the activities associated with the construction, operation and maintenance of the proposed marine farm. It is set out in the following sections:

Section 2.2 Describes the location of the proposed marine farm.

Section 2.3 Describes the site selection process for the proposed marine farm.

Section 2.4 Describes the design of the proposed marine farm.

Section 2.5 Describes the activities to be undertaken at the proposed marine farm.

2.2 LOCATION OF THE PROPOSED MARINE FARM

As noted in section 1 and Figure 1 of this AEE, the site of the proposed marine farm is located approximately 4.8 km off the coastline near Ohiwa Harbour.

The total extent of the proposed marine farm is 4,043 ha and is bound by the following map references:

- 5793116.80 N 1967462.36 E
- 5793400.75 N 1961222.80 E
- 5800624.73 N 1962956.86 E
- 5800407.95 N 1967788.11 E

The farmed area will comprise 2,471 ha. The configuration of the proposed marine farm is discussed further in section 2.4 of this AEE.

Water depths across the site range from approximately 45 – 75 m.

2.3 SITE SELECTION

2.3.1 Off-Shore Marine Farms

Currently, market demand for mussels and shellfish is strong and demand outstrips supply. If the industry is to continue to develop, it needs further water space together with a reliable spat supply.

The key to satisfying the current and future demand and maintaining New Zealand's place in the global market is the expansion of the Greenshell™ mussel industry in appropriate locations, as well as the sensible and sustainable farm management of current operations. Offshore marine farms are essential in this regard.

Coastal marine space is the primary resource required in aquaculture. Space in the Marlborough Sounds and other desirable inshore locations is now extremely restricted and availability is limited, whereas the availability of water space in the open sea, well away from land is almost unlimited.

A combination of both offshore and inshore farms is important to the viability of the industry in New Zealand and both have different benefits and effects.

An offshore marine farm is disadvantaged relative to an inshore marine farm in that during periods of rough weather servicing and harvesting will be difficult and on occasion impossible. Also, although the offshore waters are productive, the structural requirements of farm construction are such that offshore farms will produce approximately 1/10th the biomass per unit area, compared to more sheltered coastal waters.

However, the use of open ocean space has the advantages of minimising potential effects on the Bay of Plenty's coastal communities and the environment. The proposed marine farm site is far enough away from shore to avoid conflict with recreational users and visual intrusion – noting the farm will be virtually impossible to see with the naked eye from any point on the shore.

Proposed marine farm operations will also be less susceptible to the sanitation constraints (caused by contaminants in runoff from the adjacent land) that can affect near-shore farms and which close processing factories for periods. The supply of high quality product at times when other product is unavailable is extremely attractive for the processing industry. This would enable a higher degree of security for the industry, and accordingly for the employees of the industry.

2.3.2 Selection of the Site

The proposed marine farm site is considered appropriate for the following reasons:

- It will significantly contribute to the Bay of Connections goal of an integrated and sustainable aquaculture industry in the Bay of Plenty with exports sales totalling $250 million by 2025; and
- The proposed marine farm site is not located in an identified area of cultural significance, significant seabird colony buffer, shipping lane buffer, above a rocky reef, within a popular navigation access area, outstanding natural feature landscape, or marine reserve, as identified in the Coastal Use and Value Maps 2006.

2.4 PROPOSED MARINE FARM DESIGN DETAILS

2.4.1 Introduction

The following sections outline the layout and design of the proposed marine farm. While the scale and density of the proposed marine farm will remain within the envelope described in this section of the AEE, it is anticipated that matters of design detail relating to the floatation systems, anchoring, buoyage and lighting may be further refined and change over time.

2.4.2 Scale and Farm Layout

The proposed marine farm will comprise a total of 15 blocks, five of approximately 184 ha, five of approximately 186 ha, and five ranging from 60.5 ha to 188.8 ha. These will be located over the total area of 4,043 ha and the 15 blocks collectively comprise the 2,471 ha of farmed area.

The blocks will have 450 m of vacant space between them in a north-south orientation, and 493 m in a west-east direction, with 3,000 m of separation distance between the proposed marine farm, and the existing Eastern Sea Farms Limited marine farm and PTC's 900 ha proposed marine farm (Figure 1).

A layout plan of the proposed marine farm and existing marine farm, identifying the location and size of each block, is attached as **Appendix A** to this AEE.

The lines in each block will be spaced approximately 75 m apart, which is equivalent to 0.17 lines / ha of the total area, or 0.25 lines / ha of the farmed area. Backbone line length will be approximately 240 m.

At the ends of each line there will be a screw anchor securing the line to the seabed. Each line will start with approximately 10 seeding floats, with additional floats added up to 35 – 40 floats per line at the time of harvest.

The backbone lines of the proposed marine farm will be located either at the surface, or if sea conditions require, up to 5 me below the surface. The backbone lines are discussed further in section 2.4.4 of this AEE.

2.4.3 Staging

PTC are intending to stage the proposed marine farm as follows:

Stage 1: Development of 374 lines.

Stage 2: Development of a further 309 lines, increasing the total to 683 lines.

Plans for this staging are attached as **Appendix B**.

Monitoring of the effects of Stage 1 will commence once Stage 1 is completed (installation of 374 lines) and Stage 2 will not be able to proceed until the necessary monitoring is completed and it is demonstrated that the relevant environmental triggers have not been breached.

2.4.4 Floatation System

Given that the site of the proposed marine farm site is offshore, the backbones require submerging up to 5 m below the surface.

Single or double backbone longlines may be used at the proposed marine farm. However, future technology and development of other farming systems may prove other methods to be a viable alternative.

The backbones will be attached to floats and anchored to the seafloor by screw or concrete block anchors. The shellfish will be grown on dropper ropes suspended from the backbones. The dropper ropes will occupy approximately 10 m of depth and will be spaced approximately 0.8 m apart along the backbone.

Indicative line designs are shown in Figure 2 below.

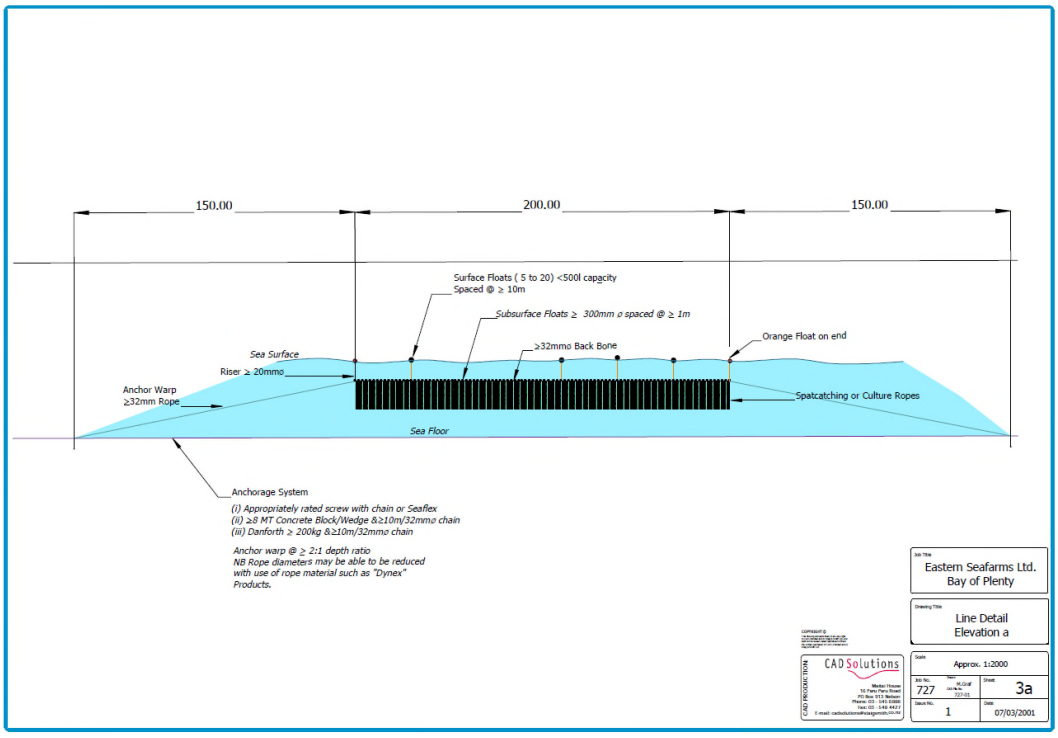

Figure 2: Elevation View of a Longline with a Submerged Backbone.

2.4.5 Anchoring

Screw anchors are likely to be suitable for use in the seabed below the site. These anchors are particularly suitable to marine farming as they resist vertical pull out loads and have been adopted in other marine farms around New Zealand.

Screw anchors are lightweight with high holding power. The anchors typically consist of a 6 m long shaft welded to a circular steel auger plate at the bottom. The shaft is either a 50 mm solid bar or a 76 mm diameter tube. The anchor is screwed into the seafloor by a hydraulically powered motor. The installation procedure is fast, requires only a light handling weight crane, and can be installed without the use of divers.

Appropriately sized and designed concrete anchors are also suitable and may be used on the proposed marine farm.

Any equipment failures at the proposed marine farm will be evident from the sea surface. These can be easily monitored and identified by the relative position of the surface floats, which will provide an early indication of any potential problems.

2.4.6 Buoyage and Lighting

The proposed marine farm will at all times comply with the lighting and marking requirements of Maritime New Zealand's "*Guidelines for Aquaculture Management Areas and Marine Farms"*.[1]

The buoyage and lighting configuration proposed for the proposed marine farm is shown in **Appendix C**, and will comprise 115 lights around the 15 blocks, with 6 – 8 lights per block.

2.5 PROPOSED MARINE FARM OPERATIONS

Apart from the operations involved in constructing the proposed marine farm, the attachment of the spat, removal and re-attachment of the larger seed mussels etc, and harvesting are the major activities to be carried out at the farm. The farming operations are generally sporadic, although there could be up to six vessels working at the farm at key periods (i.e. harvesting). The vessels that will service the marine farm will be standard mussels harvesting vessels, which will range in size from 20 to 40 m.

The proposed marine farm will be serviced by existing facilities in the Bay of Plenty.

An Environmental Code of Practice has been developed by the New Zealand Mussel Industry Council in consultation with regulatory authorities and scientists.[2] It addresses all activities associated with the mussel industry, from the collection of spat, to the harvesting of mussels and the disposal of waste material. PTC proposes to undertake its marine farming activities in accordance with the code of practice in order to minimise any environmental effects of its operations at the proposed marine farm.

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[1] Maritime New Zealand (2004). *Guidelines for Providing Aids to Navigation in New Zealand*. https://www.maritimenz.govt.nz/commercial/ports-and-harbours/documents/Aids-to-navigation-guidelines.pdf

[2] Aquaculture New Zealand Greenshell™ Mussel Industry Environmental Code of Practice New Zealand Mussel Industry Council Limited, 1999 (Revised, June 2007 by Aquaculture New Zealand).

3. RESOURCE CONSENT REQUIREMENTS

3.1 INTRODUCTION

The relevant statutory planning document for the assessment of the resource consents required for the proposed marine farm is the Proposed Regional Coastal Environment Plan ("**PRCEP**"). The rules in the PRCEP have legal effect as of 12 May 2017, provided they are beyond appeal.

3.2 ZONING AND OVERLAYS

The proposed marine farm site is located in the Coastal Marine Area ("**CMA"**), and is not subject to a specific zoning or any overlays under the PRCEP or the Bay of Plenty Regional Policy Statement ("**RPS**"). The nearest overlays are an Indigenous Biological Diversity Area A located approximately 10 km to the east, which is located from Harere Point to Ohae Point, and extends in a semi-circle between these two locations up to approximately 10 km offshore, and Outstanding Natural Features and Landscapes 45 – Moutohorā (Whale Island) and Rūrima Islets, located approximately 9.5 km west of the proposed marine farm.

3.3 ACTIVITY STATUS

3.3.1 Overview

The proposed marine farm will involve the following activities under section 12 of the RMA:

- The erection of structures that are fixed to the seabed;
- Disturbance of the seabed;
- Occupation of the CMA;
- Deposition of material on the seabed; and
- All ancillary activities.

In addition, the proposed marine farm will involve the discharge of contaminants associated with the establishment, operation and maintenance activities (i.e. biodegradable and organic matter) in accordance with section 15 of the RMA.

3.3.2 Proposed Regional Coastal Environment Plan

Part Four of the PRCEP sets out an activity based polices and rules framework. The proposed marine farm requires resource consent under Rule AQ 4 as new commercial aquaculture (outside high value areas and permanently navigable harbour waters) as a **discretionary activity**.

Rule AQ 4 includes the following activities:

- Erection, reconstruction, placement, alteration, or extension of a structure that is fixed in, on, under or over the foreshore or seabed;
- Disturbance of the foreshore or seabed associated with the structure;

- Occupation of space in the common marine and coastal area;
- Discharge of contaminants to the coastal marine area; and
- Deposition of material within the coastal marine area.

Therefore, all those activities the proposed marine farm are provided for under Rule AQ 4.

3.4 CONSENT LAPSE AND DURATION

PTC seeks a consent lapsing date ten years from the granting of resource consent, and a term of 35 years (in accordance with section 123A of the RMA).

A 10 year lapse period is sought in order to provide sufficient flexibility to time the construction and commissioning of the proposed marine farm with a range of variable conditions (e.g. the timing of the construction of other projects such as the Opotiki Harbour Transformation Project).

A consent term of 35 years is considered appropriate given that PTC is proposing to stage development of the proposed marine farm and undertake robust monitoring to ensure that the actual effects on the coastal environment align with those predicted. A longer consent term will also provide PTC with investment certainty such that it can confidently commit to the capital expenditure associated with the development of the proposed marine farm.

4. ENVIRONMENTAL SETTING

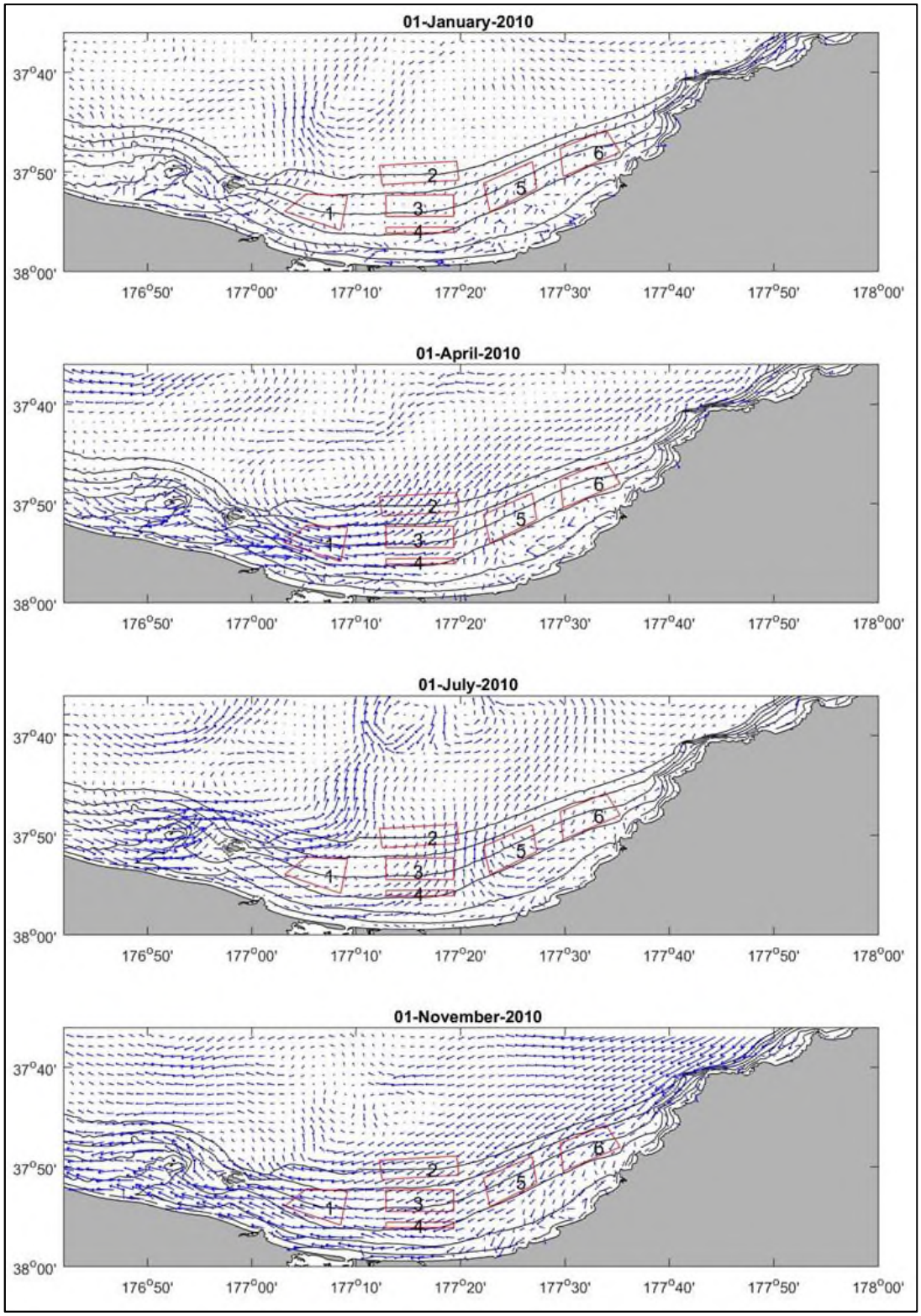
4.1 THE PHYSICAL ENVIRONMENT

The physical environment of the site is described in a number of baseline reports, including the Cawthron Institute report addressing potential aquaculture in the Eastern Bay of Plenty. The physical environment plays a critical role in determining the capacity of a region to support aquaculture and can have important operational implications. Physical factors that may affect the feasibility of aquaculture development include currents, temperature and waves.

4.1.1 Water Currents

The main currents within the Bay of Plenty are considered to be an extension of the East Auckland Current, with wind and other circulation drivers (e.g. tides) dominating flows in the Bay of Plenty. A predominant westerly flow is present through the proposed marine farm site. Maximum tidal flows have been found to be up to 10 cm/s, and total current flow has exceeded 25 cm/s. These currents are of a similar magnitude to those observed at inshore marine farms sites around New Zealand.

Modelling undertaken by the Cawthron Institute illustrates the variability and complexity of horizontal flows in the vicinity of the proposed marine farm (Figure 3).



Note: Boxes 1 – 6 denote potential marine farm locations provided to the Cawthron Institute by BOPRC.

Figure 3: Modelled currents in the Bay of Plenty.

Mean current speeds would be considered 'weak' or 'very weak' according to the shellfish aquaculture scale, as a result any aquaculture development needs to consider a low intensity

approach to minimise benthic effects. Low-intensity is typically associated with line spacings of 50 m.

4.1.2 Waves

Wave-generated currents can play a critical role in the dispersal and resuspension of aquaculture discharges however, wave events may also affect site access, and therefore, viability of an offshore aquaculture venture. To assess the long-term wave climate, a 30-year wave hindcast was analysed (Figure 4). This shows that significant wave heights (mean height of highest third of waves) are less than 3 m 90% of the time, with waves travelling to the south-west.

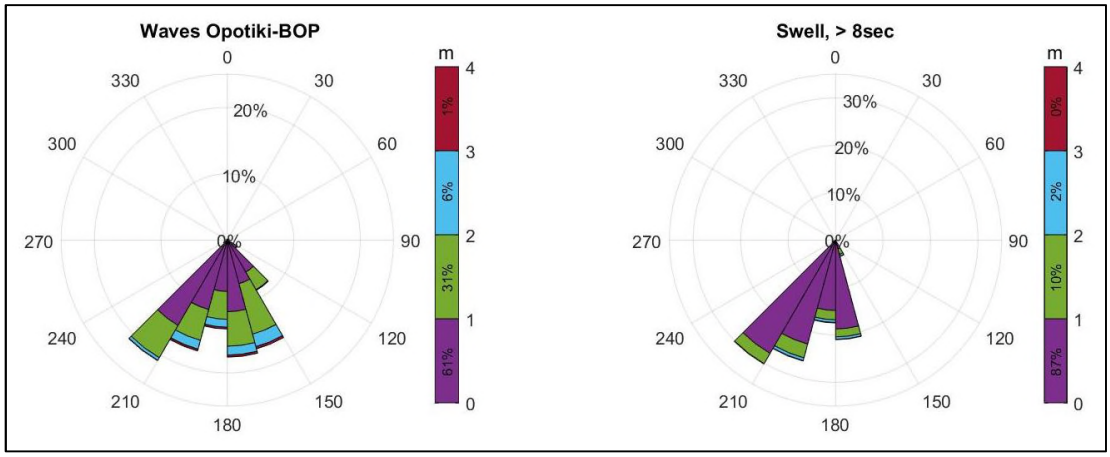


Figure 4: Wave rose provided by MetOcean for the centre of the Eastern Sea Farms Limited marine farm.

In terms of dispersing wastes from aquaculture, the period (and wavelength) of the waves is critical, with long period (and wavelength) waves able to have a greater effect on seabed currents. For instance, an 8 sec period wave of 2 m in height can induce a 6 cm/s current at 50 m depth, whereas a 12 second period wave can induce currents up to 23 cm/s at the same depth. Strong episodic currents (e.g. >10 cm/s) near the seabed have the ability to resuspend waste material and distribute it to reduce the impact of benthic organic enrichment under the farms.

4.1.3 Temperature

A number of temperature loggers were distributed through the water column at the Eastern Sea Farms Limited marine farm site, and temperatures ranged from 14 – 22 °C in surface water, while the thermocline depth (the depth where any observed strong temperature change occurs) was around 10 to 25 m.

4.1.4 Summary of the Physical Environment

Overall, the physical characteristics of the area are such it is likely to be suitable for a range of aquaculture species. The area would be considered 'low-flow' when compared to farming areas in the Marlborough Sounds. The wave climate is such that vessels will be able to operate in the area 80–94% of the time provided the vessels and structures are able to work in high

wave and windy conditions. Wave-driven currents may also provide some mitigation for benthic enrichment effects.

4.2 CARRYING CAPACITY

The carrying capacity of the Bay of Plenty is described in the Cawthron report addressing potential aquaculture in the Eastern Bay of Plenty. 'Carrying capacity' is defined as a critical point at which the effects of aquaculture could have important effects on social, economic, ecological, cultural or aquaculture production indicators.

Shellfish production carrying capacity is defined as the point at which increasing the amount of shellfish aquaculture could reduce the total aquaculture production of a region; whereas ecological carrying capacity is a level of culture at which other aspects of the ecosystem could be affected. Ecologically carrying capacity is typically much lower than the production carrying capacity, although it can be difficult to determine what constitutes a significant ecological effect.

Concentration of chlorophyll-*a* within the vicinity of the proposed marine farm have been modelled (Figure 5) to be in the range of 1 – 2 mg/m^3. This is considered to provide "moderate" growing conditions for shellfish such as Greenshell mussels.

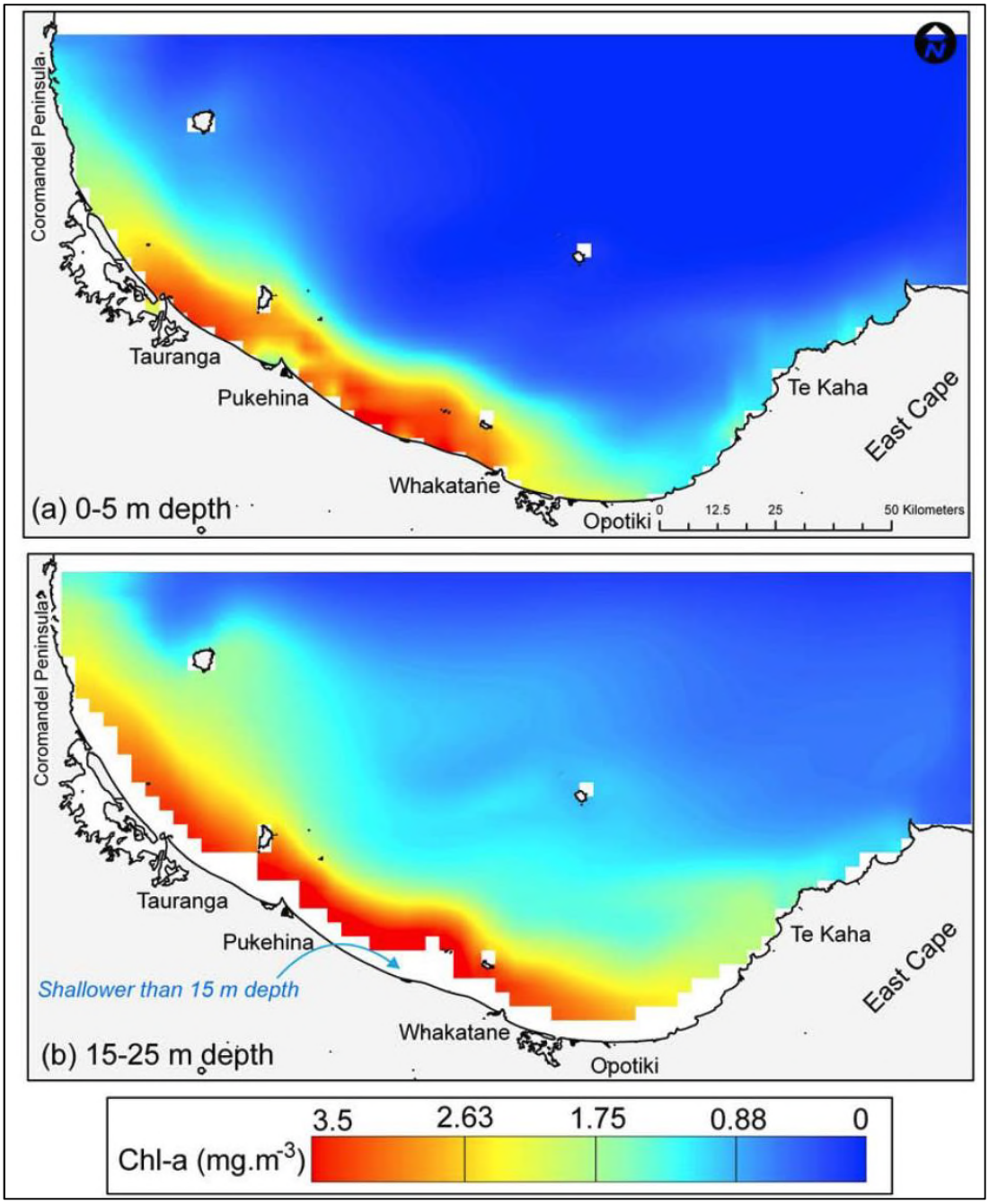


Figure 5: **Modelled mean annual chlorophyll-a concentrations at 0-5 m (upper) and 15-25 m depths.**

4.3 MARINE MAMMALS

4.3.1 Overview

An assessment of the marine mammal that frequent the Bay of Plenty was undertaken in respect of the Eastern Sea Farms Limited marine farm, located approximately 3 km east of the proposed marine farm. This assessment is considered relevant to the proposed marine farm due to its proximity to those farms, and position within the continental shelf.

Twenty-two species of marine mammal are known to frequent the Bay of Plenty, including some listed as threatened or at risk in the New Zealand Threat Classification System – including killer whale, Bryde's whale, and southern right whale. They can be sorted into four subgroups as follows:

- Seals;
- Baleen whales;
- Toothed whales; and
- Dolphins.

4.3.2 Seals

4.3.2.1 New Zealand Fur Seals

New Zealand fur seals are found throughout New Zealand's coastal waters. The current population is approximately 200,000, having doubled since 2002, and is still undergoing rapid expansion following being on the brink of extinction in the 1700s and 1800s.

Given the rapid population increase, as rookeries and haul-out sites for fur seals reach their carrying capacity, animals move away and establish new breeding rookeries and haul-outs on suitable coastal and offshore sites.

In the Bay of Plenty, fur seals are seen from March to October with maximum numbers present in September. Isolated individual may be seen throughout the year though. They occupy traditional sites, most popular of which is White Island. The total number present in the Bay of Plenty is unknown, but anecdotal evidence suggests a steady increase in numbers.

4.3.2.2 Leopard Seals

Leopard seals are uncommon, but not rare, visitors to New Zealand, having visited North and South Island beaches. Leopard seal occurrences appear cyclic, with maximum numbers appearing in winter months every four years. Leopard seals are predatory carnivores and are known to take small dolphins, seals and penguins as prey.

4.3.2.3 Southern Elephant Seals

Southern elephant seals are the largest of all seals, reaching a maximum length of 4.9 m and a weight of approximately four tonnes. Breeding in the sub-Antarctic islands, they roam widely, including into New Zealand waters during the winter months. Southern elephant seals are generally solitary while at sea and are usually reported hauled out as single animals.

4.3.3 Baleen Whales

4.3.3.1 Overview

Blue, fin, sei, bryde's, ninke, humpback and right whales have all been reported from the Bay of Plenty. All these species, with the exception of bryde's whales, make long seasonal migrations from sub-tropical and temperate waters in the Spring south to the Antarctic

convergence where they feed during the astral summer. With the onset of Autumn they return north to breed in low latitudes. Humpbacks show the clearest evidence of near-coastal migrations, travelling southward, across the Bay of Plenty, in Spring and northward in Autumn. These movements are verified by observations by local whale tourism operators of whales travelling southeast in November-December and northwest in June-July.

Although some species, for example right whales, may venture within five nautical miles of the shore, most are encounters occur between the 200 and 500 m isobaths (continental shelf edge), 10 – 15 nm offshore.

Since this assessment was undertaken, the New Zealand Threat Classification System List[3] for marine mammals has been updated. Of note, the southern right whale, which is commonly found within the New Zealand's coastal waters and the Bay of Plenty, is identified as 'National Vulnerable' with between 250 – 1000 mature individuals.

4.3.3.2 Bryde's Whale

Bryde's whale are found in tropical and warm temperature, often near-shore in areas of high productivity, with a southern limit restricted by the 16 – 17°C isotherm at a maximum latitude of 42° south. They are particularly common in the vicinity of White Island in the Bay of Plenty, and around Little Barrier and Great Barrier islands in the Hauraki Gulf. They are rarely seen south of East Cape.

4.3.4 Toothed Whales

4.3.4.1 Sperm Whales

Sperm whales are the most populous and frequently observed large whales in the New Zealand region. They are a deep water species and in general follow the 200 m contour when passing along the coastline. They are not frequently observed within the Bay of Plenty.

4.3.4.2 Bottlenose and Ziphiid (Beaked) Whales

Bottlenose and Ziphiid whales are oceanic deep diving species that are rarely encountered at sea, but have been observed in the Bay of Plenty. Most encounters are single strandings.

4.3.4.3 Killer Whales

Killer whales are among the most frequently reported whales seen in the Bay of Plenty. They are most often observed between shore and the continental shelf edge 10 – 15 nautical miles from shore. This area in very rich in transient fish stock that pass through the Bay of Plenty seasonally.

Killer whales are naturally inquisitive, investigating closed bays and waterways, having made brief excursions into ports.

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[3] Department of Conservation Report *'Conservation Status of New Zealand marine mammals, 2013'*

4.3.4.4 Pilot Whales

Pilot whales are an oceanic deep water species that are very social, often seen travelling in groups of 10 – 30, and occasionally pods of 300 – 400. Close to land they become easily agitated and as a species are the most frequent mass stranders in New Zealand waters. They have been recorded in the Bay of Plenty from December to September.

4.3.4.5 False Killer Whales

False Killer whales, like Pilot whales, are social animals often encountered in pods of 20 – 30, and sometimes 100 – 300 when in transit. They frequently associate with Bottlenose dolphins, forming mixed pods. They are deep water oceanic shelf edge feeders, but have been observed in the Bay of Plenty off Mayor and White Islands, usually in September. Close to shore, also like Pilot whales, they become confused, resulting in mass strandings.

4.3.5 Dolphins

4.3.5.1 Hector's Dolphins

Hector's dolphins are indigenous to New Zealand and are also endangered. From sightings recorded around the North Island it is feasible that they frequent the Bay of Plenty, albeit sporadically and in small numbers.

4.3.5.2 Common Dolphin

Common dolphins frequent coastal waters all around New Zealand, and is one of the most populous species in New Zealand waters. They are playful when at sea, often approach to ride bow and wake waves. Common dolphins are likely resident in the Bay of Plenty and constitute 80% of sighting of whales and dolphins in the Bay of Plenty. Their main feeding grounds lie predominantly 1 – 2 nautical miles either side of the 100 m isobath. During summer months, large nursery pods ranging in size from 20 – 300 animals congregate in waters less than 70 m.

4.3.6 Bottlenose Dolphins

Bottlenose dolphins are often encountered close to shore in groups of 10 – 30, and will forage along the coastline in search of fish and other prey. Approximately 5 – 6% of sightings of marine mammals in the Bay of Plenty have been of Bottlenose dolphins.

4.4 BENTHIC ENVIRONMENT

Baseline surveys of the Eastern Sea Farms Limited marine farm have been undertaken prior to the development of a 3,800 ha marine farm approximately 3 km east of the proposed marine farm site.

Sediments in this location are muddy with low – medium organic content, supporting a relatively homogenous and diverse population of epifauna and infauna taxa. There were frequent signs of bioturbation in the form of burrow holes, small mounds and trail marks.

Epifauna observed was moderate to sparse. Gastropod molluscs were the dominant epifauna taxa, and less common heart urchins and various sponges were also observed.

A total of 101 taxa were found across 30 samples, across the area. Typical of a soft sediment marine benthic environment, polychaetes were the dominant taxa group (32). There were 27 crustacean, 15 bivalve, and eight gastropod taxa. The number of taxa per core ranged from 19 – 36, and the total abundance per core ranged from 59 – 194 individuals, showing some variability between cores. The AZTI marine biotic index ("**AMBI**") and benthic quality index ("**BQI**") scores were typical of an undisturbed benthic community, classifying the site as "normal" – "slightly disturbed", where the proportions of more tolerant taxa were balanced by the presence taxa considered to be more sensitive to disturbance.

Sediment cores taken from across the site were of a relatively uniform colour throughout the depth of the profile, and there was no distinct redox potential discontinuity layer observed. There was also no evidence of sediment anoxia, indicating well oxygenated conditions. However, slight black mottling was observed and there was a mild sulphide odour associated.

Phosphorus and nitrogen concentrations ranged from 510 mg/kg – 610 mg/kg and 800 mg/kg – 1,200 mg/kg across the entire site, respectively. Redox potential within the samples ranged from 75 relMv – 183 relMv, and there were no apparent spatial differences across the site.

4.5 VISUAL AND NATURAL CHARACTER, AND LANDSCAPE AMENITY

Rachel de Lambert presented evidence regarding the visual and natural character, and landscape amenity of the Bay of Plenty in the vicinity of the proposed marine farm at the Eastern Sea Farms Limited marine farm resource consent hearing. This evidence is summarised with respect to the proposed marine farm.

Due to the distance out to sea of the proposed marine farm, the Bay of Plenty coastline forms a long broad linear landward backdrop to southerly and southeast/south westerly views. The relationship with the land is not intimate or enclosing but rather distant with considerable depth of field. Motuhora (Whale Island) away to the west and Whakaari (White Island) further distant to the north also feature in this seascape experience but are also distant, seen across a broad open expanse of water. The primary visual aspect when located at this distance from land is the open expanse of the sea with the long sweeping landform of the coast and the horizon giving a strong linear character to the landscape/seascape.

Landscape assessments undertaken for the Bay of Plenty Regional Council and Whakatane and Opotiki District Councils (all undertaken by Boffa Miskell) have addressed the coastal environment of the landward coastal backdrop describing the characteristics of the landscape resource and identifying outstanding natural features and landscapes. These include:

- Kohi Point and the Otawairere Bay catchment;
- Ohiwa Harbour;
- Waiotahi Spit and River Mouth;
- Motu River Mouth; and

- Whale and White Islands.

The coastal waters of the Bay themselves were not identified as an outstanding or significant landscape, although this was not the focus of these more land and land/water interface based studies.

In undertaking an evaluation of the coastal waters of the Bay of Plenty, Ms de Lambert did not consider they constitute an outstanding natural landscape.

It is the case that the area proposed to be occupied by the marine farm is a natural expanse of seascape within a significantly larger broad expanse of the Bay of Plenty seascape. Present modification of this seascape is limited to short duration passage of boats although the majority of boat traffic traverses the area closer in to the shore.

4.6 FISHERIES

This section of the AEE describes the major fisheries resources in the region of the proposed marine farm, this has been limited to targeted fisheries resources. It draws from a November 2004 report by the Cawthron Institute, which provided information require for an evaluation of whether the Eastern Sea Farms Limited marine farm would have an undue adverse effect on fishing or on the sustainability of fisheries resources.

It has been reported that pelagic schooling species such as skipjack tuna, trevally, blue mackerel, jack mackerel and kahawai are abundant and widespread in the Bay of Plenty.

Information obtained from the Ministry of Fisheries ("**MFish**") catch database indicates that the most dominant species caught (>100 t) in the Bay of Plenty are: jack mackerel, English mackerel, skipjack tuna, kahawai, trevally, snapper, bluenose and terakihi. Jack mackerel are by far the most abundant. Barracouta, hoki, ling, scampi, cardinal fish, orange roughy and ruby fish are also taken, but mostly in deeper waters than the proposed marine farm site.

Gurnard and snapper are also widely caught along the continental shelf in the Bay of Plenty, and there are no regions where stocks appear to be particularly abundant or particularly sparse. Regarding snapper, modelling suggests that the abundance of 8+ year old snapper is relatively homogenous across the Bay of Plenty, and that the habitat preference for juvenile and adult snapper will also be relatively homogenous. Results from further studies suggest that the area around the head of the Bay of Plenty may be favoured by 1+ year old snapper. The area around the proposed marine farm has been identified as potentially having value as a nursery ground for both snapper and trevally.

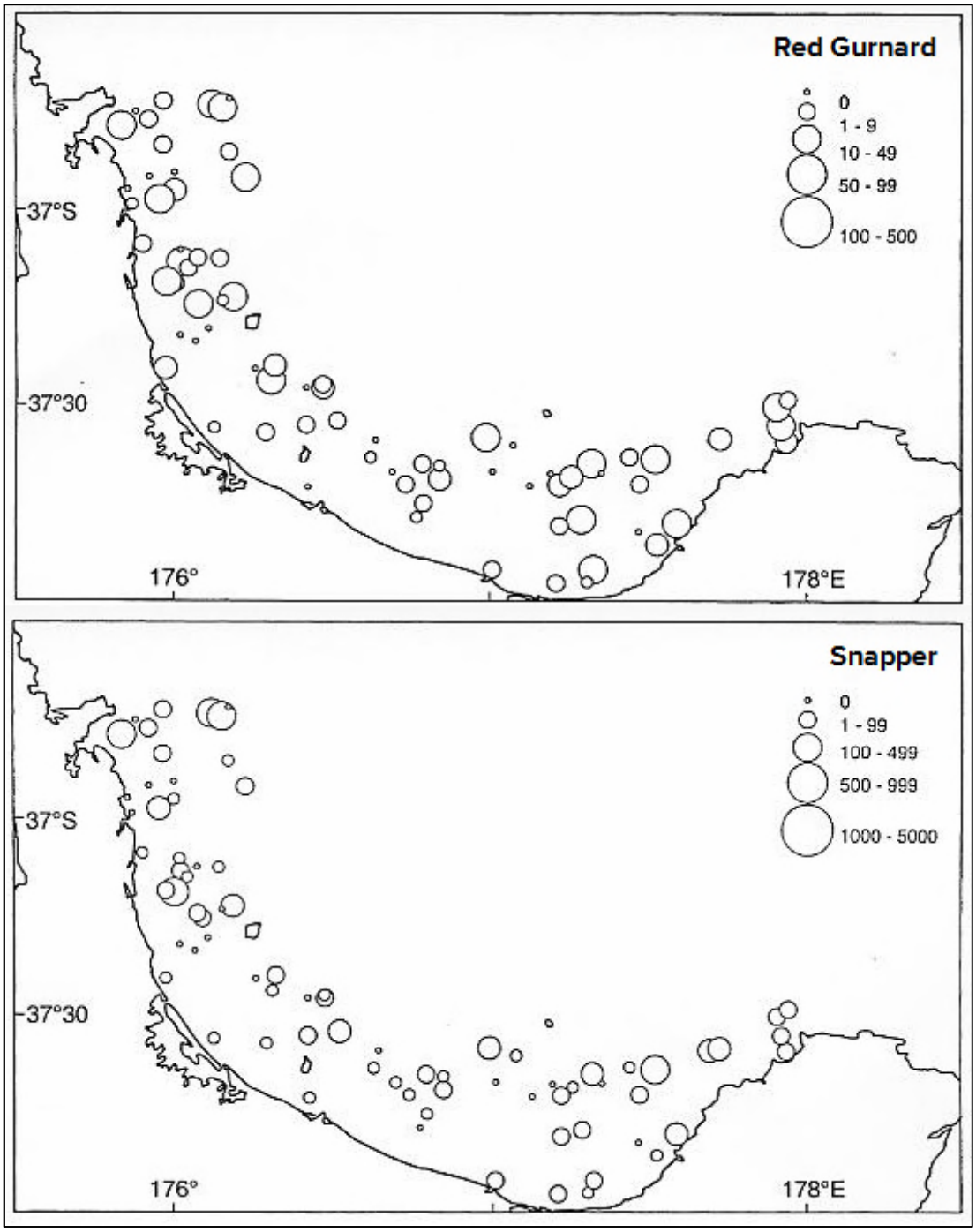

Figure 6: Red gurnard and snapper catch-rates in the Bay of Plenty.

John dory and terakihi are predominately found around the edge of the continental shelf and there is a conspicuous absence of tarakihi from the head of the Bay of Plenty, where the proposed farm is located (Figure 7).

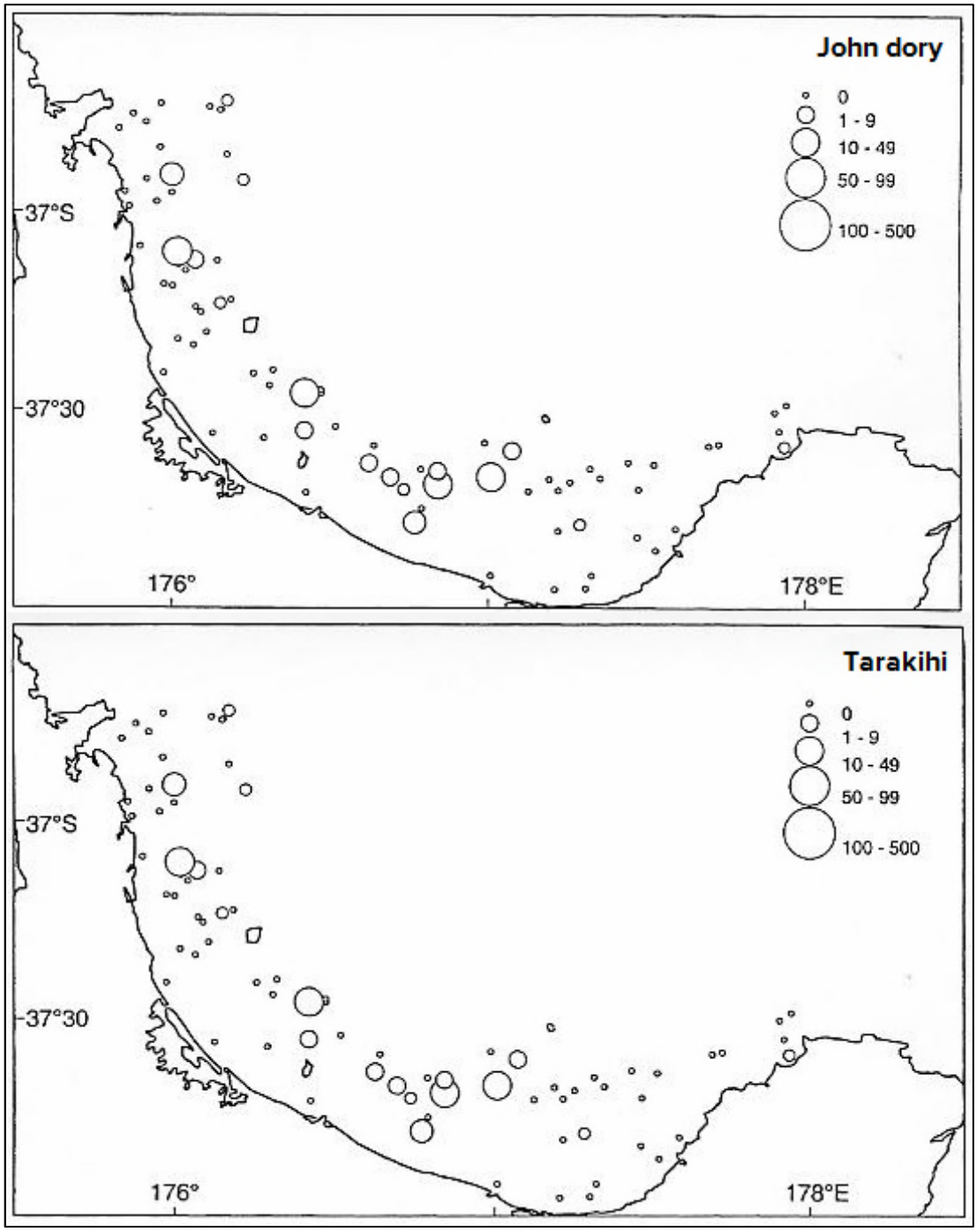

Figure 7: **John dory and terakihi catch-rates in the Bay of Plenty.**

The Bay of Plenty also hosts an active population of recreational fishers. These fishers target a range of species including those discussed above. Recreational fishers also actively target species such as kahawai, kingfish and other pelagics. Figure 8 shows that the general coastal distribution of kingfish, determined from research trawls for the period of 1961-1997, is primarily focussed around the east coast of the North Island, including the Bay of Plenty, has high numbers of kingfish schools.

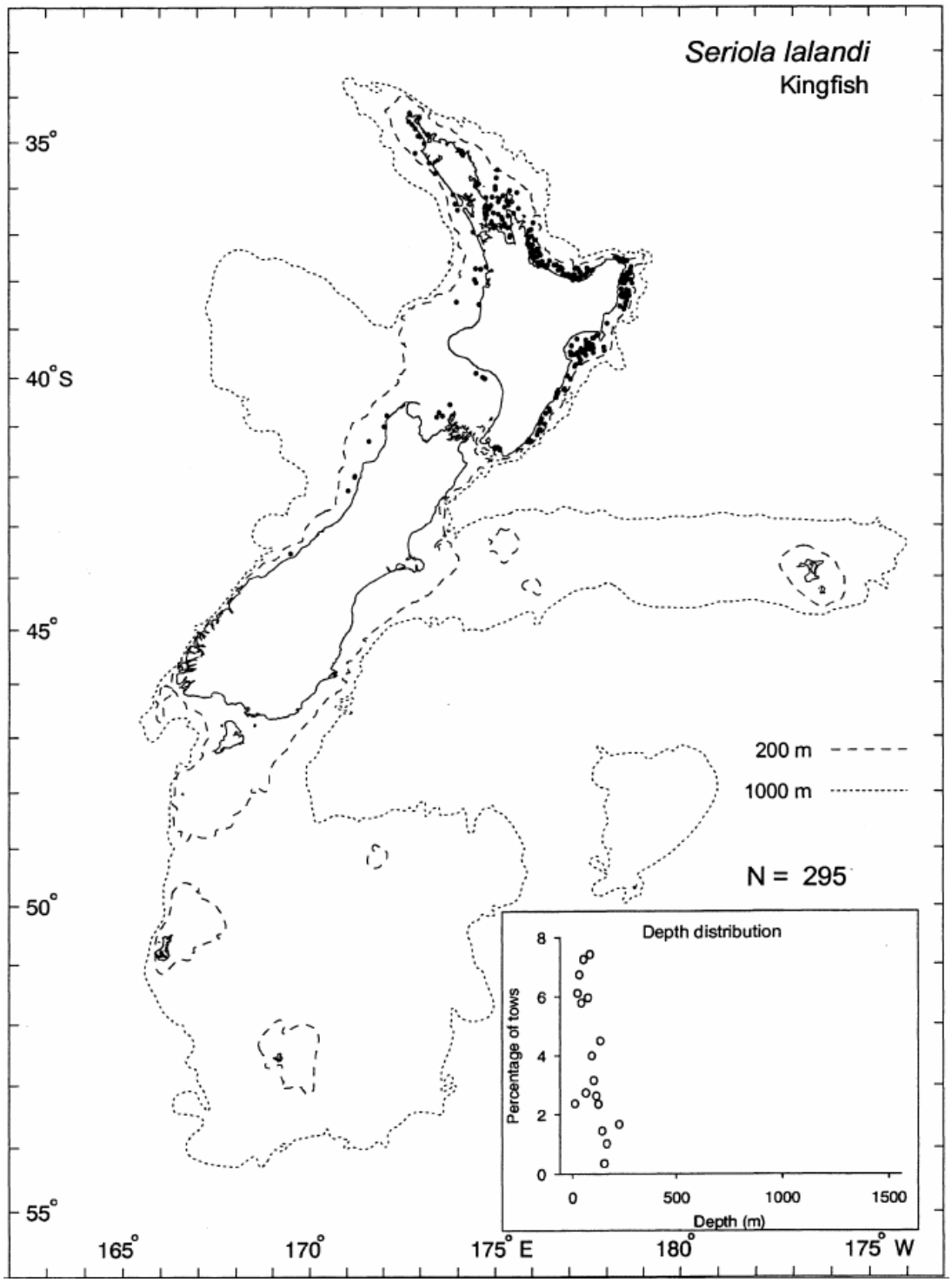

Figure 8: Distribution of kingfish determined from research trawls (1961-97).

Available information indicated that the Bay of Plenty, as a whole, supports a large number of mainly pelagic species, around which both recreational and commercial fisheries are based. However, apart from having value as a potential nursery for snapper and tarakihi, the proposed marine farm site does not stand out from the wider Bay of Plenty as an important area for fisheries resources.

4.7 COASTAL USE AND VALUE MAPS 2006

The Coastal Maps were consulted to determine the existing uses in the coastal environment within the vicinity of the proposed marine farm. In regard to each map, the following is concluded:

1. The nearest proposed / approved marine farms are approximately 3 km to the east.
2. The popular navigation access zone extending 5.5 km out from Ohiwa Harbour is within 200 m of the proposed marine farm.
3. There is a site of cultural significance approximately 15 km offshore of the Ohiwa Harbour entrance, and approximately 500 m north of the proposed marine farm.
4. There is a rocky reef and buffer zone between the proposed marine farm site and the Ohiwa Harbour entrance, this is less than 5 km offshore.
5. The Marine Mammals Protection Buffer extends 6 km seaward from the coastline. An approximately 300 ha area of the proposed marine farm is overlaps this buffer.
6. There are no Significant Seabird Colonies nearby, with White Island being the nearest.
7. The proposed marine farm site is within the horizon line from elevated sites, but is beyond the sea level horizon line.
8. The proposed marine farm site is not near any outstanding natural features and landscapes.
9. The proposed marine farm site is within the general vicinity of fishing effort count of 101 – 3000 in regards to the commercial fishing effort bottom trawl method 1999 – 2004.
10. The proposed marine farm site is within the general vicinity of fishing effort count of 1 - 3 in regards to the commercial fishing effort Danish seine method 1999 – 2004.
11. The proposed marine farm site is not within the general vicinity of a fishing effort count in regards to the commercial fishing effort purse seine method 1999 – 2004.
12. In regards to the Bay of Plenty commercial fisheries overview, the proposed marine farm site is not within a “hotspot”.
13. The proposed marine farm site is beyond the land-based fishing buffer, but is within the buffer for small vessels navigation and charter boat routes. Recreational boat density within the vicinity of the site is 0 – 51 per year. However, as the proposed marine farm site is with the popular navigation zone of the Ohiwa Harbour, this area has a density of 501 – 1000 boats per year.

An overall summary figure with all the maps overlaid is provided as Figure 9 below.

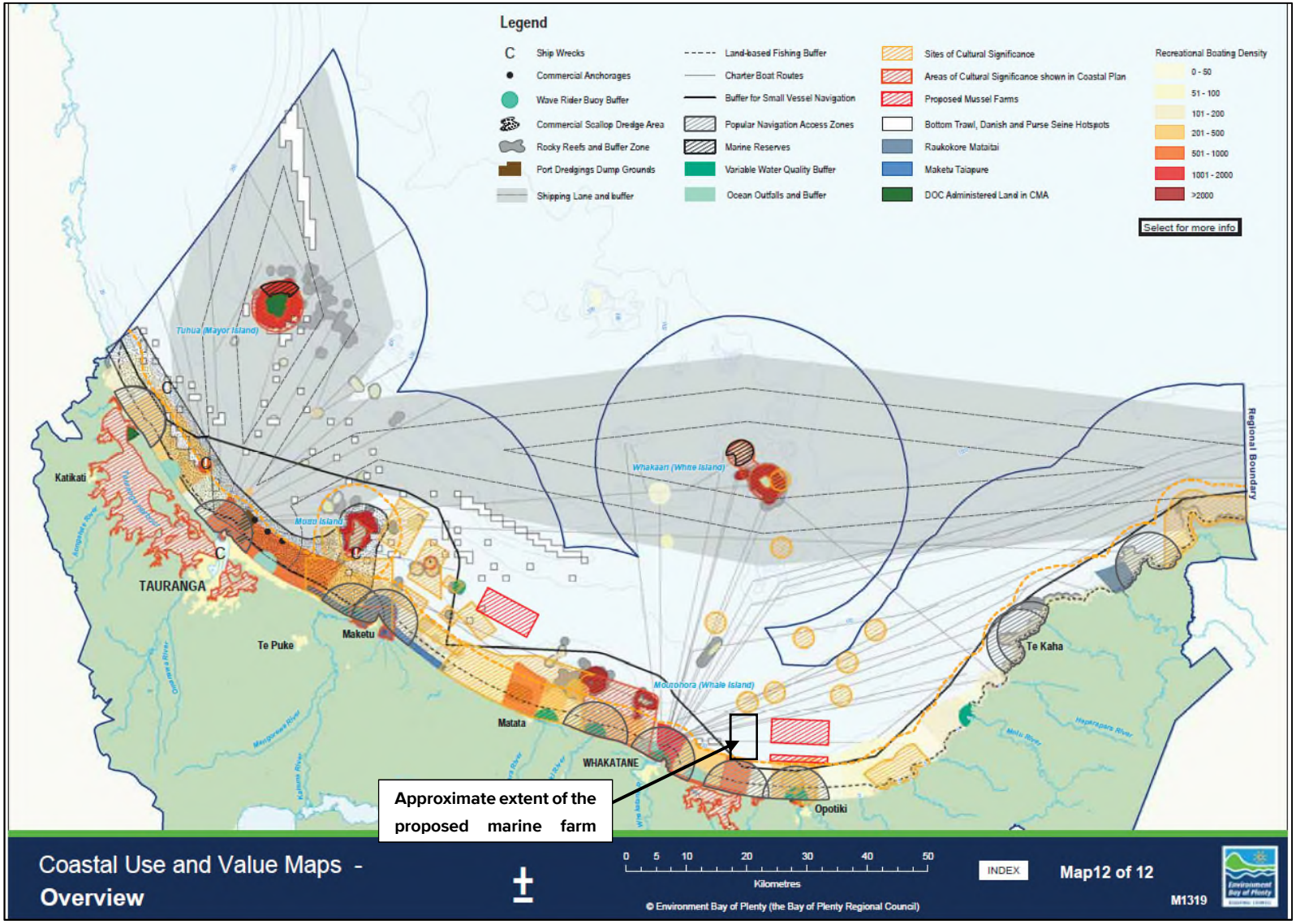

Figure 9: Coastal Use and Value Maps 2006 – Overview Map.

5. POTENTIAL ENVIRONMENTAL EFFECTS

5.1 OVERVIEW

Potential environmental effects in relation to the proposed marine farm include the following:

- Positive effects;
- Effects on the pelagic environment;
- Effects on coastal processes;
- Effects on marine mammals;
- Effects on fisheries;
- Effects on the benthic environment; and
- Biosecurity effects;
- Effects on visual and natural character, and landscape amenity.

Each of these is addressed in the subsections below.

5.2 POSITIVE EFFECTS

The establishment and operation of the proposed marine farm in the Bay of Plenty will generate a number of positive social, cultural and economic effects.

Aquaculture generates around $500 million in revenue to New Zealand,[4] and the Bay of Connections Aquaculture Strategy has set the goal of growing an integrated and sustainable aquaculture industry in the Bay of Plenty, with export sales of $250 million by 2025.

The proposed marine farm will provide social and economic benefits through the provision of additional domestic and export revenue, and will assist in growing the economic value of the aquaculture industry. In addition, the proposed marine farm will provide direct and indirect job opportunities in the Bay of Plenty region. These jobs will be associated with farming and processing activities, and the employment of people in supporting services (e.g. transport and logistics).

Furthermore, the proposed marine farm will generate the following positive ecological effects on the coastal environment:

- The attraction of fish with associated recreational opportunities;
- The attraction of pelagic species and the associated increased biodiversity;
- The creation of additional marine habitat;
- The removal of suspended sediment from the water column; and

[4] Aquaculture New Zealand.

- The exclusion of activities (i.e. trawling) that periodically disturb the seabed, and the associated recovery and stabilisation of the benthic community.

With regard to cultural matters, PTC view marine farming as an extension of kai moana gathering activities, and as such provides for the relationship of Māori with their ancestral lands and water.

5.3 POTENTIAL EFFECTS ON THE PELAGIC ENVIRONMENT AND COASTAL PROCESSES

5.3.1 Overview

The proposed marine farm has the potential to affect the pelagic environment and coastal processes. Potential effects on the pelagic environment can be short-term and local, or longer-term cumulative impacts on phytoplankton abundance, typically the removal of phytoplankton and zooplankton.

Effects on coastal processes include those on water flows and surface waves as a result of the structures.

5.3.2 Pelagic Environment Effects

5.3.2.1 Short-Term Effects

Short-term and local effects include the removal of food particles from the water column. While shellfish such as mussels are capable of extracting a variety of particles from the water column, including microscopic plants, animals and detritus, they will often select single-celled floating phytoplankton as their major dietary component. Mussels also release faeces and psuedofaeces (undigested particles bound up in mucus) into the water column that will sink to the seafloor.

Phytoplankton are one of the building blocks of the marine food web, and therefore the removal of an excessive number can potentially impact other organisms in the pelagic environment. Potential impacts include reduced prey for other species (e.g. zooplankton (floating passive or weak swimming animals)), or by alterations to nutrient cycling, as phytoplankton utilise and remove nutrients from the water column.

Some marine farms have resulted in the mussels stimulating phytoplankton growth by recycling inorganic nitrogen in the form of ammonia, from particulate organic material. However, phytoplankton most likely to take advantage of the nutrients released by mussels may not be the same species as those extracted by the mussels. Opportunistic phytoplankton are likely to be smaller, fast growing species that have less nutritional value than those selectively extracted by the mussels.

5.3.2.2 Longer-Term Impacts

Longer-term cumulative impacts on the pelagic environment that are a result of the operation of marine farms are difficult to assess. It is considered that, long-term, shellfish will graze down a large proportion of the available phytoplankton with the immediate vicinity of the farm. Some growth may then result from the injection of inorganic nutrients back into the water column.

This will result in a change in community structure and abundance, and may have impacts on other trophic levels that depend on phytoplankton resources.

5.3.2.3 Modelling Undertaken in the Bay of Plenty

Modelling of the potential effects on the pelagic environment was undertaken by ASR in regards to two marine farms in the Bay of Plenty,[5] the location of which are shown as "proposed marine farms" in 10. Each of these was approximately 5,000 ha in area.

When averaged over a year, these farms reduced the phytoplankton in a 40 x 20 km area by approximately 1% in the surface waters of the Bay of Plenty (0 – 5 m depth). This depletion represents a decrease of approximately 0.04 mg/m^3 chlorophyll-*a* from a typical average value of approximately 4.5 mg/m^3. The marine farms increase the local ammonia concentration by approximately 0.001 g/m^3, and deplete the local dissolved oxygen concentration by approximately 0.002 g/m^3, from background values of typically 0.05 g/m^3 and 8 g/m^3 respectively.

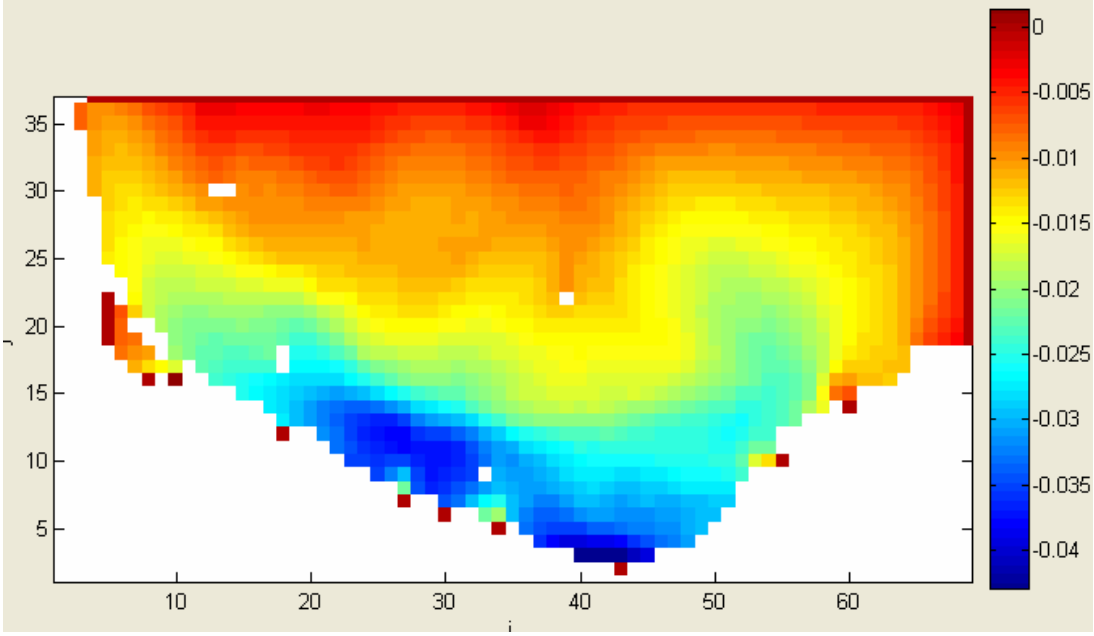

Figure 10: Year long difference in the surface layer chlorophyll-*a* concentration (mg/m^3) between the 'no farm' and the '2 mussel farm' scenarios.

At the depths the mussels would be located within the water column (15 – 25 m), phytoplankton abundance reduced by 4 – 8%, over an area some 12 x 6 km (the immediate vicinity of the marine farms and towards the adjacent coastline) when averaged over a full year. This zone of reduction is proportionate to the total area and mussel density of the farm.

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[5] ASR Marine Consulting and Research (2006). *Bay of Plenty Primary Production Modelling: Aquaculture Management Areas.* Report prepared for Bay of Plenty Regional Council. September 2006. https://www.boprc.govt.nz/media/33301/Report-060900-BOPPrimaryProductionModellingAquacultureManagementAreas.pdf

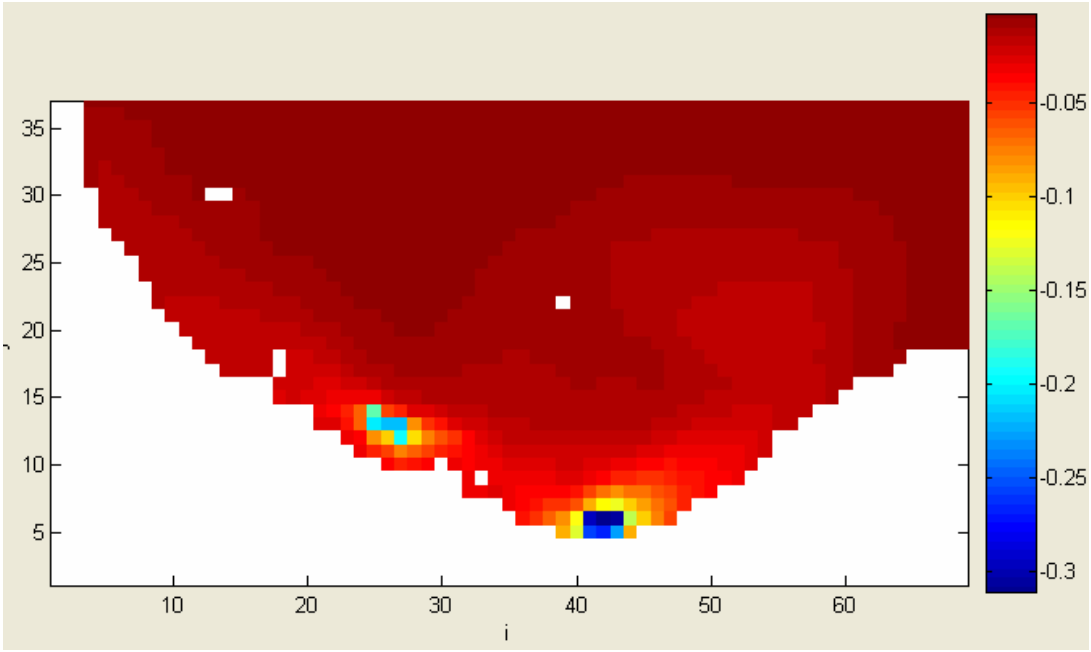

Figure 11: Year long difference in 15-25 m water depths of chlorophyll-*a* concentration (mg/m^3) between the 'no farm' and the '2 mussel farm' scenarios.

While the abundance of phytoplankton may be reduced by 4 – 8% when averaged over the year, the percentage of reduction is higher in seasons when natural phytoplankton abundance is lower. Therefore, there are annual and seasonal effects that will potentially impact on the broader eco-system, which is equally subject to seasonal dynamics.

The conclusion of this modelling was that it is unlikely that the production carrying capacity of the Bay of Plenty will be adversely affected as even the maximum depletion rates resulted in chlorophyll-*a* levels that are well above published threshold production carrying capacity levels identified for marine farming in other parts of New Zealand, being approximately 1 µg L^{-1}. Overall, the physical and biological characteristics of the Bay of Plenty and ecosystem carrying capacity, relative to the predicted levels of impact, are unlikely to be adversely affected.

5.3.3 Effects on the Abundance of Other Species

The proposed marine farm has the potential to affect the abundance and distribution other species. The proposed marine farm will create new habitat in the water column and therefore the lines can be colonised by a variety of other organisms, many of which are regarded as biofouling by operators. The mussels and other organisms may attract other species of fish, which would therefore increase the abundance of these species

5.3.4 Effects on Water Flows and Surface Waves

Marine farms have the potential to alter current direction and speed, with the magnitude of this dependant on the structure, layout, and size of the farm, and on the current velocity. Most backbone lines are orientated parallel to the flow to reduce drag, but there can still be effects on the currents – particularly around larger farms.

Generally, the effects of marine farms on hydrodynamics have been found to be localised and are unlikely to extend more than a few hundred metres beyond the marine farm. Unpublished modelling carried out by NIWA showed that the direct effects of a farm on flow are likely to be only significant in the zone that is about half-the-farm upstream to one-farm length downstream of the mean flow.

As outlined in section 4.1.1, the proposed marine farm site is considered to have 'weak' or 'very weak' mean current speeds. As a result of this marine farm development requires a low density development approach. Low density for offshore marine farms is associated with line spacing on the order of 50 m. The proposed marine farm that is part of this resource consent application is proposing a spacing of 75 m between lines.

Long-lines will be orientated parallel to the tidal flows, generally north-south. As the proposed marine farm site is approximately 5 km offshore and the current flow is predominantly parallel to the shore (Figure 3), any effects on the currents will be minimal and would be unlikely to affect movement of sediment or shoreline processes.

5.4 POTENTIAL EFFECTS ON MARINE MAMMALS

5.4.1 Overview

Potential effects of the proposed marine farm on marine mammals include entrapment and entanglement.

As set out in section 4.3 of this AEE, 22 marine mammals are known to frequent the general area. An assessment of the potential effects on those species is provided below.

5.4.2 Seals

There is no historical record of fur seals, leopard seals, or southern elephant seals having a negative interaction with marine farms through entanglement in New Zealand, Australia or Chile (where other marine farms are located). Therefore, they are not considered to be at risk of from the proposed marine farm in this regard. Anecdotal evidence suggests that there is a strong possibility that some species profit from the increased availability of fish species in the immediate vicinity of marine farms.

5.4.3 Baleen Whales

Right whales have previously been recorded swimming in the vicinity of Marlborough mussel farms, and while at times they came close to the line, at no time did they appear disconcerted, nor did they become entangled with any of the moorings or other potentially hazardous (to them) equipment. Given the small numbers of Right whales in the Bay of Plenty, it has never been considered to be a gathering place for this species, the likelihood of entanglement with the proposed marine farm is considered to be extremely low.

The other species of baleen whale are migratory, transiting along the continental shelf 10 – 15 nautical miles offshore. The likelihood of these species coming into contact with the proposed marine farm is minimal.

5.4.4 Toothed Whales

Sperm whales are known to have a habit of investigation and playing with flotsam, and on rare occasions, do become entangled in loose lines or netting fragments. With a normal maintenance schedule, it is highly unlikely entanglement will occur because of the distance from the proposed marine farm site to the continental shelf edge. Therefore, the proposed marine farm is unlikely to have a detrimental effect on Sperm whales.

It is not considered that the proposed marine farm will have any detrimental effects on bottlenose or ziphiid whales.

Killer and false killer whales have no history of entanglement in marine farm structures. It is not considered that the proposed marine farm, with wide spread grow ropes and accessways will present a threat to killer whales.

Pilot whale do not typically frequent as close to the coastline as where the proposed marine farm will be located unless they are stressed or in pursuit of food. They have no history on entanglement with marine farms and it is not considered that the marine farm will result in adverse effects on them.

5.4.5 Hector's Dolphins

Hector's dolphins have no recorded history or entrapment of entanglement in marine farms. Anecdotal information associated with marine farms in Golden Bay suggest that they will swim within the confines of marine farms, showing no adverse behaviour when in the presence of moorings, lines or grow ropes, nor do they appear disturbed by the presence of working boats.

The farm structure is likely to accumulate small fish around anchors, mooring lines, and grow ropes, which will become prey for Hector's dolphins. While Hector's dolphins are rarely recorded in the Bay of Plenty, it is highly unlikely that the proposed marine farm will disadvantage them in any way.

5.4.6 Common and Bottlenose Dolphins

With regard to Common dolphins there is no history of them becoming entangles or entrapped in marine farm lines. Bottlenose dolphins have been recorded seeking attention with divers working within grow ropes in a marine farm in the Pelorous Sound therefore, suggesting that they are entirely at ease within the confines of a marine farm. On these bases, it is not considered that the proposed marine farm will adversely affect either Common or Bottlenose dolphins.

5.5 POTENTIAL EFFECTS ON FISHERIES

The proposed marine farm would be located over an area of soft sediment, inshore fishing grounds, in the Quota Management Area 1 ("**QMA 1**"). The proposed marine farm should therefore be considered against the area of similar habitat in QMA 1.

The proposed marine farm site would occupy approximately 0.47% of the total inshore fishing grounds shallower than 100 m, and approximately 0.24% of the inshore fishing grounds less than 200 m.

The presence of marine farms, like marine reserves, prevents or restricts many forms of commercial fishing activities. If marine farms and marine reserve areas are established in a location where commercial fishing presently takes place, then existing rights holders (quota owners) will primarily be concerned over potential reductions in the value of their quota asset. Although quota ownership is a harvest right as opposed to a spatial property right, quota owners argue that the value of the asset is related to the area available to exercise their rights. It then follows that reductions in the area available for fishing will reduce the abundance of fish available for harvest, and hence less fish will be harvested and the value of the asset will decrease. However, these relationships are not straight-forward and hence the simplistic notion that reductions in the area available for fishing will reduce the value of quota assets is not necessarily true. This is particularly the case when considering small relative reductions in the available habitat area.

5.6 POTENTIAL EFFECTS ON THE BENTHIC ENVIRONMENT

Potential effects of the proposed marine farm on the benthic ecosystem result from the deposition of farm related material, including mussels and biofouling communities. The effects of this include the sedimentation of organic-rich fine grained particles (e.g. mussel faeces and psuedofaeces), and the deposition and accumulation of live mussels, mussel shell litter and other biota that has grown on ropes, float and mussels themselves. This waste material on the seabed alters the physical, chemical and biological nature of the sediments.

The spatial extent and severity of these effects from the monitoring of other marine farms around New Zealand indicate that minor effects occur below marine farms. The extent or severity depend on mussel densities, management practices, and environment parameters (depth, current speeds and directions, existing benthic habitat, proximity to other discharges, water clarity, and phytoplankton abundance).

Given the relatively low mussel density, and moderate current speed, the effects are anticipated to be a low to moderate increase in the organic content of the sediments, an increase in shell content, and an accompanying change in the biological community structure. This will be due to faeces and psuedofaeces being deposited in a relatively dilute manner, and being carried away by the prevailing current. Benthic affects are largely reversible, with recovery taking months – years depending on water flushing characteristics. Significant recovery occurs within 3 – 12 months of the removal of a marine farm, and with most recovery occurring in 5 – 10 years at a low-flow site.

While the proposed marine farm will result in changes from the current benthic environment, in some cases these are positive effects, particularly where benthic communities have been affected by other activities (i.e. dredging and trawling). The installation of the proposed marine farm will result in the exclusion of these activities that periodically disturb the benthic environment, resulting in recovery and stabilisation of the benthic communities.

To ensure that no high value, or sensitive habitats fall within the proposed marine farm boundaries a site specific benthic survey will be undertaken prior to marine farm structures being installed. The benthic survey will map and describe seabed features and biological communities beneath the proposed marine farm site.

5.7 POTENTIAL BIOSECURITY EFFECTS

Harmful marine organisms ("**HMOs**") have the potential to negatively impact coastal ecosystems and associated resources and values. However, the interaction between HMOs and aquaculture is two-way. The industry is vulnerable to the negative effects of HMOs, yet at the same time can significantly exacerbate HMO risk.

All main aquaculture sectors in New Zealand have been negatively affected by HMOs to varying degrees. In shellfish aquaculture, biofouling can impact all production stages. Biofouling can impact the quality, yield and value of the shellfish crop, impact infrastructure, impeded industry processes such as harvesting, and lead to degraded product value.

Historically, aquaculture seed stock movements among countries have been responsible for the spread of HMOs globally. In New Zealand, any such international movements would be controlled by stringent border standards however, domestic aquaculture activities are an important contributor to the regional and inter-regional spread of HMOs. This can exacerbate risks to the industry itself, in particular:

- Many HMOs have a limited natural dispersal ability therefore, regional or inter-regional movements of vessels, equipment and stock can lead to the inadvertent spread of such organisms; and
- Marine farms provide an extensive surface area of artificial structure, which provides habitat for many organisms, including certain HMOs.

Overall, the Bay of Plenty has been relatively unimpacted in terms of coastal development and habitat modification, with the exception of the Port of Tauranga. A biological baseline survey in Tauranga Harbour in 2002 revealed a total of 316 species or higher taxa. Among these, 12 non-indigenous species were identified, along with 202 native species, 40 cryptogenic species (those whose geographic origins are uncertain) and 62 species indeterminata (taxa for which there is insufficient information to enable identification to species level).

Due to the absence of significant in the vicinity of the proposed marine farm, it is possible that HMOs do not yet occur in the area, although without systematic surveillance it may be the case that HMOs are present but have not been detected. The further development and intensification of marine farming in the Opotiki region, with the possibility of an adjacent coastal port development, raises the likelihood of an increased network of aquaculture and vessel movements.

To mitigate the potential for HMOs in association with the proposed marine farm, PTC purposes a biosecurity monitoring and management framework to ensure that the proposed marine farm does not cause an unacceptable biosecurity risk. This will be achieved through incorporating appropriate mechanisms to minimise the spread of pests and diseases, identifying any new

marine pests and isolating / containing any outbreaks, and the reporting of any suspected new or notifiable pest or diseases to the Ministry for Primary Industries. The biosecurity monitoring and management framework is outlined in the management framework provided separately with the application.

5.8 POTENTIAL VISUAL, NATURAL CHARACTER, AND LANDSCAPE AMENITY EFFECTS

As set out in section 4.5, Ms de Lambert presented evidence regarding the visual and natural character, and landscape amenity of the Bay of Plenty in the vicinity of the proposed marine farm at the Eastern Sea Farms Limited marine farm resource consent hearing. The potential effects of the proposed marine farm on the visual and natural character, and landscape amenity of the Bay of Plenty are addressed below.

Ms de Lambert undertook an assessment of the potential visibility of the Eastern Sea Farms Limited marine farm on a fine day. In order to define the location, extent and potential visibility of the marine farm, buoys were placed in the water to mark the inner corner of the proposed farm in the east and the west. The buoys used were of typical 350 litre plastic marine farm buoys, one black and one orange. Contact was maintained with a land based viewer who travelled to public and private locations along the coastline.

Due to the distance offshore, the proposed marine farm falls within the background viewing audience. As the buoys were placed in the water it became clear that, even with binoculars on a day with good visibility and minimal wave action, the buoys themselves were too distant to be determined from land. With the naked eye, buoys and vessels more than 5 km offshore are generally not visible however, using binoculars and knowing the reference points vessels can just be pinpointed close to the horizon from sea level. At an elevated site (40 m above sea level), visibility of the proposed marine farm, when fully established, will be minimal.

With regard to water based viewpoints, the proposed marine farm buoys will not become clearly visible until they come within the foreground visibility range of 0 – 1 km. At 1 km the presence of boats associated with the marine farm operation is more likely to signal the presence of the farm rather than the visibility of the buoys themselves. On the water therefore people on boats traversing the inner coastal waters between 1 and 3.5 km (depending on weather conditions) off shore are unlikely to significantly perceive the presence of the marine farm. Once out beyond the 4 km range the marine farm will become visually apparent although this will be affected by light, weather and wave conditions.

Overall, it is not considered that the proposed marine farm will not generate significant adverse landscape, visual effects or natural character effects.

6. STATUTORY CONSIDERATIONS

6.1 REQUIREMENTS OF A RESOURCE CONSENT APPLICATION

Section 88 of the RMA requires that an application for a resource consent be made in the prescribed form and manner, and include, in accordance with Schedule 4, the information relating to the activity, including an assessment of the effects of the activity on the environment.

The resource consent applications for the proposed marine farm are in the prescribed form, as set out in Form 9 of the Resource Management (Forms, Fees, and Procedure) Regulations 2003.

By way of summary, the provided material meets the requirements of the Fourth Schedule, and the requirements of section 88.

6.2 SECTION 104(1)(B) ASSESSMENT

6.2.1 Introduction

Section 104(1) of the RMA lists the matters that the consent authority must have regard to when considering an application for resource consent. Section 104(1) states:

> ***104 Consideration of applications***
> *(1) When considering an application for a resource consent and any submissions received, the consent authority must, subject to Part 2, have regard to–*
> *...*
> *(b) any relevant provisions of*
> *(i) a national environmental standard:*
> *(ii) other regulations:*
> *(iii) a national policy statement:*
> *(iv) a New Zealand coastal policy statement:*
> *(v) a regional policy statement or proposed regional policy statement:*
> *(vi) a plan or proposed plan; and*
> *...*

Section 104(1) does not give any of the matters to which a consent authority is required to have regard primacy over any other matter. All of the matters are to be given such weight as the consent authority sees fit in the circumstances, and all provisions are subject to Part 2 of the RMA.

Set out below is an assessment of all matters relevant to these consent applications under section 104(1) of the RMA.

6.2.2 New Zealand Coastal Policy Statement 2010

6.2.2.1 Overview

The NZCPS sets out a number of objectives and policies for achieving the purpose of the RMA in relation to the coastal environment. It contains provisions which address the following matters of relevance to the proposed marine farm:

- Aquaculture and the provision for social and economic wellbeing;
- The precautionary approach;
- Indigenous biodiversity;
- Natural character and landscape values; and
- Amenity and access.

The NZCPS provisions relating to each matter are addressed below.

6.2.2.2 Provision for Aquaculture and Social and Economic Wellbeing

Objective 6, and Policies 6 and 8 of the NZCPS seek to, amongst other things, enable people and communities to provide for their social and economic wellbeing through the use and development of natural and physical resources in the coastal environment.

The relevant aspects of Objective 6 and Policies 6 and 8 to the proposed marine farm are set out below:

> ***Objective 6***
> *To enable people and communities to provide for their social, economic, and cultural wellbeing and their health and safety, through subdivision, use, and development, recognising that:*
> - *the protection of the values of the coastal environment does not preclude use and development in appropriate places and forms, and within appropriate limits;*
> - *some uses and developments which depend upon the use of natural and physical resources in the coastal environment are important to the social, economic and cultural wellbeing of people and communities;*
> - *functionally some uses and developments can only be located on the coast or in the coastal marine area;*
> - *...*
> - *the protection of habitats of living marine resources contributes to the social, economic and cultural wellbeing of people and communities;*
> - *...*
> - *the proportion of the coastal marine area under any formal protection is small and therefore management under the Act is an important means by which the natural resources of the coastal marine area can be protected; and*
> - *....*
>
> ***Policy 6 Activities in the coastal environment***
> *(1) In relation to the coastal environment:*
> *...*
> *(j) where appropriate, buffer areas and sites of significant indigenous biological diversity, or historic heritage value.*
> *(2) Additionally, in relation to the coastal marine area:*
> *(a) recognise potential contributions to the social, economic and cultural wellbeing of people and communities from use and development of the coastal marine area, ...:*
> *(b) recognise the need to maintain and enhance the public open space and recreation qualities and values of the coastal marine area;*
> *(c) recognise that there are activities that have a functional need to be located in the coastal marine area, and provide for those activities in appropriate places;*
> *(d) ...*
> *(e) promote the efficient use of occupied space, including by:*
> *(i) requiring that structures be made available for public or multiple use wherever reasonable and practicable;*
> *(ii) requiring the removal of any abandoned or redundant structure that has no heritage, amenity or reuse value; and*
> *(iii) considering whether consent conditions should be applied to ensure that space occupied for an activity is used for that purpose effectively and without unreasonable delay.*

Policy 8 Aquaculture

Recognise the significant existing and potential contribution of aquaculture to the social, economic and cultural well-being of people and communities by:

(a) including in regional policy statements and regional coastal plans provision for aquaculture activities in appropriate places in the coastal environment, recognising that relevant considerations may include:

(i) the need for high water quality for aquaculture activities; and

(ii) the need for land-based facilities associated with marine farming;

(b) taking account of the social and economic benefits of aquaculture, including any available assessments of national and regional economic benefits; and

(c) ensuring that development in the coastal environment does not make water quality unfit for aquaculture activities in areas approved for that purpose.

Key directives of these provisions when considering these applications for the proposed marine farm include:

- The social and economic benefits of the proposed marine farm are to be recognised[6] and taken into account;[7]
- The functional need of the proposed marine farm to locate in the coastal environment is to be recognised; and[8]
- The protection of the values of the coastal environment does not preclude use and development where it is located in an appropriate place and form, and within appropriate limits.[9]

Aquaculture generates around $500 million in revenue to New Zealand[10], and the Bay of Connections Aquaculture Strategy 2013 has set the goal of growing an integrated and sustainable aquaculture industry in the Bay of Plenty with export sales of $250 million by 2025.

The proposed marine farm will provide social and economic benefits through the provision of additional domestic and export revenue, and will assist in the objective of growing the economic value of the aquaculture industry in the Bay of Plenty. In addition, the proposed marine farm will provide direct and indirect job opportunities in the Bay of Plenty region. These jobs will be associated with farming and processing activities, and the employment of people in supporting services (e.g. transport and logistics).

It is also considered that the proposed marine farm aligns with the direction provided in the NZCPS with respect to recognising that there are activities that have a functional need to be located in the CMA, and to provide for those activities in appropriate places. Off shore of Ohiwa Harbour is considered to an appropriate location for a marine farm because of its good water quality, and water depth. In addition, the site of the proposed marine farm is not located within,

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6 Policy 6(2)(a).

7 Policy 8(b).

8 Policy 6(c).

9 Objective 6.

10 Aquaculture New Zealand.

or immediately adjacent to, any sites of environmental or cultural value identified in the RPS or the PRCEP.

In light of the above, it is considered that the site of the proposed marine farm is an appropriate location and that the proposed marine farm itself will assist in enabling people and communities to provide for their social and economic wellbeing through the use and development of natural and physical resources in the coastal environment.

6.2.2.3 Precautionary Approach

Policy 3 of the NZCPS addresses a precautionary approach. It states:

> ***Policy 3 Precautionary approach***
>
> *(1) Adopt a precautionary approach towards proposed activities whose effects on the coastal environment are uncertain, unknown, or little understood, but potentially significantly adverse.*
>
> *(2) In particular, adopt a precautionary approach to use and management of coastal resources potentially vulnerable to effects from climate change, so that:*
>
> *(a) avoidable social and economic loss and harm to communities does not occur;*
>
> *(b) natural adjustments for coastal processes, natural defences, ecosystems, habitat and species are allowed to occur; and*
>
> *(c) the natural character, public access, amenity and other values of the coastal environment meet the needs of future generations.*

Clause (1) of Policy 3 is considered most relevant to the proposed marine farm in that it directs decision-makers to adopt a precautionary approach towards proposed activities whose effects on the coastal environment are *"uncertain, unknown, or little understood, but potentially significantly adverse."*

It is not considered that there will be any significant adverse effects generated by the proposed marine farm, however, it is recognised that there can potentially be unexpected effects when undertaking an activity in the coastal environment. For this reason, the development of a number of marine farms around New Zealand has involved a staged development and a concurrent monitoring programme in order to ensure a precautionary approach is followed.

PTC is proposing the staged development of the proposed marine farm in order to ensure that any environmental effects are no greater than anticipated. Full development of the proposed marine farm will not occur until it can be demonstrated that the defined environmental triggers for the marine farm will not be exceeded.

This approach also allows for modifications to be made to the development of the proposed marine farm so as to avoid or mitigate any unforeseen environmental effects. This could include changes to the operational management of the proposed marine farm (e.g. stocking density or the removal of lines), should this be deemed necessary following the review of monitoring data.

6.2.2.4 Indigenous Biodiversity

Objective 1 and Policy 11 of the NZCPS are its key provisions in respect of the management of indigenous biodiversity in the coastal environment. They state:

> ***Objective 1***
> *To safeguard the integrity, form, functioning and resilience of the coastal environment and sustain its ecosystems, including marine and intertidal areas, estuaries, dunes and land, by:*
> - *maintaining or enhancing natural biological and physical processes in the coastal environment and recognising their dynamic, complex and interdependent nature;*
> - *protecting representative or significant natural ecosystems and sites of biological importance and maintaining the diversity of New Zealand's indigenous coastal flora and fauna; and*
> - *maintaining coastal water quality, and enhancing it where it has deteriorated from what would otherwise be its natural condition, with significant adverse effects on ecology and habitat, because of discharges associated with human activity.*
>
> ***Policy 11 Indigenous biological diversity (biodiversity)***
>
> *To protect indigenous biological diversity in the coastal environment:*
> *(a) avoid adverse effects of activities on:*
> *(i) indigenous taxa[4] that are listed as threatened[5] or at risk in the New Zealand Threat Classification System lists;*
> *(ii) taxa that are listed by the International Union for Conservation of Nature and Natural Resources as threatened;*
> *(iii) indigenous ecosystems and vegetation types that are threatened in the coastal environment, or are naturally rare;*
> *(iv) habitats of indigenous species where the species are at the limit of their natural range, or are naturally rare;*
> *(v) areas containing nationally significant examples of indigenous community types; and*
> *(vi) areas set aside for full or partial protection of indigenous biological diversity under other legislation; and*
> *(b) avoid significant adverse effects and avoid, remedy or mitigate other adverse effects of activities on:*
> *(i) areas of predominantly indigenous vegetation in the coastal environment;*
> *(ii) habitats in the coastal environment that are important during the vulnerable life stages of indigenous species;*
> *(iii) indigenous ecosystems and habitats that are only found in the coastal environment and are particularly vulnerable to modification, including estuaries, lagoons, coastal wetlands, dunelands, intertidal zones, rocky reef systems, eelgrass and saltmarsh;*
> *(iv) habitats of indigenous species in the coastal environment that are important for recreational, commercial, traditional or cultural purposes;*
> *(v) habitats, including areas and routes, important to migratory species; and*
> *(vi) ecological corridors, and areas important for linking or maintaining biological values identified under this policy.*

In summary, Objective 1 and Policy 11 of the NZCPS seek to avoid the adverse effects of activities on significant or important indigenous biodiversity values in the coastal environment, and avoid the significant adverse effects of activities on other indigenous biodiversity values in the coastal environment.

The proposed marine farm is not located in an Indigenous Biological Diversity Area identified in the PRCEP, with the nearest one being along the shoreline directly inshore from the proposed marine farm. Furthermore, benthic surveys undertaken for other marine farms in the vicinity of the proposed marine farm did not identify any species, communities or habitats of particular scientific and/or ecological importance.

However, 22 species of marine mammals are known to frequent the Bay of Plenty, including some listed as threatened or at risk in the New Zealand Threat Classification System – including killer whale, Bryde's whale. Approximately 300 ha of the 4,043 ha proposed marine farm is located inside of the Marine Mammal Protection Buffer identified by the Bay of Plenty Regional Council in the Coastal Use and Values Map – Marine Mammals and Seabirds.

The New Zealand Threat Classification System List[11] for marine mammals has been updated since Mr Cawthorn produced his evidence. Of note, the Southern Right Whale, which is commonly found within the New Zealand's coastal waters and the Bay of Plenty area, is identified as 'National Vulnerable' with between 250 – 1000 mature individuals.

The evidence of Mr Cawthorn concludes that the installation of an offshore marine farm will not have a significant adverse effect on the marine mammals of Bay of Plenty.[12] MPI 2013, concludes that the consequences of physical interaction of marine mammals with marine farms in considered to be minor, in most cases, as the outcomes are generally expected to affect individuals or result in small-scale avoidance or attraction.

With regard to orca, they are naturally inquisitive but have no history of entanglement with marine farm structures. Bryde's whales are found in warm water, with a southern limits restricted by the 16 or 17°C isotherm, and are particularly common around White Island. Sightings are most common at the 200 – 500 m isobaths (continental shelf edge), approximately 10 – 15 nautical miles offshore.

Overall, it is not considered that the proposed marine farm will adversely affect the life-cycle of the species and taxa identified in Clause (a) of Policy 11 of the NZCPS, nor will it generate significant adverse effects on habitats and areas of the coastal environment in accordance with Clause (b) of the NZCPS. It is noted that the benthic environment is unlikely to have changed from that which was surveyed as part of the previous resource consent applications around 2001 / 2002.

6.2.2.5 Natural Character and Landscape Values

Objective 2 of the NZCPS addresses natural character and landscape values. It states:

> ***Objective 2***
> *To preserve the natural character of the coastal environment and protect natural features and landscape values through:*
> - *recognising the characteristics and qualities that contribute to natural character, natural features and landscape values and their location and distribution;*

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[11] Department of Conservation Report *'Conservation Status of New Zealand marine mammals, 2013'*

[12] Para 14 – Evidence of Martin Cawthron.

- *identifying those areas where various forms of subdivision, use, and development would be inappropriate and protecting them from such activities; and*
- *encouraging restoration of the coastal environment.*

Policy 13 provides direction on how natural character is to be preserved. It states:

Policy 13 Preservation of natural character

(1) To preserve the natural character of the coastal environment and to protect it from inappropriate subdivision, use, and development:

(a) avoid adverse effects of activities on natural character in areas of the coastal environment with outstanding natural character; and

(b) avoid significant adverse effects and avoid, remedy or mitigate other adverse effects of activities on natural character in all other areas of the coastal environment; including by:

(c) assessing the natural character of the coastal environment of the region or district, by mapping or otherwise identifying at least areas of high natural character; and

(d) ensuring that regional policy statements, and plans, identify areas where preserving natural character requires objectives, policies and rules, and include those provisions.

(2) Recognise that natural character is not the same as natural features and landscapes or amenity values and may include matters such as:

(a) natural elements, processes and patterns;

(b) biophysical, ecological, geological and geomorphological aspects;

(c) natural landforms such as headlands, peninsulas, cliffs, dunes, wetlands, reefs, freshwater springs and surf breaks;

(d) the natural movement of water and sediment;

(e) the natural darkness of the night sky;

(f) places or areas that are wild or scenic;

(g) a range of natural character from pristine to modified; and

(h) experiential attributes, including the sounds and smell of the sea; and their context or setting.

Policy 15 contains direction on how natural features and landscapes in the coastal environment are to be protected. It states:

Policy 15 Natural features and natural landscapes

To protect the natural features and natural landscapes (including seascapes) of the coastal environment from inappropriate subdivision, use, and development:

(a) avoid adverse effects of activities on outstanding natural features and outstanding natural landscapes in the coastal environment; and

(b) avoid significant adverse effects and avoid, remedy, or mitigate other adverse effects of activities on other natural features and natural landscapes in the coastal environment; including by:

(c) identifying and assessing the natural features and natural landscapes of the coastal environment of the region or district, at minimum by land typing, soil characterisation and landscape characterisation and having regard to:

(i) natural science factors, including geological, topographical, ecological and dynamic components;

(ii) the presence of water including in seas, lakes, rivers and streams;

(iii) legibility or expressiveness—how obviously the feature or landscape demonstrates its formative processes;

(iv) aesthetic values including memorability and naturalness; (v) vegetation

(native and exotic);

(vi) transient values, including presence of wildlife or other values at certain times of the day or year;

(vii) whether the values are shared and recognised;

(viii) cultural and spiritual values for tangata whenua, identified by working, as far as practicable, in accordance with tikanga Māori; including their expression as cultural landscapes and features;

(ix) historical and heritage associations; and

(x) wild or scenic values;

(d) ensuring that regional policy statements, and plans, map or otherwise identify areas where the protection of natural features and natural landscapes requires objectives, policies and rules; and

(e) including the objectives, policies and rules required by (d) in plan

While PTC acknowledge that Policy CE 2B(c) of the RPS provides a 'blanket' classification of all open coastal water as being of least high natural character, it is unclear what particular values have been assigned to all open coastal water to warrant this classification across the entire Bay of Plenty. It is noted that the pervious evidence for the resource consent application did not identify the site as having particularly notable natural character values.

The proposed marine farm is not located near any identified areas of outstanding or very high natural character or outstanding natural features and landscapes identified in the RPS or PRCEP. The closest areas identified as having outstanding or very high natural character are located along the coastline, extending no more than 1 km seawards. As such, it is not considered that the proposed marine farm will adversely affect any areas of outstanding or very high natural character or outstanding natural features and landscapes in accordance with Clause (1)(a) of Policy 13 and Clause (a) of Policy 15 of the NZCPS.

However, Policy CE2B(c) of the RPS notes that:

Open coastal water in the region is of at least high natural character.

This policy clarifies the natural character status of open coastal water in the Bay of Plenty Region, and as such, Policy 13 of the NZCPS also applies – recognising that the blanket classification of open coastal water may require consideration of the site-specific characteristics and qualities of this area. Policy CE2B also confirms that the effects of some activities may not be adverse in light of an areas' natural character attributes and a consideration of whether the activity itself is appropriate in this location.

With respect to avoiding significant adverse effects and avoiding, remedying or mitigating other adverse effects of activities on natural character and other natural features / landscapes in all other areas of the coastal environment, the evidence of Ms de Lambert for the Eastern Seafarms Limited consent application, concluded that the location of q proposed marine farm, approximately 6 km offshore, will ensure that the natural character of the coastline and visual amenity values of the coastal environment, as experienced either from on land or in the waters along the coast within about 1 km of the shore, will not be adversely effected by the proposed marine farm. This assessment is still considered valid. While the policy framework of the NZCPS has changed since Ms de Lambert's assessment was prepared, the principle focus of

the RMA in terms of preserving the natural character of the coastal environment from inappropriate development has not.

Furthermore, a number of measures are proposed by PTC to avoid, remedy or mitigate the potential effects of the proposed marine farm on natural character and landscape values - including limiting the intensity of development.

In light of the above, it is considered that the proposed marine farm can be established in accordance with the management expectations set out in Clause (1)(b) of Policy 13 and Clause (b) of Policy 15 of the NZCPS.

6.2.2.6 Amenity and Access

Objective 4 of the NZCPS addresses the public open space and recreation values attributed to the coastal environment. It states:

> ***Objective 4***
> *To maintain and enhance the public open space qualities and recreation opportunities of the coastal environment by:*
> - *recognising that the coastal marine area is an extensive area of public space for the public to use and enjoy;*
> - *maintaining and enhancing public walking access to and along the coastal marine area without charge, and where there are exceptional reasons that mean this is not practicable providing alternative linking access close to the coastal marine area; and*
> - *recognising the potential for coastal processes, including those likely to be affected by climate change, to restrict access to the coastal environment and the need to ensure that public access is maintained even when the coastal marine area advances inland.*

The NZCPS contains no clear policy direction as to how activities such as the proposed marine farm should be managed to achieve Objective 4. However, Policy 6 does contain the following relevant matters which should be had regard when considering the development:

> ***Policy 6 Activities in the coastal environment***
> ...
> *(2) Additionally, in relation to the coastal marine area:*
> ...
> *(b) recognise the need to maintain and enhance the public open space and recreation qualities and values of the coastal marine area;*
> ...
> *(e) promote the efficient use of occupied space, including by:*
> *(i) requiring that structures be made available for public or multiple use wherever reasonable and practicable;*
> *(ii) requiring the removal of any abandoned or redundant structure that has no heritage, amenity or reuse value; and*
> *(iii) considering whether consent conditions should be applied to ensure that space occupied for an activity is used for that purpose effectively and without unreasonable delay.*

Public access will be available between the marine farm lines and the 15 blocks comprising the proposed marine farm. In this regard, the gaps between each of the blocks will be

approximately 500 m. Based on experience at other marine farms, the provision of access through the proposed marine farm will provide increased recreational fishing opportunities.

Given the above, it is considered that any potential adverse effects on public access will be minimal and that the proposed marine farm will align with the management expectations of Policy 6(2)(b) of the NZCPS.

With respect to Policy 6(2)(e) of the NZCPS, the proposed marine farm is considered to be an efficient use of space within the CMA as this space would otherwise be unused.

6.2.3 Bay of Plenty Regional Policy Statement

The RPS became operative on 1 October 2014. The RPS identifies the significant resource management issues for the Bay of Plenty region, and gives specific and broad direction to regional and district plans. The RPS contains policies relevant to the proposed marine farm in the following sections:

- Coastal Environment;
- Integrated Resource Management;
- Iwi Resource Management; and
- Matters of National Importance.

The relevant policies are set out and analysed below.

6.2.3.1 Coastal Environment

Policy CE 2B: *Managing adverse effects on natural character within the coastal environment*

Policy CE 8B: *Ensuring subdivision use and development is appropriate to the natural character of the coastal environment*

Policy CE 9B: *Safeguarding the life-supporting capacity of coastal ecosystems*

Policy CE 13B: *Enabling sustainable aquaculture*

As noted above in the discussion on the NZCPS, the proposed marine farm is not located near any areas of the coastal environment with outstanding natural character (as identified in either the RPS or PRCEP). As such, it is not considered that the proposed marine farm will adversely affect any areas of outstanding natural character.

Assessments undertaken for other marine farms in similar offshore location conclude that, the natural character of the coastline and visual amenity values of the coastal environment, as experienced either from on land or in the waters along the coast within about 1 km of the shore, will not be adversely effected by the proposed marine farm. As such, the proposed marine farm will be consistent with Policies CE 2B and CE 8B.

With regard to Policy CE 9B, 22 species of marine mammals are known to frequent the Bay of Plenty. However, marine farms are not considered to have a significant adverse effect on

marine mammals. It is, however, noted that approximately 300 ha of the proposed marine farm is also located inside of the Marine Mammal Protection Buffer identified by the Bay of Plenty Regional Council in the Coastal Use and Values Map – Marine Mammals and Seabirds. This encroachment is not considered to affect the life supporting capacity of the coastal ecosystem in regard to marine mammals.

Furthermore, regarding benthic ecology and the food web, assessments from within the Bay of Plenty conclude that there are no significant populations of commercially or recreationally important shellfish species and the proposed marine farm only has the potential to create minor adverse benthic impacts.

Policy CE 13B seeks to enable sustainable aquaculture in appropriate locations whilst taking into account existing uses and values, significant benefits to communities, land based facilities and infrastructure, adverse effects on marine mammals and areas of significant value, and water quality and effects on water quality. Each of these matters has been had regard to in previous technical assessment undertaken for marine farms in the Bay of Plenty, such that the proposed marine farm is considered to be sustainable aquaculture.

6.2.3.2 Integrated Resource Management

Policy IR 1B: *Applying a precautionary approach to managing natural and physical resources*

Policy IR 4B: *Using consultation in the identification and resolution of resource management issues*

Policy IR 5B: *Assessing cumulative effects*

Policy IR 1B will be had regard to through the management and monitoring plans to be implemented, the staging of the proposed marine farm, and the resource consent conditions imposed on the proposed marine farm.

With regard to Policy IR 4B, consultation with relevant iwi has occurred and is ongoing. This has taken place as part of the overlapping claims processes relating to their efforts to achieve a Treaty of Waitangi Settlement and is reflected in the Agreement in Principle that was signed with the Crown on 18 August 2017. The iwi groups that have been consulted are:

- Ngati Awa;
- Ngai Tai;
- Te Whanau a Apanui;
- Tuhoe; and
- Te Whakatohea;

In addition, the PTC has also notified all applicants under the Marine and Coastal Area (Takutai Moana) Act 2011 ("**MACA Act**") of their intention to apply for a coastal permit. However, it also noted that section 62 of the MACA Act only requires PTC to notify the applicant groups and

"seek the views" on the application. No views from the applicant groups listed below have been forthcoming at this stage:

- Te Whakatohea;
- Whakatohea Whanau, Hapu, Iwi;
- Te Uri a Tehapu;
- Te Runanga o Ngati Awa;
- Ririwhenua Hapu;
- Ngai Tai Iwi;
- Ngai Tamahaua Hapu;
- Te Whanau a Mokomoko;
- Te Hapu O Titoko Ngai Tama;
- Te Upokorehe Iwi;
- Ngai Taiwhakaea Hapu;
- Ngati Patumoana;
- Nga hapu o Ngati Ira o Waioweka Rohe;
- Manu Paora Whanau;
- Hiwarau, Turangaoikitoi and Ohiwa of Whakatohea;
- Whakatohea Pakowhai Hapu;
- Ngati Muriwai Hapu;
- New Zealand Maori Council; and
- New Zealand Maori.

Policy IR 5B requires regard be had to the cumulative effects of the proposed marine farm. Relevant to the proposed marine farm, Policy IR 5B is concerned with incremental degradation on the following:

- Incremental degradation of sites of high natural character;
- Incremental degradation of matters of significance to Maori
- Inefficient use of space;
- Incremental degradation of scenic values, amenity, open space, recreation, and the general use and enjoyment by the public;
- Adverse impacts on coastal processes, resource or values, biodiversity and ecological functioning; and
- Social and economic wellbeing.

With regard to each of these, the following is considered:

- The proposed marine farm is located more than 5 km from the coast and is consider to be an appropriate use of the coastal environment in this location. It is not considered it will have an adverse effect on identified scenic values, amenity, open space, recreation, and the general use and enjoyment by the public;
- With regard to the matters of significance to Maori, the proposed marine farm will enable the PTC to provide for the social, economic and cultural wellbeing of Whakatohea;
- The site is considered suitable for the proposed marine farm due to its offshore location, water quality, and water depth;
- The proposed marine farm will comprise 2,471 ha of marine farming across a wider 4,043 ha area. This is considered to be an efficient use of space that would not otherwise be utilised by another use;
- Technical reports produced for other marine farms in the Bay of Plenty consider that the effects of marine farming will be minor or benign; and
- The proposed marine farm will have significant and demonstrable positive effects in terms of sustaining the social and economic wellbeing of the local and regional community.

6.2.3.3 Iwi Resource Management

Policy IW 2B: *Recognising matters of significance to Māori*

Policy IW 6B: *Encouraging tangata whenua to identify measures to avoid, remedy or mitigate adverse cultural effects*

Policy IW 2B seeks to recognise and provide for traditional Māori uses and practices relating to natural and physical resources, their role as kaitiaki, mana whenua relationship, and recognise that only tangata whenua can identify and substantiate their relationships.

There is only one Iwi Management Plan that relates to the application area that needs to be taken into account – that being Tawharau o nga Hapu o Whakatohea. This is the WMTB's Iwi Management Plan (with PTC being a company owned by the Whakatohea Maori Trust Board). In this regard, the WMTB consider that the provision for marine farming by tangata whenua for the social and economic wellbeing of the iwi, thereby providing for a cultural benefit to the iwi as a whole. The WMTB does not consider that the application will have any adverse cultural effects on Whakatohea.

A specific cultural values assessment is also not considered necessary by PTC at this point for the reasons noted above – the application is effectively being undertaken by the WMTB in the rohe of Whakatohea.

Further, it is noted that under the Coastal Use and Values Maps (Figure 9), which identifies the proposed marine farm location, the proposed marine farm is not located within any *'Sites of Cultural Significance'*.

Therefore, it is considered that the application is consistent with both Policy IW 2B and IW 6B of the RPS.

6.2.3.4 Matters of National Importance

Policy MN 5B: Encouraging public access to and along the coast, lakes and rivers

With regard to Policy MN 5B, Objective 4 and Policy 6 of the NZCPS address public access along the coast. Public access will be available between the marine farm lines and the 15 blocks comprising the proposed marine farm. In this regard, the gaps between each of the blocks will be approximately 500 m. Based on experience at other marine farms, the provision of access through the proposed marine farm will provide increased recreational fishing opportunities.

6.2.4 Proposed Bay of Plenty Regional Coastal Environment Plan

The PRCEP was notified on 24 June 2014, and the provisions that are beyond appeals are to be treated as operative from 12 May 2017. The purpose of the PRCEP is to enable BOPRC to promote the sustainable management of the natural and physical resources of the Bay of Plenty coastal environment. The PRCEP contains the following sections relevant to the proposed marine farm:

- Natural Heritage;
- Iwi Resource Management;
- Coastal Discharges;
- Structures and Occupation of space in the Coastal Marine Area; and
- Aquaculture.

The relevant policies are set out and analysed below. Those parts that are highlighted remain under appeal. As such weighting should be applied to the Operative Regional Coastal Environment Plan policies also set out below where required.

6.2.4.1 Natural Heritage

Policy NH 1 *In relation to the protection of the natural heritage of the coastal environment, activities may be considered appropriate if they contribute to the restoration and rehabilitation of natural heritage ~~and~~ or cultural values associated with natural heritage (including kaimoana resources and cultural landscape features), or if they:*

(ee) Involve the operation, maintenance, upgrading or development of existing regionally significant infrastructure; or

(c) Have a functional need to be located in or near the coastal environment in general, or in or near a specific part of the coastal environment and no reasonably practicable alternative locations exist; and

...

(b) Are compact, and do not add to sprawl or sporadic development; and

~~*(c) Have a functional need to be located in or near the coastal environment in general, or in or near a specific part of the coastal environment and no reasonably practicable alternative locations exist; and*~~

...

(e) *Will not, by themselves or in combination with effects of other activities, have significant adverse effects on the natural processes or ecological functioning of the coastal marine area; or except that clauses (a), (b), (d) and (e) do not apply for the National Grid.*

~~*(ee) Are the operation, maintenance, upgrading or development of existing regionally or nationally significant infrastructure.*~~

Advisory note:

1 Particular consideration must be given to Policies NH 4, NH 4A, NH 5 and NH 11 if an activity may have adverse effects on the values and attributes of an Outstanding Natural Feature and Landscape (ONFL), an area of Outstanding Natural Character (ONC) or an Indigenous Biological Diversity Area A (IBDA A).

Policy NH 6A Significant adverse effects on natural character in areas that are not identified as outstanding in Appendix I to the RPS are to be avoided, and other adverse effects avoided remedied or mitigated.

Policy NH 7 Areas of indigenous biodiversity in the coastal environment not identified in Schedule 2 contribute to the overall natural character of the environment and cumulative adverse effects on these areas should be avoided, remedied or mitigated.

Policy NH 9 Maintain ecological interconnections that are necessary to sustain indigenous species, including migratory routes, intact ecological sequences and ecological corridors. Irreversible and other significant adverse effects on these interconnections should be avoided, including significant cumulative adverse effects; other effects should be avoided, remedied or mitigated.

Policy NH 9A Recognise and provide for Māori cultural values and traditions when assessing the effects of a proposal on natural heritage, including by:

(a) *Avoiding significant adverse effects, and avoiding, remedying, mitigating or offsetting other effects, on habitats of indigenous species that are important for traditional or cultural purposes; and on cultural and spiritual values associated with natural features and natural landscapes;*

(b) *Avoiding, remedying or mitigating cumulative adverse effects on the cultural landscape;*

(c) *Assessing whether restoration of cultural landscape features can be enabled; and*

(d) *Applying the relevant Iwi Resource Management policies from this Plan and the RPS.*

The natural heritage policies in the PRCEP repeat similar themes from the NZCPS and RPS with respect to having a functional need to be located in or near the coastal environment, and avoidance of significant adverse effects. Given this, it is considered that the analysis provided above with respect to the NZCPS and RPS also applies with respect to the consideration of the proposed marine farm against the natural heritage policies of the PRCEP.

Policy NH 1 of the PRCEP is currently subject to an appeal to the High Court. As such, the Natural Character policies of the Operative Regional Environment Coastal Plan that are relevant to the proposed marine farm are outlined below.

4.2.3(a) To recognise that there are areas of exceptional natural character which require preservation and for which no development is appropriate. These

include but are not limited to the Coastal Habitat Preservation Zone (see chapter 6 – Significant Areas of Flora and Fauna, and the maps).

4.2.3(b) To recognise that most of the coast has some degree of natural character which needs to be protected from inappropriate use and development. The following plan provisions should be used as a guide to the relative weight to be attached to the protection of natural character in particular localities:

- *The purpose of the zones as set out in chapter 3 – Plan Structure.*
- *Policies 4.2.3(f), 4.2.3(i), 5.2.3(a), 5.2.3(b), 6.2.3(a) and 6.2.3(b).*
- *Policies 13.2.3(b), 13.2.3(c) and 13.2.3(d).*

...

4.2.3(d) To recognise the important ecological interconnections that are necessary to sustain species and their habitats. Cumulative and irreversible adverse effect on these interconnections should be avoided.

As noted above regarding the discussion on the NZCPS, the proposed marine farm is not located near any areas of the coastal environment with outstanding natural character (as identified in the Operative or Proposed Regional Coastal Environment Plans). As such, it is not considered that the proposed marine farm will adversely affect any areas of high natural character.

With respect to avoiding significant adverse effects and avoiding, remedying or mitigating other adverse effects of activities on natural character (Policy NH 6A and NH 9A), the evidence of Ms de Lambert concludes that the proposed marine farm will not adversely affect the natural character or visual amenity values of the coastline. Additionally, as stated earlier, it is unclear what particular values warrant classifying all open coastal water in the Bay of Plenty as having high natural character.

In terms of other areas of indigenous biodiversity in the coastal environment that contribute to the overall natural character of the environment (Policy NH 7), it is noted that baseline surveys of the Eastern Sea Farms site have found sediments in this location to be muddy with low – medium organic content, supporting a relatively homogenous and diverse population of epifauna and infauna taxa. There were frequent signs of bioturbation in the form of burrow holes, small mounds and trail marks. Epifauna observed was moderate to sparse. Gastropod molluscs were the dominant epifauna taxa, and less common heart urchins and various sponges were also observed.

While the proposed marine farm will result in changes from the current benthic environment, in some cases these are positive effects, particularly where benthic communities have been affected by other activities. The installation of the proposed marine farm will result in the exclusion of these activities that periodically disturb the benthic environment, resulting in recovery and stabilisation of the benthic communities – such that the contribution of these values to natural character will not be compromised.

Furthermore, a number of measures have been proposed by PTC to avoid, remedy or mitigate the potential effects of the proposed marine farm on natural character and landscape values - including locating the marine farm approximately 6 km offshore and limiting the intensity of

development. In addition, and as previously noted, the WMTB does not consider that the application will have any adverse cultural effects on Whakatohea.

In light of the above, it is considered that the proposed marine farm can be established in accordance with the management expectations in relation to natural heritage.

6.2.4.2 Iwi Resource Management

Policy IW 1 *Proposals which may affect the relationship of Māori and their culture and traditions must recognise and provide for:*

(a) *Traditional Māori uses, practices and customary activities relating to natural and physical resources of the coastal environment such as mahinga kai, mahinga mātaitai, wāhi tapu, ngā toka taonga, tauranga waka, taunga ika and taiāpure in accordance with tikanga Māori;*

(b) *The role and mana of tāngata whenua as kaitiaki of the region's coastal environment and the practical demonstration of kaitiakitanga;*

(c) *The right of tāngata whenua to express their own preferences and exhibit mātauranga Māori in coastal management within their tribal boundaries and coastal waters; and*

(d) *Areas of significant cultural value identified in Schedule 6 and other areas or sites of significant cultural value identified by Statutory Acknowledgements, iwi and hapū resource management plans or by evidence produced by tāngata whenua and substantiated by pūkenga, kuia and/or kaumatua; and*

(e) *The importance of Māori cultural and heritage values through methods such as historic heritage, landscape and cultural impact assessments.*

Policy IW 2 *Avoid significant adverse effects on resources or areas of spiritual, historical or cultural significance to tāngata whenua in the coastal environment identified using criteria consistent with those included in Appendix F set 4 to the RPS, and remedy or mitigate other adverse effects on these areas. Where significant adverse effects cannot be avoided, remedied or mitigated, it may be possible to provide positive effects that offset the effects of the activity.*

Policy IW 3 *To recognise the sensitivity associated with identifying sites, areas and resources of significance to Māori.*

Policy IW 4 *The following shall be taken into account during decision-making:*

(a) *The consistency of the proposal with any iwi or hapū resource management plan recognised by an Iwi Authority and lodged with the Regional Council that applies to the area affected; and*

(b) *Recognition provided under any other legislation – including but not limited to: Treaty of Waitangi settlements; gazetting of Rohe Moana and Mātaitai under the Kaimoana Customary Fishing Regulations 1998 and the customary rights recognitions available under the Marine and Coastal Area (Takutai Moana) Act 2011.*

Policy IW 6 *Applications for coastal permits should include sufficient evidence of consultation with tāngata whenua likely to be affected by the proposed activity or those who otherwise have tribal jurisdiction over the location of the proposed activity. Tāngata whenua that may be affected by a proposal include those:*

(a) *That have mana moana or mana whenua over an affected area;*

(b) *That are ahi kā;*

(c) *That are landowners;*

(d) *Groups that have recognition under other legislation; or*

(e) *Tāngata whenua who have lived in an affected area for a long time.*

Policy IW 8 *Tāngata whenua shall be involved in establishing appropriate mitigation, remediation and offsetting options for activities that have an adverse effect on areas of significant cultural value (identified in accordance with Policy IW 1(d)).*

Policy IW 9 *With regard to Policy IW 8, recognise that appropriate mitigation, remediation and offsetting may include, but is not limited to, the following:*

(a) *Restoring and protecting areas identified by tāngata whenua as being of significant cultural or biodiversity value or that are mahinga kai sites; or*

(b) *Contributing resources (financial or otherwise) to environmental, social or cultural enhancement and improvement programmes run by affected tāngata whenua; or*

(c) *Providing structures associated with customary activities or access to resources of cultural value.*

Policy IW 10 *To avoid use and development which would restrict the access of tāngata whenua to sites used for cultural practices, gathering kaimoana and areas of cultural significance in the common marine and coastal area, unless: (a) The restriction is consistent with one or more of the clauses (a) to (k) listed in Policy RA 4; or (b) Alternative access can specifically be provided for; or (c) The effects of the loss of access can be adequately remedied or mitigated.*

With regard to the above policies, it is considered they expand on the RPS policies in relation to iwi resource management. In this regard, the application is located in the rohe of Whakatohea and PTC is also currently undertaking consultation with iwi who might be affected as well as those applicant groups that have lodged under the Marine and Coastal Area (Tukutai Moana) Act 2011. The groups that PTC has notified and sought the views of are identified in section 6.2.4.2 of this document.

It is also considered that the proposed marine farm is consistent with Tawharau o nga Hapu o Whakatohea. This is the WMTB's Iwi Management Plan. In this regard, the WMTB consider that the provision for marine farming by tangata whenua for the social and economic wellbeing of the iwi, thereby providing for a cultural benefit to the iwi as a whole.

Furthermore, and in accordance with Policy IW 2, the WMTB does not consider that the application will have any adverse cultural effects.

6.2.4.3 Coastal Discharges

Policy CD 1 *Discharges to the coastal marine area must:*

(a) *Avoid significant adverse effects, including cumulative effects, on aquatic life, habitats, feeding grounds, kaimoana (including shellfish gathering), ecosystems, contact recreation and amenity values in the coastal marine area after reasonable mixing;*

(b) *Minimise adverse effects on the life-supporting capacity of water within the mixing zone;*

...

(g) *Maintain or enhance the physical characteristics of receiving waters (including salinity) that contribute to their lifesupporting capacity, including their ability to support indigenous flora and fauna and kaimoana beds; and*

(h) *Be of a quality that has particular regard to:*

(i) *The sensitivity of the receiving environment;*

(ii) *The capacity of the receiving environment to assimilate contaminants; and*

(iii) *The nature of the contaminants to be discharged, the concentration of contaminants needed to achieve the required water quality in the receiving environment, and the risks if that concentration of contaminants is exceeded.*

Policy CD 2 *Apply the water quality classifications and standards contained in Schedule 10 to discharges to the coastal marine area, unless other standards can be demonstrated to be more consistent with the purpose of the Resource Management Act 1991. When existing water quality is significantly better than the classification standards, a higher standard will be applied to prevent degradation of existing water quality.*

...

Policy CD 3 *To define the radius of a reasonable mixing zone in the conditions of a resource consent for the point source discharge of contaminants to coastal waters having regard to the following matters:*

(a) *Use of the smallest mixing zone necessary in order to minimise adverse effects on the life-supporting capacity of water within the mixing zone and achieve the required water quality standard of the receiving environment.*

(b) *The water quality standard in Schedule 10 to this Plan.*

(c) *The hydrological regime of the receiving water.*

(d) *The ambient concentrations of contaminants in the receiving water.*

...

(g) *The need to avoid significant adverse effects on ecosystems and habitats after reasonable mixing.*

...

(i) *Māori cultural values (refer to Policy CD 4 and Iwi Resource Management policies).*

...

(k) *Adverse environmental effects of the discharge, including cumulative effects in relation to (a) to (j).*

...

(o) *Any other information relevant to the nature of the discharge and the site characteristics.*

Policy CD 4 *To recognise and provide for the effects on the mauri of the receiving environment caused by the discharge of contaminants to the coastal marine area by:*

(a) *Promoting efficient use of water, including reuse and recycling of wastewater.*

(aa) *Discouraging disposal of toxic materials via wastewater systems.*

(b) *Encouraging a shift to land based treatment and disposal systems, where appropriate and environmentally sustainable and socially, technically and economically feasible. This includes disposal of sewage by passage through land, soil or wetlands.*

(c) *Avoiding, remedying or mitigating adverse effects on coastal resources or sites that are of significance to tāngata whenua, where such resources or sites have been identified by tāngata whenua.*

Policy CD 5 *To maintain a response capability with regard to unauthorised or accidental discharges or spills of contaminants into the coastal marine area.*

Also refer to Policies CD 7, CD 8 and CD 9.

The discharges from the proposed marine farm are limited to biodegradable and organic matter from the lines. The effects of the biodegradable and organic matter on the environment and water quality are addressed in the evidence of Mr Gibbs and Mr Gillespie.

Further to the expert evidence, the Ministry for Primary Industries ("**MPI**") *"Overview of Ecological Effects of Aquaculture – August 2013"* provides a summary of the potential ecological effects associated with aquaculture activities. The content of this document, in particular Chapters 2 (Shellfish) and 5 (Cumulative Effects), has provided valuable input into the design of the proposed marine farm with regard to addressing the environmental effects associated with the proposed aquaculture activities.

Various design elements (including stocking density) contribute to the discharge of biodegradable and organic matter from the mussel lines. In this case the configuration of the proposed marine farm has been designed to not exceed the carrying capacity of the receiving environment and to avoid, remedy or mitigate any potential adverse effects of the discharge.

Monitoring and the use of environmental trigger levels will also be utilised to manage the potential effects of the discharge of biodegradable and organic matter from the mussel lines matter to the coastal environment.

With respect to Policy CD 5, PTC will comply with the Resource Management (Marine Pollution) Regulations 1998 and does not intend to have vessels refuelling at sea (as this would put the aquaculture stock at risk). It is also considered that Policy CD 5 is principally targeted as a function of the Bay of Plenty Regional Council. In this regard, Method 12 of the PRCEP identifies that the Bay of Plenty Regional Council will continue to participate in the Hazardous Substances Technical Liaison Committee for the prevention and clean-up of spills of hazardous substances. It may be that further spill contingency resources are established at Opotiki Harbour in time as part of the redevelopment of the harbour – but this is beyond the control of PTC.

Policies CD 7, CD 8 and CD 9 relate to discharges of human sewerage and are therefore not relevant to the proposed marine farm.

6.2.4.4 Structures and Occupation of space in the Coastal Marine Area

Policy SO 2 *Structures in the coastal marine area shall:*

(a) Be consistent with the requirements of the NZCPS, in particular Policies 6(1)(a) and 6(2);

...

(b) Be consistent with the requirements of the RPS in relation to the Coastal Environment, in particular Policies CE 2B, CE 4A, CE 5A, CE 8B, CE 9B, CE 11B, and CE 12B;

(c) Avoid, remedy or mitigate adverse effects on coastal hydrological and geomorphic processes;

...

With regard to Policy SO 2(a) and (b), Policies 6(1)(a) and 6(2) of the NZCPS are addressed in section 6.2.2.2 above, and Policies CE 2B, CE 8B and CE 9B are addressed in section 6.2.3.1 above. By way of summary the proposed marine is consistent with their requirements.

Policy SO 2(c) seeks the avoidance, remediation or mitigation of adverse effects on coastal hydrological and geomorphic processes. In this regard, the site is located in relatively deep water, ranging from approximately 45 – 75 m, with a mean current speed of approximately 8.2 cm s^{-1}. It is acknowledged that within the immediate vicinity of the proposed marine farm, current speeds may be affected however, given the relative size of the proposed marine farm in relation to the wider Bay of Plenty it is not considered that it will have notable effects on hydrological processes.

6.2.4.5 Aquaculture

Policy AQ 1 The Regional Council will give particular consideration to the following matters when making decisions on any application for aquaculture activities:

(a) The suitability of the location for the proposed type of aquaculture and species to be farmed; including consideration of the cumulative effects of other aquaculture in the area;

(b) The sensitivity of the receiving environment;

(c) The potential adverse effects of the proposed aquaculture activities on natural, social, cultural, heritage and economic values, including biosecurity risks;

(d) The potential social, cultural and economic benefits of the proposed aquaculture activities;

(e) Navigation safety issues;

(f) The provision of appropriate site access, and the potential effects associated with any off-site structures, facilities or activities forming part of the proposal;

(fa) The availability of the necessary land and water-based infrastructure to service the development; and

(g) Potential conflict with existing uses and values of the coastal marine area - the Coastal Use and Value Maps 2006 (available on Council's website: www.boprc.govt.nz) will inform this consideration; however, more recent evidence on existing uses and values may also be taken into account.

Policy AQ 1A Promote the integrated provision of facilities and infrastructure associated with new and existing aquaculture activities, and the integrated management of any associated land-use effects.

Policy AQ 2 *When considering aquaculture proposals, the potential benefits to be taken into account include, but are not limited to:*

(a) *Local employment opportunities;*

(b) *Opportunities for enhancing Māori development, particularly in areas where alternative opportunities are limited;*

(c) *Research and training opportunities – which would grow the community's knowledge base and up skill the labour force;*

(d) *Opportunities to supplement or complement natural fish and shellfish stocks; and*

(e) *The contribution of the proposal to primary and secondary industries and the overall regional and national economy.*

Policy AQ 3 *Aquaculture applications shall contain a draft management plan that includes, but is not limited to, the following:*

(a) *A design plan for the layout and structure of the farm;*

(b) *A maintenance programme for all structures associated with the farm, together with a system to record maintenance;*

(c) *An environmental effects monitoring programme that corresponds to the scale of the potential effects of the proposed aquaculture activity;*

(d) *A navigation lighting plan and maintenance programme, with approval in principle from the Bay of Plenty Harbourmaster;*

(e) *Details of landing facilities or other off-site facilities that form part of the proposal; and*

(f) *A biosecurity monitoring plan.*

Policy AQ 5 *Aquaculture developments shall provide access for recreational fishers and other small watercraft to the aquaculture area, except where access restrictions are necessary to protect public health and safety or ensure a level of security consistent with the purpose of a resource consent.*

Policy AQ 6 *New commercial aquaculture is inappropriate in the following areas:*

(a) *Any Indigenous Biological Diversity Area A (as identified in Schedule 2, Table 1);*

(b) *Areas of Outstanding Natural Character (as identified in Appendix I to the RPS);*

(c) *Within 5.5 kms (three nautical miles) of commercial shipping lanes identified in the Coastal Use and Value Maps 2006 or navigable river mouths;*

(d) *In any mooring area shown in the maps to this Plan, the Port and Harbour Development Zones; and*

New commercial aquaculture may be inappropriate in the areas of cultural significance, which iwi or hapū have identified in the Coastal Use and Value Maps 2006.

Policy AQ 10 *The Regional Council will require new aquaculture activities to be developed in a staged manner, where:*

(a) *The potential adverse effects cannot be adequately predicted and are potentially significant;*

(b) *New species are being introduced and any adverse effects may not be known and are potentially significant;*

(c) *New technology is being proposed and the adverse effects from such technology have not been recorded and are potentially significant; or*

(e) *The sensitivity of the receiving environment to aquaculture activities warrants a precautionary approach.*

A staged approach will require:

(a) *A baseline environmental survey;*

(b) *A Development Plan showing the stages appropriate to the scale of the aquaculture activity being applied for;*

(c) *A staged Environment Limits and Monitoring Programme that will assess environmental change and report on triggers that would allow for or restrict the rate of progression of further stages of the aquaculture development; and*

(d) *Identification of actions that will be undertaken to avoid, remedy or mitigate effects that exceed the environment limits set by way of consent conditions or within the Environment Limits and Monitoring Programme.*

Policy AQ 13 *When assessing the potential effects of aquaculture activities on fisheries resources, the following matters shall be considered as a minimum and at a level of detail appropriate to the significance of the potential effects:*

(a) *Discharge and deposition of contaminants.*

(b) *Uptake of phytoplankton and zooplankton.*

(c) *Effects on the local marine ecosystems.*

(d) *Hydrodynamic effects.*

(e) *Nutrient cycling.*

(f) *Water clarity.*

(g) *Genetic effects.*

(h) *Unwanted and exotic species.*

(i) *Biosecurity.*

(j) *Effects on associated and dependent species.*

Policy AQ 14 *All applications for commercial aquaculture ventures shall be accompanied by an assessment of the physical viability of the operation at the intended location. This assessment shall include consideration of whether the water quality in the proposed location is suitable for aquaculture.*

It is considered that the aquaculture provisions effectively provide a comprehensive checklist of the matters to be assessed when decision-makers consider resource consent applications for different types of aquaculture activities in the Bay of Plenty region – based on the direction provided by the NZCPS and the RPS. Given this, the following provides a summary of how the proposed marine farm aligns with these matters:

- The suitability of the site, and environmental effects are discussed in the evidence briefs provided;
- The social and economic benefits of the proposed marine farm are discussed above in relation to the relevant provisions of the NZCPS;

- The layout and design of the proposed marine farm is also such that recreational vessels (e.g. small boats) will be able to navigate their way through the farm blocks;
- In order to avoid the spread of unwanted pests and diseases, the proposed marine farm will be operated in accordance with the New Zealand Mussel Industry Seed Code of Practice as outlined in the *"Pakihi Trading Company, Opotiki Marine Farm, Monitoring and Management Framework, August 2017"*;
- The application of the precautionary approach (and adaptive management) is discussed above as it relates to the consistency of the proposed marine farm with Policy 3 of the NZCPS;
- A baseline benthic environment survey will occur. This is noted in *Pakihi Trading Company, Opotiki Marine Farm, Monitoring and Management Framework, August 2017*";
- With respect to associated facilities and infrastructure, no new infrastructure is proposed by the PTC as part of the development of the proposed marine farm at this stage;
- The site of the proposed marine farm in the Bay of Plenty is considered appropriate given that it will consolidate existing aquaculture activities in the area – being that block to the north – and will not compromise biosecurity in the area;
- The proposed marine farm will provide direct and indirect job opportunities in the Bay of Plenty region. These jobs will be associated with farming and processing activities, and the employment of people in supporting services (e.g. transport and logistics);
- PTC have prepared a monitoring and management framework document "*Pakihi Trading Company, Opotiki Marine Farm, Monitoring and Management Framework, August 2017*" that outlines the maintenance, monitoring and navigation framework for the site (as required under Policy AQ 3). In order to ensure the integrated management of the proposed marine farm with the marine farm operated by Eastern Sea Farms Limited, the framework has been drafted to broadly align with its monitoring and management requirement. The framework has been included as part of the application package to be lodged with BOPRC;
- The proposed marine farm is not located in any of the areas identified in Policy AQ 6;
- The MPI *'Aquaculture Biosecurity Handbook – Assisting New Zealand's commercial and non-commercial aquaculture to minimise on-farm bio-security risk'* has been used as a guidance document when drafting the monitoring and management framework (Policy AQ 3) for the proposed marine farm; and
- Fisheries and site suitability are discussed in the evidence briefs provided with the applications, and it is understood that the undue adverse effects test can be passed.

Overall, it is considered that the location and design of the proposed marine farm will ensure that it is consistent with the outcomes sought by the PRCEP.

6.2.5 Part 2 Matters

6.2.5.1 Section 5 of the RMA

The provisions of section 104 of the RMA are all *"subject to Part 2"*. The purpose of the RMA (section 5) is to promote the sustainable management of natural and physical resources. The Act defines *"sustainable management"* as:

(2) ...managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural wellbeing and for their health and safety while—

(a) Sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and

(b) Safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and

(c) Avoiding, remedying, or mitigating any adverse effects of activities on the environment.

Applying section 5 of the RMA, and the other relevant matters under Part 2 of the Act, can involve the assessment of conflicting considerations – including the positive and adverse effects associated with the use, development and protection of resources. In addition, the consideration of the matters in sections 5(2)(a) – (c) is often informed by the direction provided in the objectives and policies in the relevant statutory planning documents.

With respect to the requirement that any adverse effects of activities be avoided, remedied or mitigated, case law has established that it is not required that all effects be avoided, or that there is no net effect on the environment. Rather, section 5(2)(c) of the RMA is concerned about doing what is reasonably necessary, given the circumstances of the particular case, to lessen the severity of the effects of an activity. The approach to managing effects at the proposed marine farm, including its location and design, and its monitoring and adaptive management regime is consistent with this requirement.

6.2.5.2 Section 6 – Matters of National Importance

Section 6 of the RMA identifies matters deemed to be of national importance. In exercising their functions and powers under the RMA, consent authorities must recognise and provide for the relevant matters. With respect to the proposed marine farm, the matters of relevance are:

(a) The preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins and the protection of them from inappropriate subdivision, use and development:

(b) The protection of outstanding natural features and landscapes from inappropriate subdivision, use and development:

(c) The protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna:

(d) The maintenance and enhancement of public access to and along the coastal marine area, lakes and rivers:

(e) The relationship of Maori and their culture and traditions with their ancestral lands, water, sites, wahi tapu, and other taonga:

(f) The protection of historic heritage from inappropriate subdivision, use, and development:

Section 6(g) of the RMA is not considered relevant to this assessment as there are no protected customary rights identified in the area around the proposed marine farm. For clarity, it is noted that some of the iwi applicant groups under the MACA Act have sought protected customary rights. However, none of these iwi applicant groups have had their applications for a protected

customary right recognised by a protected customary rights order or an agreement – which is why section 6(g) is not considered relevant at this point.

Section 6(a)

The preservation of the natural character of the coastal environment in the vicinity of the proposed marine farm and its protection from inappropriate use and development is a matter of national importance in accordance with section 6(a) of the RMA. Of particular note when considering the proposed marine farm in this context:

- The definition of what constitutes natural character has evolved over the period since the enactment of the RMA. It has become generally accepted that natural character derives from the presence of natural elements, biophysical features and perceptual aspects;
- Protection in a section 6(a) context means keeping safe from injury or harm, rather than absolute protection, prevention or prohibition; and
- An assessment of 'appropriateness' in a section 6(a) context must be made on a case by case basis in terms of the values that contribute to the natural character of a site.

The relative significance of the various values that comprise the natural character of the Bay of Plenty, and the anticipated effects of the proposed marine farm on those values, are outlined in the evidence of Ms de Lambert. In particular, it is noted that the proposed marine farm is not located in an area of outstanding natural character and is a considerable distance from shore – meaning its impact on the aesthetic values of the Bay of Plenty will be minimised. It will not have significant adverse effects on natural character.

Effects on the various coastal processes evident in the Bay of Plenty are also expected to minimal. In this regard, as the longlines will be orientated parallel to the tidal flows at the proposed marine farm, any effects on the currents will be minimal and would be unlikely to affect movement of sediment or shoreline processes - as the proposed marine farm site is approximately 4.8 km offshore and the current flow is predominantly parallel to the shore.

Overall, it is considered that the proposed marine farm does not constitute inappropriate development and will not impact on the protection of natural character in accordance with section 6(a) of the RMA.

Section 6(b)

Section 6(b) seeks to protect outstanding natural features and landscapes from inappropriate use and development. As already noted, the nearest areas identified as being outstanding natural features and landscapes are located along the coastline extending no more than 1 km seaward. Given this, it is not considered that the proposed marine farm will affect the protection of any outstanding natural landscape or feature and does not constitute an inappropriate development.

Section 6(c)

Section 6(c) of the RMA seeks to protect areas of significant indigenous vegetation and significant habitats of indigenous fauna.

The proposed marine farm site is not identified in the PRCEP as being an Indigenous Biological Diversity Area, however one is located directly inshore from the proposed marine farm, but along the shoreline. That said, it is acknowledged that the Bay of Plenty provides habitat for marine mammals that are listed as threatened or at risk – including Southern Right Whale, Killer whale and Bryde's whale. Investigations undertaken for other marine farms in the Bay of Plenty conclude that the installation of offshore marine farming will not have a significant adverse effect on the marine mammals of Bay of Plenty.

It is not considered that the proposed marine farm will affect the protection of areas that are significant habitats of indigenous fauna. Habitat exclusion, underwater noise and potential entanglement appear to be minor issues for marine farming. In addition, given that the proposed marine farm is located in an offshore, relatively open ocean environment, the proposed marine farm would exclude marine mammals from a negligible area in relation to the wider Bay of Plenty.

Section 6(d)

Section 6(d) relates to the maintenance and enhancement of public access to, and along, the CMA.

Navigation and recreation within the vicinity of the site of the proposed marine farm is reasonably low and that it will not represent a hindrance to commercial vessels in the Bay of Plenty.

Public access would be provided between the blocks comprising the proposed marine farm. In this regard, the gaps between each of the blocks between 450 and 493 m. Based on experience at other marine farms, the provision of access through the proposed marine farm will provide increased recreational fishing opportunities.

Given the above, it is considered that any potential adverse effects on navigation and public access will be minimal and that the proposed marine farm will generally enable the maintenance of public access to, and along, the CMA.

Section 6(e)

Section 6(e) of the RMA refers to the relationship of Māori and their culture and traditions with their ancestral lands, water, sites, wahi tapu and other taonga.

PTC regard aquaculture development as a modern extension of traditional kai moana activities. As such, it is viewed that the development of aquaculture can be undertaken in a manner that aligns with section 6(e) of the RMA.

6.2.5.3 Section 7 – Other Matters

Section 7 of the RMA identifies additional matters that consent authorities shall have particular regard to when exercising their functions and powers under the Act. With respect to the proposed marine farm, the following matters in section 7 of the RMA are considered to be relevant:

(a) Kaitiakitanga:
(aa) The ethic of stewardship:
(b) The efficient use and development of natural and physical resources:
(ba) ...
(c) The maintenance and enhancement of amenity values:
(d) Intrinsic values of ecosystems:
(e) [Repealed]
(f) Maintenance and enhancement of the quality of the environment;
(g) Any finite characteristics of natural and physical resources:
...

Sections 7(a) and (aa)

Sections 7(a) and (aa) of the RMA require particular regard to given to kaitiakitanga and the ethic of stewardship.

As with the discussion on section 6(e) of the RMA, it is considered that the proposed marine farm can be developed in a manner that gives particular regard to the kaitiakitanga responsibilities of the iwi of the Bay of Plenty. This will be considered further in discussions with relevant iwi.

Section 7(b)

Section 7(b) of the RMA is concerned with the efficient use and development of natural and physical resources.

The proposed marine farm is considered to be an efficient use of natural and physical resources as it will enable the utilisation of a coastal location that is suitable for the growing of mussels (due to its water depth, water quality, offshore location, and vicinity to existing marine farms).

Section 7(c)

With respect to section 7(c) of the RMA, the potential effects of the proposed marine farm on amenity values will be primarily limited to the amenity values of those persons traversing the CMA in a vessel in the vicinity of the proposed marine farm.

It is considered the number of vessels traversing past the site are reasonably limited due to site being relatively close to the coastline from a shipping perspective, and the offshore location from a recreational perspective. Any potential amenity effects will be minimised by the low profile of the proposed marine farm in the water, the proximity of the vessel to the marine farm, and changing weather and sea conditions (i.e. the visibility of the proposed marine farm – excluding the navigation lighting - will generally be reduced in swell conditions).

The proposed marine farm will not generally be visible or obvious in the seascape to people living and travelling around the shoreline of the Bay of Plenty (except potentially from elevated locations). As with the above, potential effects on amenity will be reduced by the low profile of the proposed marine farm

Aspects of recreational amenity may also be enhanced by virtue of people utilising the marine farm as a location to fish – as has been experienced other marine farms around New Zealand.

Section 7(i) Sections 7(d), (f) and (g)

Sections 7(d), (f) and (g) of the RMA relate to the intrinsic values of ecosystems, the quality of the environment, and the finite characteristics of natural and physical resources. Based on the evidence of Mark Gibbs, Martin Cawthron, Paul Gillespie, and Rachel de Lambert it is considered that particular regard has been given to the intrinsic values of ecosystems and to the maintenance of the quality of the environment in the location and design of the proposed marine farm and its monitoring and adaptive management regime.

6.2.5.4 Section 8 – Treaty of Waitangi

Section 8 sets out that all persons exercising functions and power under the RMA, in relation to managing the use, development and protection of natural and physical resources, shall take into account the principles of the Treaty of Waitangi (Te Tiriti o Waitangi).

PTC is not a *"person exercising functions and powers under the RMA"* for the purpose of the resource consent applications to establish the proposed marine farm. In this regard, Bay of Plenty Regional Council have the *"functions and powers under the RMA"* with respect to the resource consents being sought by the PTC.

That said, it is considered that the development of the proposed marine farm will assist in providing for the rights of iwi with respect to aquaculture development in the Bay of Plenty.

6.2.5.5 Overall Conclusion Regarding Part 2

There are two general elements of sustainable management in the context of section 5 of the RMA that must be considered when assessing a resource consent application. They are whether a proposal will enable people and communities to provide for their social, economic and cultural wellbeing, and (at the same time) whether the environment will be safeguarded through the avoidance, remediation or mitigation of adverse effects.

The development of the proposed marine farm will have significant and demonstrable positive effects in terms of sustaining the social and economic wellbeing of the local and regional community.

In addition, extensive consideration has been had to the natural and physical resource values of the project site in developing and designing the proposed marine farm. As such, a number of potential environmental effects have been able to be avoided through site selection and design. Whilst the proposed marine farm will have some effects on the environment, these effects will be avoided, remedied or mitigated as far as practicable through the imposition of the robust resource consent conditions, including the robust monitoring and adaptive management regime. It is, therefore, considered that the proposed marine farm will safeguard the life-supporting capacity of air, water, soil and ecosystems.

Overall, it is considered that the project site is an appropriate location for a proposed marine farm of the nature proposed and that the construction, operation and maintenance of the

proposed marine farm will promote the sustainable management of natural and physical resources in accordance with Part 2 of the RMA.

7. CONCLUDING STATEMENT

The proposed marine farm will have significant and demonstrable positive effects in terms of sustaining the social and economic wellbeing of the local and regional community.

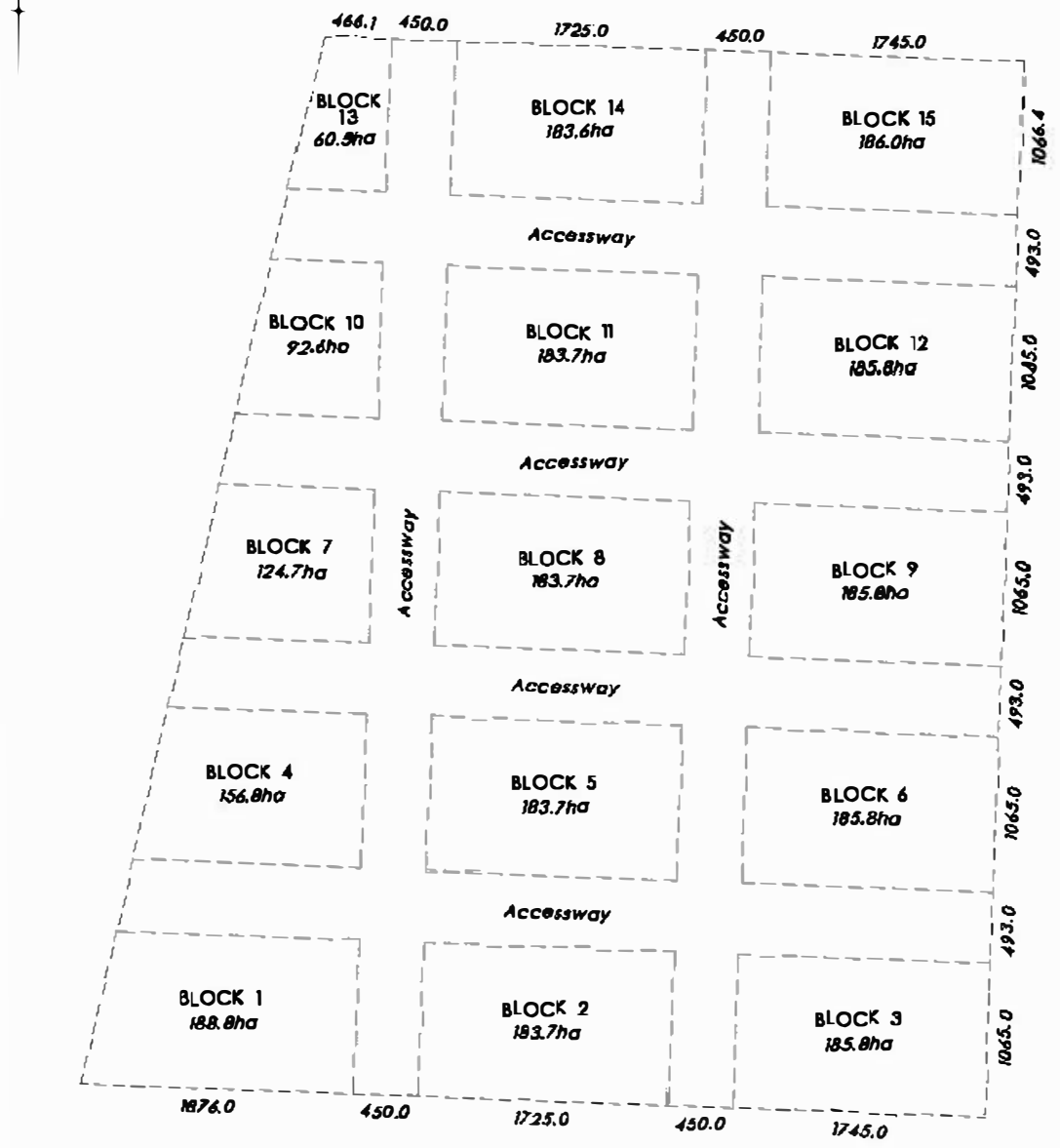
Extensive consideration has been given to the natural and physical resource values of the Bay of Plenty in developing and designing the proposed marine farm. As such, a number of potential environmental effects have been able to be avoided through site selection and design.

Whilst the proposed marine farm will have some effects on the environment, these effects will be avoided, remedied or mitigated as far as practicable through the imposition of robust resource consent conditions – including the robust monitoring and staged development regime. It is, therefore, considered that the project will safeguard the life supporting capacity of air, water, soil and ecosystems.

Overall, it is considered that the project site is an appropriate location for a marine farm of the nature proposed by PTC and that the construction, operation and maintenance of the proposed marine farm can promote the sustainable management of natural and physical resources in accordance with Part 2 of the RMA.

APPENDIX A

Proposed Marine Farm Layout



REFERENCE

- Consent Boundary
- Block Boundary

Proposed Coastal Permit
Site B - Block Plan
Pakihi Trading Company

Prepared by
DRAUGHTING PLUS LTD
Date: 14 August 2017

MF_2526

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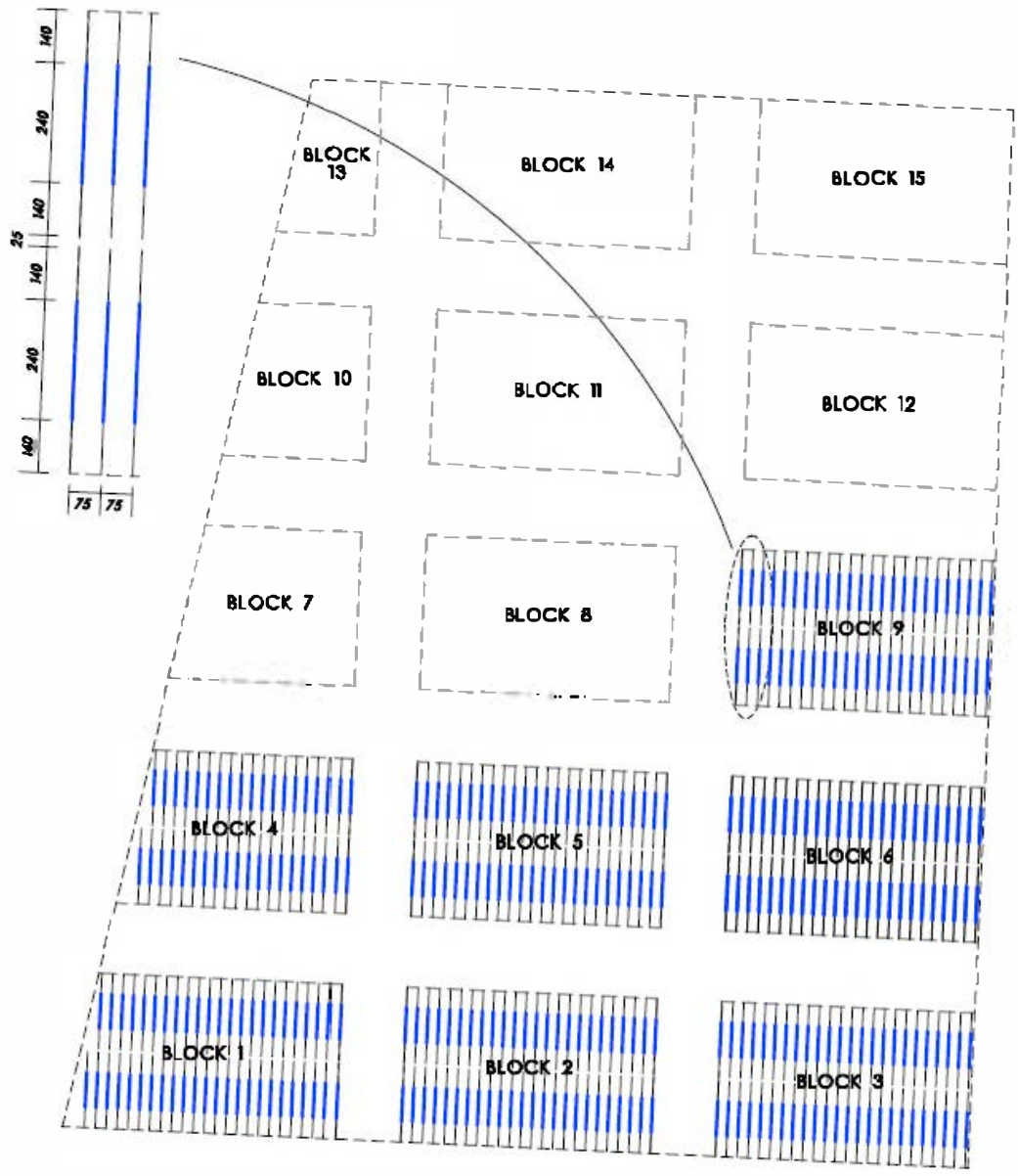
APPENDIX B

Staging Plans for the Proposed
Marine Farm



NOTES

Line spacing	75m
Total number of lines	374
Backbone Length	240m
Total Backbone Metres	89,760m

Stage 1 Development

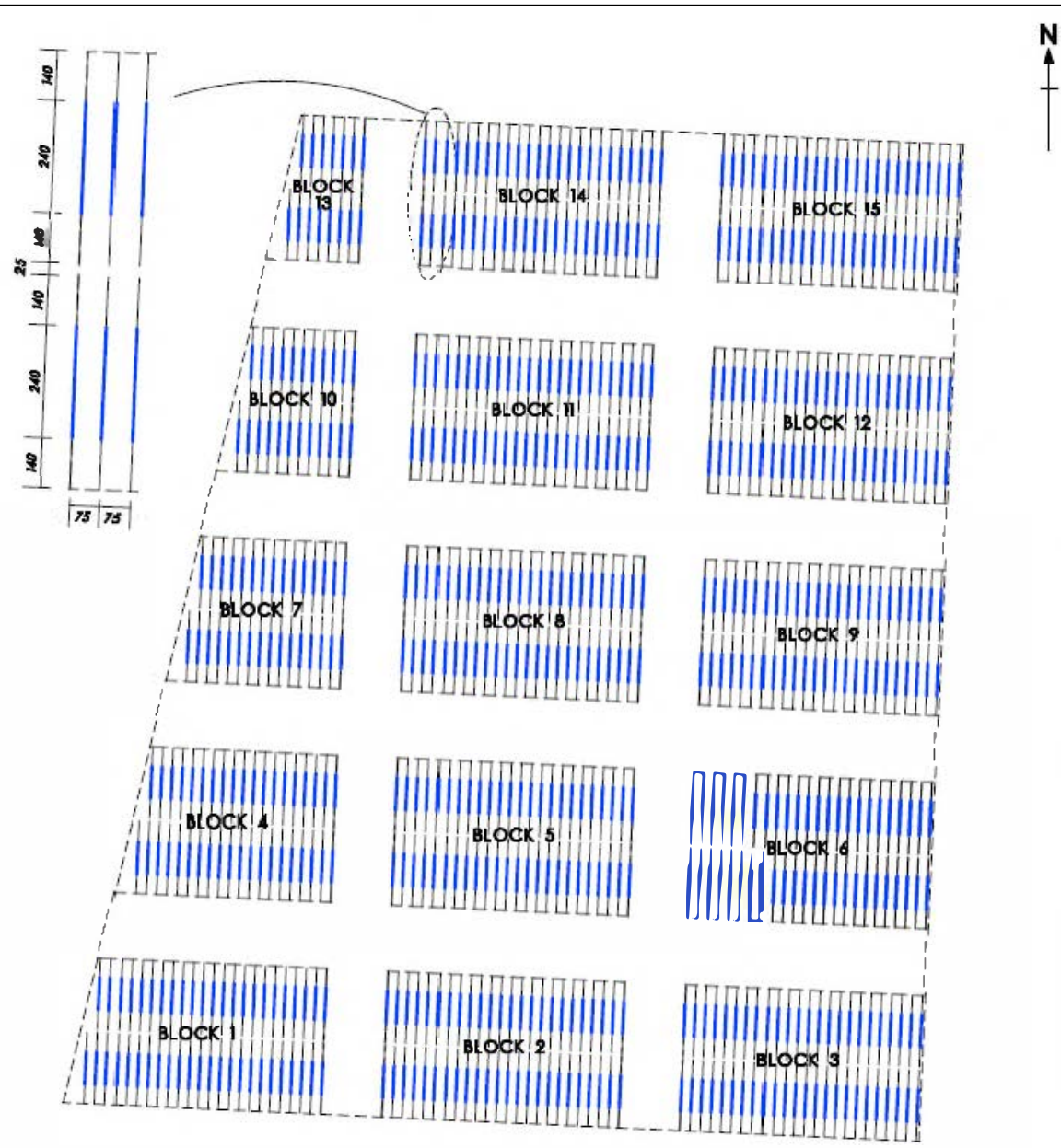
REFERENCE

- Anchor Warp
- Backbone
- Consent Boundary
- Block Boundary

Proposed Coastal Permit
Site B - Layout Plan
Pakihi Trading Company

Prepared by
DRAUGHTING PLUS LTD
Date: 14 August 2017

MF_2626



NOTES

Line spacing	75m
Total number of lines	683
Backbone Length	240m
Total Backbone Metres	163.920m

Full Development

REFERENCE

- Anchor Warp
- Backbone
- Consent Boundary
- Block Boundary

Proposed Coastal Permit Site B - Layout Plan

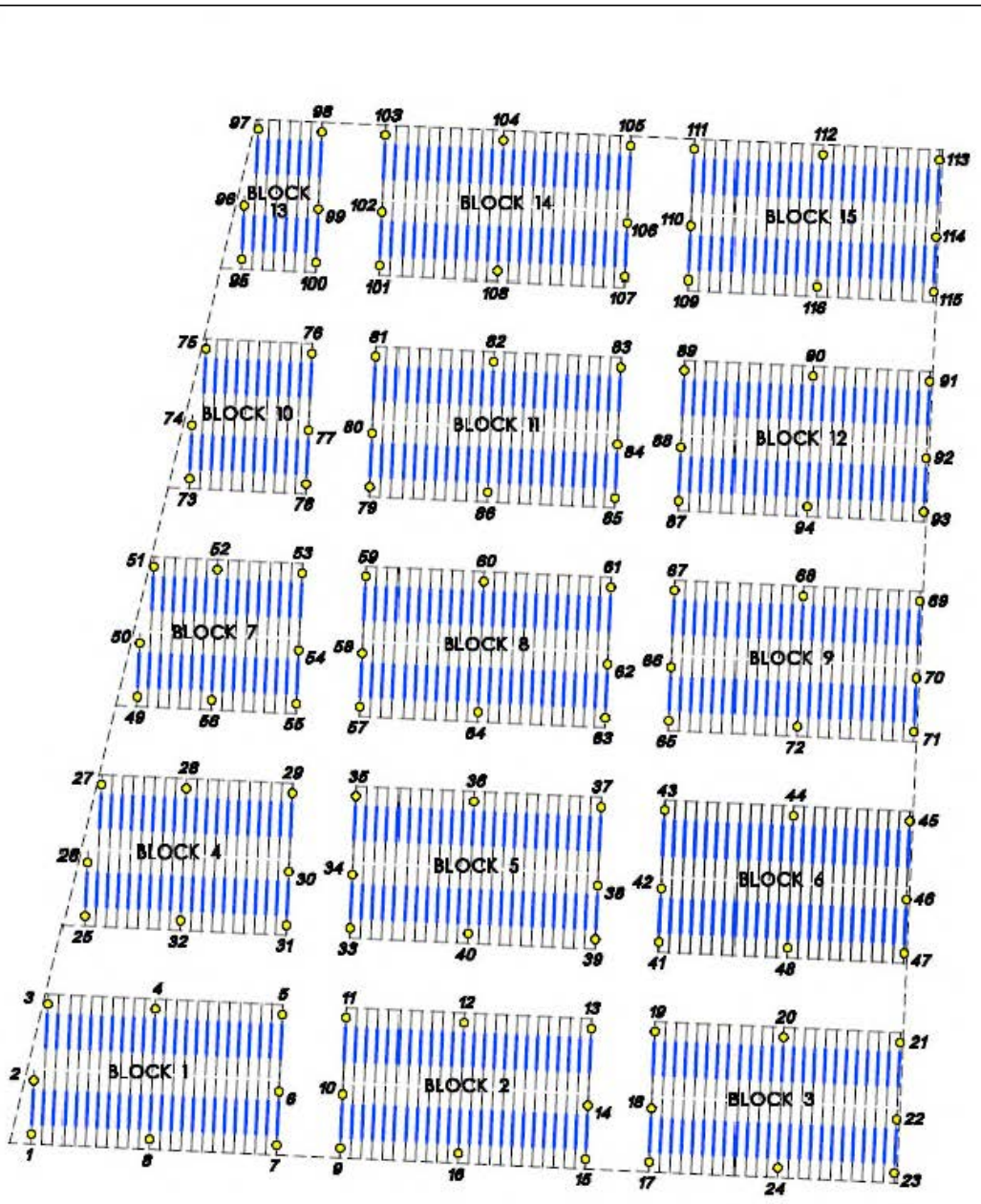
Pakihi Trading Company

Prepared by
DRAUGHTING PLUS LTD
Date: 17 August 2017

NF_3828

APPENDIX C

Proposed Marine Farm Lighting Plan



REFERENCE

- Anchor Warp
- Backbone
- Consent Boundary
- Block Boundary
- Special Light

Proposed Coastal Permit
Site B - Lighting Plan
Pakihi Trading Company

Prepared by
DRAUGHTING PLUS LTD
Date: 11 August 2017

MF_2828

Proposed Coastal Permit
Site B - Light Coordinates
Pakihi Trading Company

Prepared By
DRAUGHTING PLUS LTD
Date: 14 August 2017

NF_2035

SCHEDULE OF COORDINATES

Point	NZTM Northing	NZTM Easting	WGS-84 (G1762) Latitude	WGS-84 (G1762) Longitude
1	5793463.6	1961376.5	37° 56.07466' S	177° 06.96096' E
2	5793643.4	1961863.7	37° 55.96964' S	177° 06.69107' E
3	5794864.5	1961463.0	37° 55.57661' S	177° 06.74240' E
4	5794860.4	1962242.2	37° 55.57612' S	177° 07.25386' E
5	5794309.6	1963141.3	37° 55.57666' S	177° 07.66706' E
6	5793765.0	1963117.0	37° 55.67065' S	177° 07.66697' E
7	5793965.4	1963100.0	37° 56.07611' S	177° 07.66667' E
8	5793426.3	1962200.9	37° 56.07555' S	177° 07.26334' E
9	5793364.9	1963649.5	37° 56.07639' S	177° 08.17361' E
10	5793744.6	1963866.5	37° 56.67119' S	177° 08.17369' E
11	5794269.0	1963860.6	37° 55.57667' S	177° 08.17375' E
12	5794251.5	1964415.0	37° 56.57742' S	177° 08.73611' E
13	5794210.6	1965314.0	37° 55.57755' S	177° 08.34649' E
14	5793696.1	1965286.7	37° 55.67211' S	177° 08.34960' E
15	5793286.5	1965272.5	37° 56.07726' S	177° 08.34954' E
16	5793327.4	1964373.7	37° 56.07653' S	177° 08.73902' E
17	5793266.1	1966722.3	37° 56.07742' S	177° 08.85627' E
18	5793646.7	1965739.2	37° 55.67228' S	177° 09.66621' E
19	5794190.1	1965763.6	37° 56.67607' S	177° 08.66626' E
20	5794149.2	1966662.6	37° 56.67642' S	177° 10.26663' E
21	5794111.7	1967486.6	37° 56.67670' S	177° 10.63196' E
22	5793667.3	1967482.6	37° 56.67290' S	177° 10.63207' E
23	5793187.6	1967446.5	37° 56.07610' S	177° 10.63212' E
24	5793225.1	1966621.4	37° 56.07732' S	177° 10.29676' E
25	5795006.6	1961746.0	37° 55.23402' S	177° 06.89595' E
26	5795386.2	1961763.0	37° 55.02887' S	177° 06.89610' E
27	5795927.3	1961862.2	37° 54.73464' S	177° 06.94735' E
28	5795900.0	1962461.6	37° 54.73506' S	177° 07.35625' E
29	5795885.9	1963210.5	37° 54.73554' S	177° 07.86734' E
30	5795321.5	1963166.5	37° 56.02676' S	177° 07.86726' E
31	5794641.6	1963190.6	37° 56.23466' S	177° 07.90715' E
32	5794675.9	1962420.3	37° 56.23446' S	177° 07.86000' E
33	5794621.4	1963616.1	37° 55.23516' S	177° 08.17369' E
34	5795301.0	1963656.0	37° 55.03004' S	177° 08.17391' E
35	5795645.5	1963660.4	37° 54.73577' S	177° 08.17404' E
36	5795606.0	1964494.6	37° 54.73623' S	177° 08.73622' E
37	5795767.0	1966663.6	37° 54.73672' S	177° 09.34956' E
38	5795222.6	1966356.3	37° 56.03093' S	177° 08.34666' E
39	5794643.0	1966342.3	37° 55.23606' S	177° 08.34653' E
40	5794663.9	1964443.2	37° 56.23664' S	177° 08.73613' E
41	5794622.5	1965791.5	37° 55.23630' S	177° 08.86620' E
42	5795202.1	1965606.5	37° 56.03116' S	177° 08.86622' E
43	5795746.6	1966633.1	37° 54.73656' S	177° 09.66619' E
44	5795705.7	1966732.2	37° 54.73725' S	177° 10.26652' E
45	5795696.2	1967656.3	37° 54.73753' S	177° 10.63166' E
46	5795123.7	1967532.0	37° 55.03176' S	177° 10.63179' E
47	5794744.1	1967515.0	37° 55.23694' S	177° 10.63162' E
48	5794761.6	1966660.9	37° 55.23665' S	177° 10.26660' E
49	5796649.4	1962115.2	37° 54.39306' S	177° 07.10066' E
50	5796629.1	1962132.2	37° 54.16765' S	177° 07.10100' E
51	5797470.1	1962231.4	37° 53.69357' S	177° 07.15223' E
52	5797449.6	1962661.0	37° 53.69400' S	177° 07.45666' E
53	5797422.4	1963260.4	37° 53.69434' S	177° 07.90770' E
54	5796677.9	1963286.0	37° 54.16661' S	177° 07.86754' E
55	5796495.3	1963286.1	37° 54.39376' S	177° 07.86750' E
56	5796525.6	1962639.7	37° 54.39607' S	177° 07.45563' E
57	5796477.6	1963696.6	37° 54.39405' S	177° 08.17411' E
58	5795667.5	1963705.9	37° 54.16636' S	177° 08.17420' E
59	5797401.9	1963729.9	37° 53.59463' S	177° 08.17426' E
60	5797364.4	1964554.0	37° 53.69609' S	177° 08.73635' E

Point	NZTM Northing	NZTM Easting	WGS-84 (G1762) Latitude	WGS-84 (G1762) Longitude
61	5797323.5	1965463.1	37° 53.99883' S	177° 09.34957' E
62	5796779.0	1965426.6	37° 54.19660' S	177° 09.34907' E
63	5796369.4	1965411.6	37° 54.39496' S	177° 09.34964' E
64	5796440.3	1964512.6	37° 54.39451' S	177° 08.73832' E
65	5796379.0	1965661.4	37° 54.39512' S	177° 09.66621' E
66	5796766.6	1965676.3	37° 54.19997' S	177° 09.66617' E
67	5797303.0	1965662.6	37° 53.89578' S	177° 09.66614' E
68	5797282.1	1965601.7	37° 53.89613' S	177° 10.26938' E
69	5797224.6	1967625.6	37° 53.89642' S	177° 10.63146' E
70	5796860.2	1967601.6	37° 54.19062' S	177° 10.63151' E
71	5796300.5	1967564.6	37° 54.39562' S	177° 10.63161' E
72	5796336.0	1965760.4	37° 54.39863' S	177° 10.29643' E
73	5796062.2	1962464.5	37° 53.89206' S	177° 07.30577' E
74	5796471.9	1962601.4	37° 53.34666' S	177° 07.30863' E
75	5799012.9	1962600.7	37° 53.05270' S	177° 07.35712' E
76	5798976.8	1963349.9	37° 53.05319' S	177° 07.86801' E
77	5796434.4	1963325.6	37° 53.34741' S	177° 07.86791' E
78	5796064.7	1963309.6	37° 53.55261' S	177° 07.86780' E
79	5796034.3	1963766.2	37° 53.89288' S	177° 08.17442' E
80	5796413.9	1963776.1	37° 53.34770' S	177° 08.17445' E
81	5796866.4	1963789.4	37° 53.05343' S	177° 08.17463' E
82	5796920.8	1964823.9	37° 53.05390' S	177° 08.73858' E
83	5796879.9	1966822.7	37° 53.05440' S	177° 09.34907' E
84	5796336.5	1966466.3	37° 53.34661' S	177° 09.34869' E
85	5797955.9	1965461.4	37° 53.55376' S	177° 09.34962' E
86	5797996.8	1964582.3	37° 53.55332' S	177° 08.73845' E
87	5797935.4	1965930.9	37° 53.55399' S	177° 09.65617' E
88	5796315.0	1966647.6	37° 53.34884' S	177° 09.65620' E
89	5796859.5	1966672.2	37° 53.05458' S	177° 09.65618' E
90	5796816.6	1966671.5	37° 53.08480' S	177° 10.26928' E
91	5796761.1	1967696.4	37° 53.05528' S	177° 10.63122' E
92	5796236.9	1967671.1	37° 53.34961' S	177° 10.63132' E
93	5797867.0	1967654.1	37° 53.55486' S	177° 10.63136' E
94	5797904.5	1969030.0	37° 53.55436' S	177° 10.26934' E
95	5799696.1	1962863.7	37° 52.71106' S	177° 07.51055' E
96	5800014.7	1962870.7	37° 52.50560' S	177° 07.51067' E
97	5800556.7	1962869.8	37° 52.21173' S	177° 07.56187' E
98	5800535.3	1963419.4	37° 52.21199' S	177° 07.86834' E
99	5799960.8	1963366.1	37° 52.50628' S	177° 07.86823' E
100	5799911.2	1963376.2	37° 52.71141' S	177° 07.86818' E
101	5799560.7	1963627.7	37° 52.71171' S	177° 08.17466' E
102	5799970.4	1963644.6	37° 52.50650' S	177° 08.17471' E
103	5800514.6	1963696.0	37° 52.21226' S	177° 08.17487' E
104	5800477.3	1964863.1	37° 52.21278' S	177° 08.73872' E
105	5800436.4	1965662.2	37° 52.21321' S	177° 09.34971' E
106	5799861.9	1965587.6	37° 52.50748' S	177° 09.34970' E
107	5799512.3	1965560.6	37° 52.71263' S	177° 09.34966' E
108	5799553.2	1964651.6	37° 52.71216' S	177° 08.73860' E
109	5799461.9	1966000.4	37° 52.71251' S	177° 09.65618' E
110	5799871.5	1966017.4	37° 52.50788' S	177° 09.65618' E
111	5800416.9	1966041.7	37° 52.21348' S	177° 09.65617' E
112	5800376.0	1966940.6	37° 52.21363' S	177° 10.26915' E
113	5800337.6	1967764.6	37° 52.21413' S	177° 10.63096' E
114	5799763.1	1967740.6	37° 52.50834' S	177° 10.63100' E
115	5799413.4	1967723.7	37° 52.71354' S	177° 10.63117' E
116	5799450.9	1966669.5	37° 52.71324' S	177° 10.26920' E