Te Huata Marine Farm

Application for Resource Consent and Assessment of Environmental Effects

FERGUSSON PLANNING

DOCUMENT	
CLIENT	Te Huata Charitable Trust
PROJECT	Te Huata Marine Farm
PROJECT NO.	22-098
REVISION RECORD	
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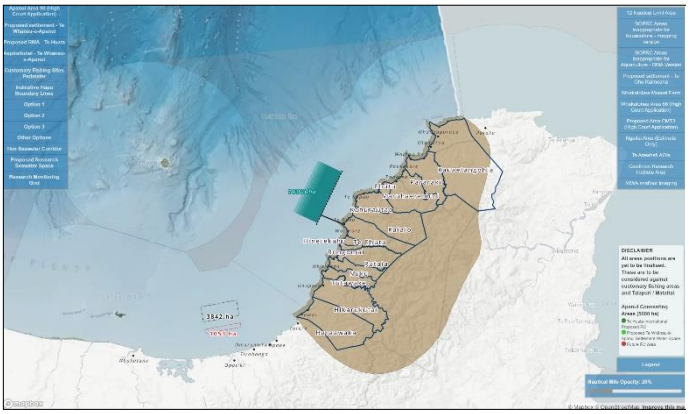
CONTENTS

APPENDICES

1. APPLICANT AND PROPERTY DETAILS

APPLICANT	KTK Hapu Holdings Limited
SITE LOCATION	See Section 3
LEGAL DESCRIPTION	Seabed
ADDRESS FOR SERVICE	C/- Fergusson Planning Limited tim@fergussonplanning.co.nz
REGIONAL PLAN	Bay of Plenty Regional Coastal Environment Plan (RCEP)
ZONING	Coastal Environment Zone
ACTIVITY STATUS	Discretionary
SITE LOCATION	

2. INTRODUCTION

2.1 PROJECT OVERVIEW

The project involves the staged development of an offshore marine farm off the coast of Te Kaha in the eastern Bay of Plenty. The project is a significant contributor towards achieving the vision of Te Whanau a Apanui for sustainable employment and economic independence for its people and is part of a wider package of interrelated projects designed to deliver transformational change to the people of Te Whanau a Apanui, Whakatohea and the wider eastern Bay of Plenty.

The application seeks to authorise the use of 10,000ha of coastal space for marine farming. Resource consent is sought for farming shellfish species including, but not limited to, Greenshell mussels, pacific oysters, and scallops as well as various New Zealand seaweed species. The design and development of the marine farm is proposed to be established through an adaptive management planning framework (AMPF) which will provide the flexibility needed to allow for a dynamic approach to farming systems which responds to emerging technologies and markets as well as environmental changes, whilst providing the necessary safeguards to ensure the environmental impacts of marine farming activities are managed appropriately.

The project complements the existing marine farming operations (both consented and operational) and the Opotiki Harbour Development and associated projects which support the development of an aquaculture industry in the Opotiki district. The project contributes to the goal of the Bay of Plenty Regional Aquaculture Strategy to grow an integrated and sustainable aquaculture industry with export sales of $250 million[1]. The project also supports the objectives of the New Zealand Aquaculture Strategy, through the expansion of offshore marine farming and enabling Māori-led aquaculture development. The New Zealand Government has set an "ambitious" goal for aquaculture to reach $3b in exports by 2035[2]. Aquaculture New Zealand in its Greenshell Mussel (GSM) Spat Strategy indicated that "*the New Zealand Greenshell mussel (GSM) industry has the potential to provide up to a third of the $3-billion-dollar goal that the New Zealand Government has set for Aquaculture by 2035*".

2.2 SITE SUITABILITY

The site has been identified as the proposed location for the establishment of a large-scale marine farming activity. The appropriateness of marine farming activities in the coastal waters of the Eastern Bay of Plenty is well established with the Eastern Seafarms marine farm consented in 2008 and currently in commercial production of GSM. In 2017 a further 4,000 ha of marine farming space was consented to Pakihi Trading Company (Whakatohea owned entity). These developments have been subject to detailed environmental assessments confirming the suitability of offshore marine farming in the coastal waters of the Eastern Bay of Plenty. The ongoing monitoring of the operational Eastern Seafarms farm has provided confidence that offshore aquaculture production is a viable and environmentally sustainable activity within this area.

The suitability of the general area for the proposed marine farm has been subject to a preliminary assessment by Cawthron Research Institute[3] ("the Cawthron report") as part of a study commissioned by the Bay of Plenty Regional Council into the potential expansion of aquaculture activities in the Eastern Bay of Plenty. This assessment considered the water column attributes and potential connectivity between new and existing marine farms within the eastern Bay of Plenty waters. This assessment addressed a range of potential environmental issues as well as operational considerations. These factors are discussed in detail in later sections of this report. The key findings from this assessment are that additional aquaculture areas can be established and managed appropriately to address potential issues with algal blooms, plankton depletion, spat and biosecurity issues. The proposed marine farm site is located within an area considered suitable for aquaculture development. This is supported by a statement prepared by Prof Chris Battershill which determines that the proposal is *"likely to have minimal impact on the regions' benthic and pelagic environment".*

[1] Bay of Connections Aquaculture Strategy 2013

[2] New Zealand Aquaculture Strategy 2019

[3] Knight B, Forrest B, Taylor D, MacKenzie L, Vennell R 2017. Potential aquaculture expansion in the eastern Bay of Plenty - A high-level scoping study of environmental issues. Prepared for Bay of Plenty Regional Council. Cawthron Report No. 3056. 65 p. plus appendices.

The proposed site has also been subject to preliminary physical investigations to assess the site suitability and environmental impacts of developing a marine farm in this location. This has involved a bathymetric survey and preliminary assessment of the benthic environment. The identified coastal uses and values within the area have also been considered in determining the extent of the site to minimise the potential for conflict with existing activities and/or impact on significant environmental values.

Fisheries New Zealand has commissioned consultants DHI to undertake detailed modelling of the effects of aquaculture activities on phytoplankton availability within the Bay of Plenty, including the specific effects of the proposed marine farm. The framework for this study is set out in the report included as **Appendix 12**. This modelling work is discussed further in later sections of this report.

2.3 BACKGROUND AND CONTEXT

The applicant has designed an approach to consenting the marine farm development and operation based on an innovative adaptive management philosophy. The applicant has provided the following rationale for this approach.

> *The proposal is reflective of the kawa and tikanga of an Iwi who have a deep connection and contract with Tangaroa. This coupled with new and progressive legislative circumstances surrounding an Iwi settling with the Crown provides an opportunity to find a different and more collaborative way forward in an environment struggling to find the outcomes being sought by all parties. An opportunity to pursue a new approach is being offered here. This new approach is underpinned by three key considerations to the current circumstances which highlight these challenges.*

1. The first is the need to find improved and innovative ways to develop consenting practices in our aquaculture industry. Pushing the boundaries of current conventions where science, commerce, sustainable environmental practices, and regulation can sit comfortably at the same table is a must. We all already understand the nature of systems and ecosystems. We are keen to pursue an agile adaptive aquaculture management planning approach in this consent to achieve the outcomes we all seek. One that develops our aquaculture activities, with others, based on a developing knowledge economy we can all participate in.

   > *Part of the rationale is based on a wider imperative. Understanding the shifting global circumstances of global warming, seawater acidification and the consequences on our marine environment require a similar approach as being suggested here in this consent. Supporting this consent, our endeavours, and a learning heuristic with others must be the way we approach all aquaculture opportunities of this nature in the future.*

2. The second consideration is tightly bound to how little we know of the environment we seek a consent in – in a scientific sense. Making long term 'static' decisions about the moana in circumstances like this is inadequate. The nature of the current Resource Management Act settings makes the development of aquaculture activities difficult – there is simply never enough science to make a genuinely informed decision. This doesn't mean we should shy away from decisions we require, like this consent. We just need to find a new approach where we can collectively build an aquaculture knowledge economy fit for a long-term sustainable aquaculture industry while simultaneously managing, in an informed way, the dynamic nature of the environment we seek to undertake activities in.

3. The third consideration is a recognition of the existing consented and operating marine farming activities within the area. These existing activities provide monitoring data that can be used to validate predicted environmental impacts from offshore marine farming in this area and resource consent conditions which can be applied to additional aquaculture areas to provide consistency with refinements where appropriate. In this case, the most significant change proposed is the adoption of an agile adaptive aquaculture management planning approach developed for the purposes indicated above.

   In summary, the premise is that the resource consent application be granted in a timely manner with similar conditions to those applying to existing marine farms in the area with the addition of a new an agile adaptive aquaculture management planning approach to guide the detailed design, operation and monitoring of the marine farm.

Formal support for the project and the proposed approach has been provided from the three hapu with mana moana over the application site as well as several key stakeholders. This correspondence is appended to this application (see **Appendix 9**). It is anticipated that these parties will be represented on a panel established to implement the AMPF.

2.4 RESOURCE CONSENT APPLICATION

The project requires resource consent from the Bay of Plenty Regional Council to install and maintain the marine farming structures, the associated occupation of space within the coastal marine area and the operation of an aquaculture activity.

The purpose of the resource consent is to provide for the staged development of a 10,000-hectare marine farm for the farming of shellfish and various seaweed species along with the catching of spat and juvenile stages of these species.

These activities and the specific resource consent requirements are discussed in detail in section 4 below.

This report provides the information required by Schedule 4 of the Resource Management Act 1991 ('RMA' or the 'Act') in appropriate detail relative to the scale and complexity of the proposal.

3. THE APPLICATION SITE

3.1 SITE LOCATION

3.1.1 LOCATION DESCRIPTION

The project site comprises an area of coastal waters and seabed within the rohe of Te Whanau a Apanui in the Eastern Bay of Plenty.

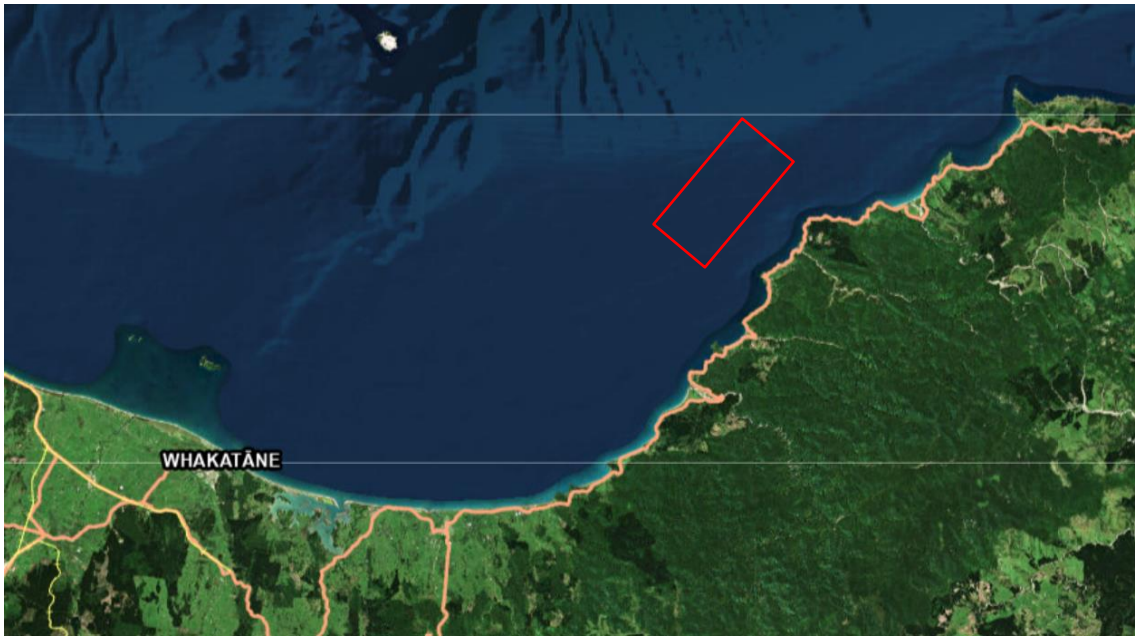


FIGURE 1: GENERAL LOCALITY

The marine farm site is approximately 6km offshore (west) from Te Kaha at the closest point to the shoreline. The area is almost rectangular in shape with a northeast-southwest alignment and is around 39km from the Opotiki harbour entrance in a direct line. The northern boundary of the marine farm has been aligned to avoid encroaching into commercial shipping lanes. The total area of the proposed marine farm is 10,000ha with Stage 1 comprising 5,000ha and subsequent stages each comprising 1,000ha. The exact details of the staging will be determined as part of the adaptive management approach. Each stage will be divided into sub-stages and progressively developed subject to detailed investigations to validate the current environmental data regarding the benthic environment and precautionary monitoring of the activity.

The location and staging is indicated in *Figure 2* below.

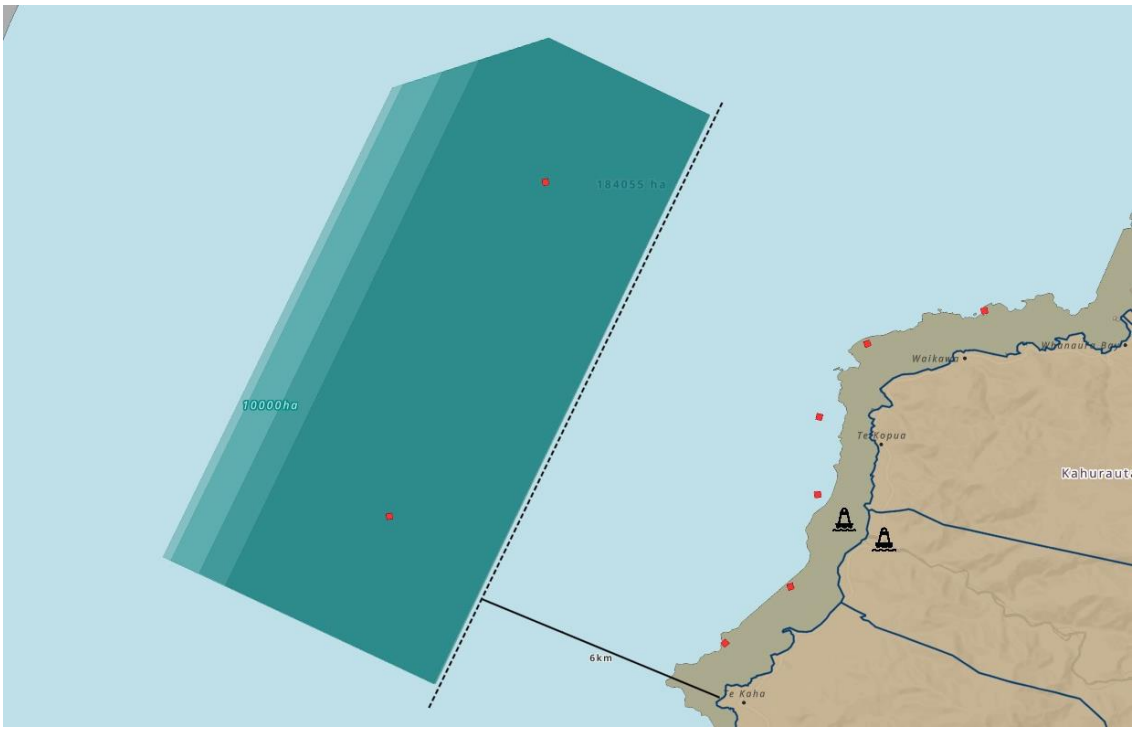


FIGURE 2: MARINE FARM SITE LOCATION AND EXTENT

The boundaries of the proposed marine farm are defined as follows:

TABLE 1: SITE COORDINATES			
LONG LLWGS84	**LAT LLWGS84**	**X NZTM**	**Y NZTM**
177.6505177	-37.62550107	2010486.236	5825552.137
177.6489204	-37.62556415	2010344.815	5825552.137
177.6488411	-37.62429366	2010344.815	5825693.559
177.6504384	-37.62423057	2010486.236	5825693.559
177.5945304	-37.68917681	2005194.559	5818725.873
177.5929316	-37.68923922	2005053.137	5818725.873
177.5928531	-37.68796864	2005053.137	5818867.295
177.5944519	-37.68790623	2005194.559	5818867.295

3.1.2 BACKGROUND AND CONTEXT TO SITE SELECTION

The areas available for sustainable aquaculture activities within the eastern Bay of Plenty have been assessed by Cawthron Institute for the Bay of Plenty Regional Council. The Cawthron report considered various areas within the Eastern Bay of Plenty near the existing Eastern Seafarms and consented Pakihi marine farms which have similar environmental characteristics to the coastal marine area proposed by this application.

The proposed marine farming site is within the Te Whānau-ā-Apanui customary title application under the Takutai Moana (Marine and Coastal Areas) Act (MACA). For the purposes of this application the seawater area considered Te Whānau-ā-Apanui customary title under the MACA is Area 2 (184,055 ha in *Figure 3* below). This area will reasonably yield 21,198 ha for sustainable aquaculture activities (seawater area considered Te Whānau-ā-Apanui customary title under the MACA). This application is for 10,000 ha or a little under half of the total area that could be reasonably used for sustainable shellfish activities (subject to further environmental assessments). It should be noted, a substantial unspecified area (possibly up to 50%) of the marine farming space included in this application will be allocated to seaweed farming. It should also be noted that the general scientific evidence for introducing seaweed into marine environments is that it increases

marine biodiversity. There are many examples globally of these regenerative aquaculture interventions / practices.[4]

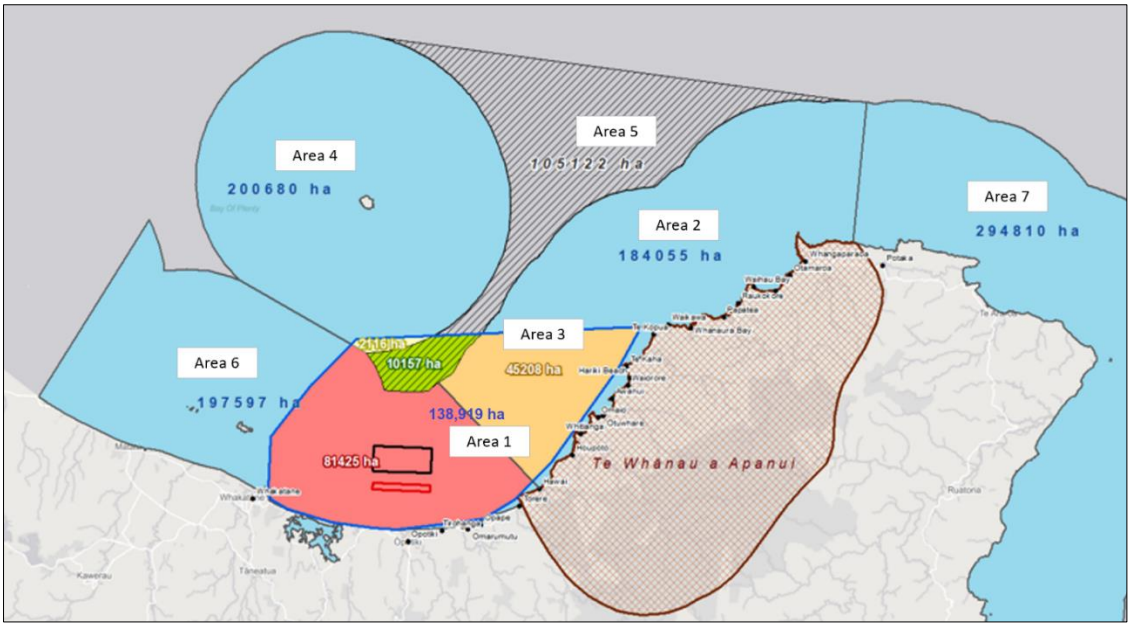


FIGURE 3: MACA AREAS

Area 1. Cawthron Research Institute's Area of Investigation - 138,919 ha

Area 2. Te Whānau-ā-Apanui Area (customary title under the MACA) - 184,055 ha

Area 3. The area that overlaps Area 1. and Area 2. - 45,208 ha

Area 4. The area around Whakaari (customary title under the MACA) - 200,680 ha

Area 5. The area in the EEZ (Te Huata interest in aquaculture activities) - 105,122 ha

Area 6. The area west outside Te Whānau-ā-Apanui Area (potentially still under customary title for another Eastern Bay of Plenty Iwi under the MACA) - 197,597 ha

Area 7. The area east outside Te Whānau-ā-Apanui Area (under Ngāti Porou customary title under the MACA) - 294,810 ha+.

3.2 PHYSICAL CHARACTERISTICS

Based on the environmental assessments undertaken within the area, the physical characteristics of the site are similar to the existing marine farm sites to the west and typical of the coastal marine area within the coastal waters in the eastern Bay of Plenty. The main features are:

- A flat and relatively homogenous soft sediment seabed, with low-medium organic matter content and mud content declining towards the inshore portion of the site,
- Water depths ranging from 50 metres to 200+ metres, with a mean current speed of 8.2cm/s.

The characteristics of the site are discussed in more detail below.

3.2.1 OCEAN CURRENTS

The Cawthron report notes that the main oceanic currents within the BOP appear to be driven by the East Auckland Current.

[4] *Seaweed-based regenerative ocean farming can efficiently restore marine ecosystems (Yong W. T. L. et al, 2022)* https://www.sciencedirect.com/science/article/abs/pii/S1364032122001459

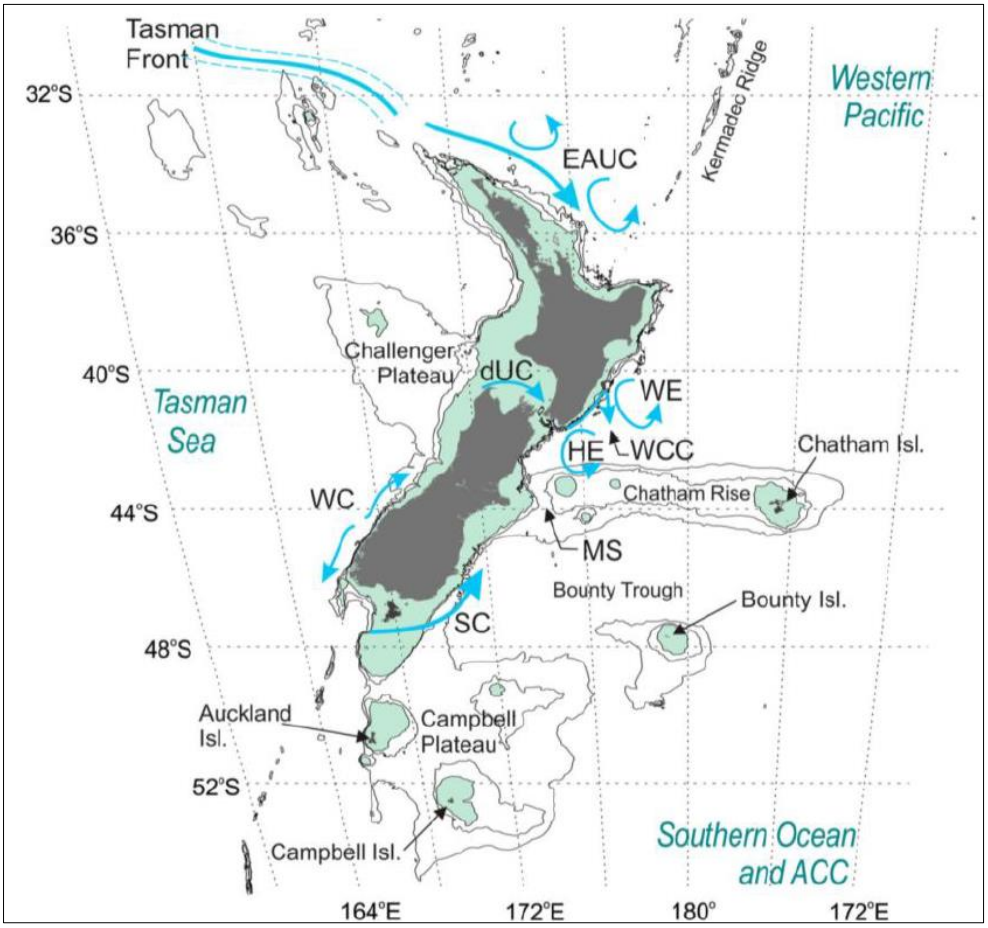


FIGURE 4: COASTAL CURRENTS AROUND NEW ZEALAND (SOURCE: STEVENS ET AL 2019)

Within the eastern Bay of Plenty waters wind and other circulation drivers (including tides) appear to dominate current flows (Longdill et al. 2008). Research undertaken for the Eastern Seafarms site showed a predominantly westerly flow near the farm, which is consistent with findings from other research sites in the outer bay. C N Battershill (**Appendix 7**) notes that *"overall, the current regimes appear to be relatively mild with counterclockwise gyres in the offshore Te Kaha region. Longdill and Black (2006) elaborated this work in a numerical model for aquaculture management areas, also providing primary production algorithms (Longdill et al 2006)".*

Maximum tidal flows in the general area have been found to be up to 10 cm/s, and total current flow has exceeded 25 cm/s. These currents are similar in velocity to those observed at inshore marine farm sites around New Zealand.

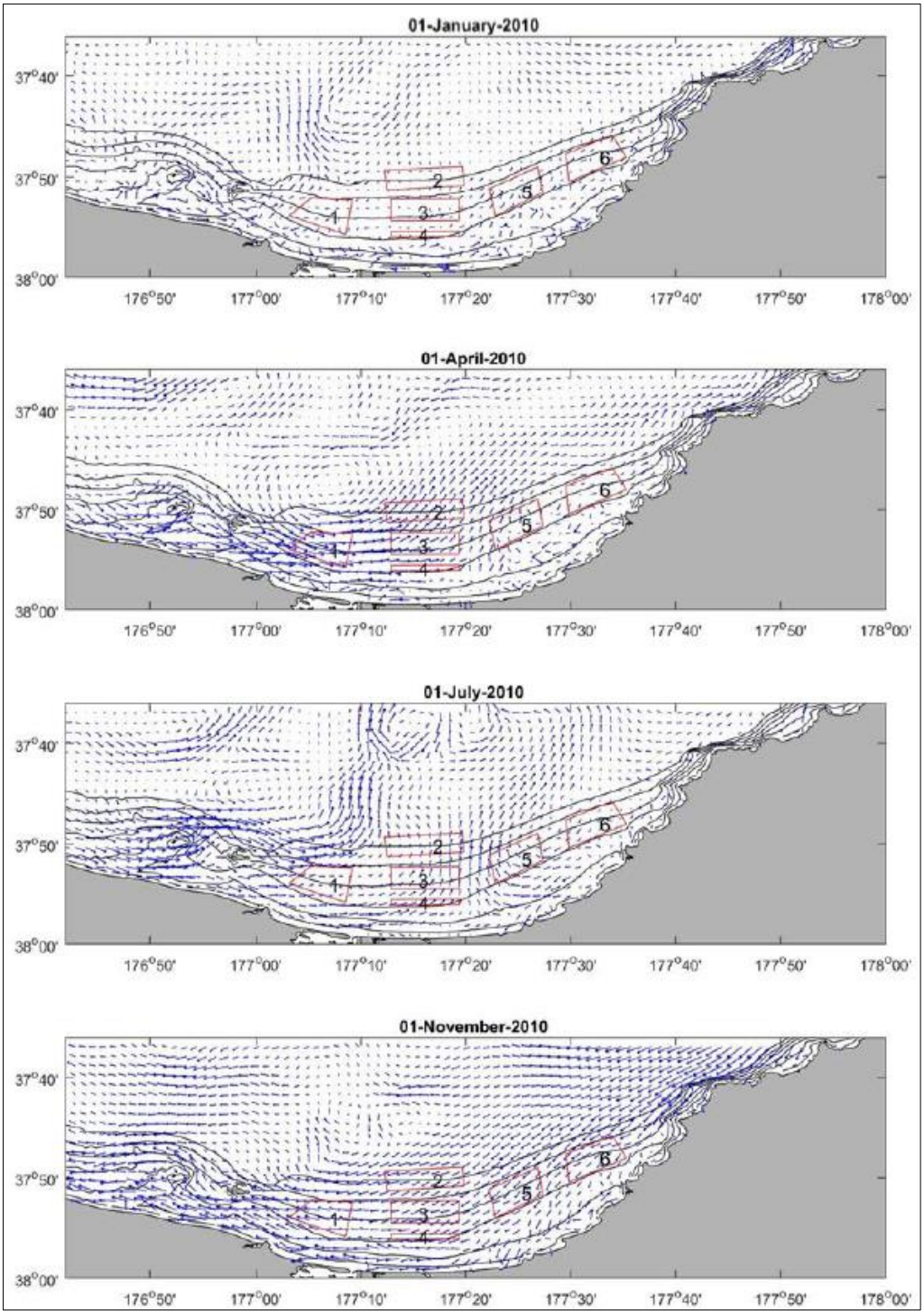


FIGURE 5: MODELLED VARIABILITY IN CURRENT DIRECTION AND VELOCITY IN EASTERN BAY OF PLENTY (SOURCE: CAWTHRON REPORT)

3.2.2 SEA TEMPERATURE

The East Auckland current provides the east coast of the upper North Island with the warmest sea temperatures in New Zealand[5].

[5] 2013, P R Chappell, The Climate and Weather of the Bay of Plenty, NIWA Science and Technology Series, Number 62

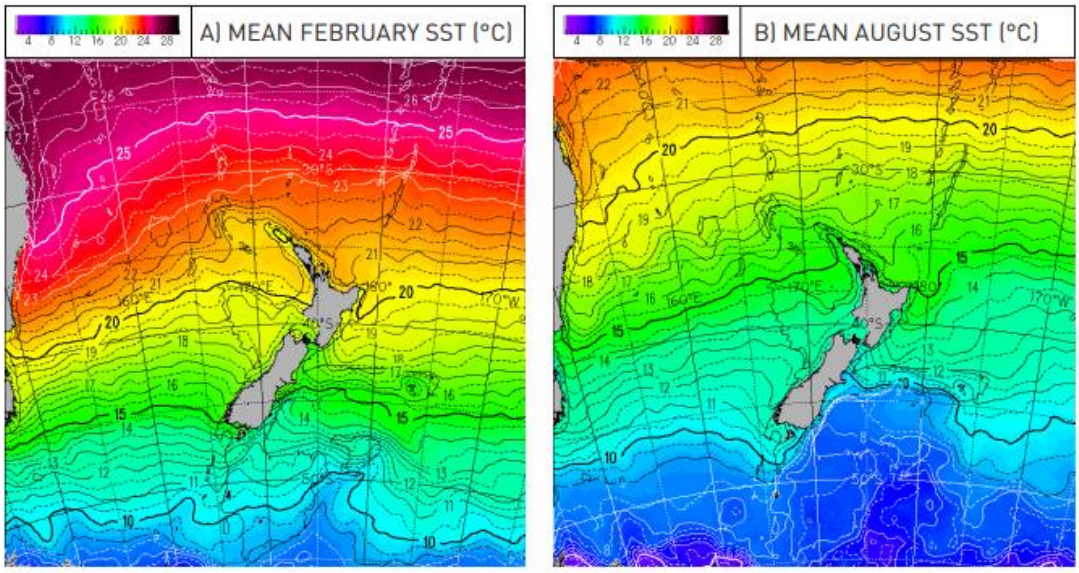


FIGURE 6: NEW ZEALAND MEAN SUMMER (FEBRUARY) AND WINTER (AUGUST) SEA SURFACE TEMPERATURES (SOURCE: NIWA)

Surface water temperature within the eastern Bay of Plenty ranges from a minimum winter temperature of around 13°C to maximum summer temperatures of around 24°C. This is broadly consistent with observations of sea temperatures elsewhere in the Bay of Plenty.

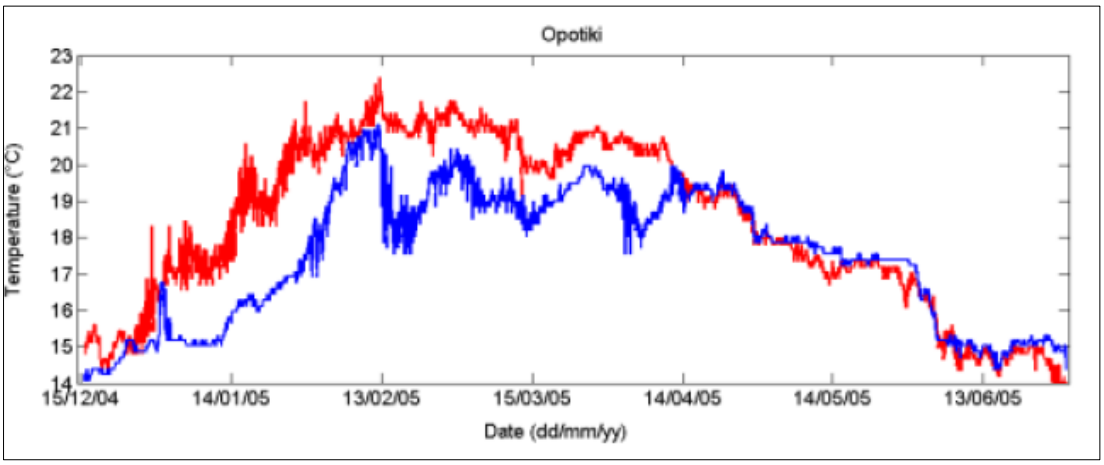


FIGURE 7: EASTERN SEAFARMS SEA SURFACE TEMPERATURES (SOURCE: CAWTHRON REPORT)

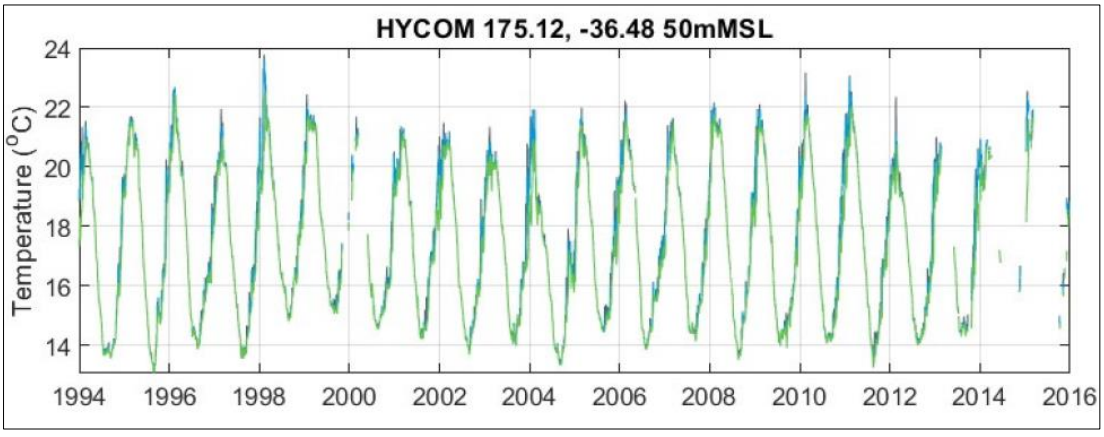


FIGURE 8: HINDCAST TEMPERATURE OFFSHORE OF OPOTIKI 1994-2015 (HYCOM MODEL)

3.2.3 WAVE ENVIRONMENT

As part of the Cawthron Report evaluation of aquaculture potential, a 30-year wave hindcast was analysed to determine the wave climate within the eastern Bay of Plenty (see *Figure 9*). This shows that 90% of the time the significant wave heights (mean height of highest third of waves) are less than 3m, with the predominant wave direction from the north-east.

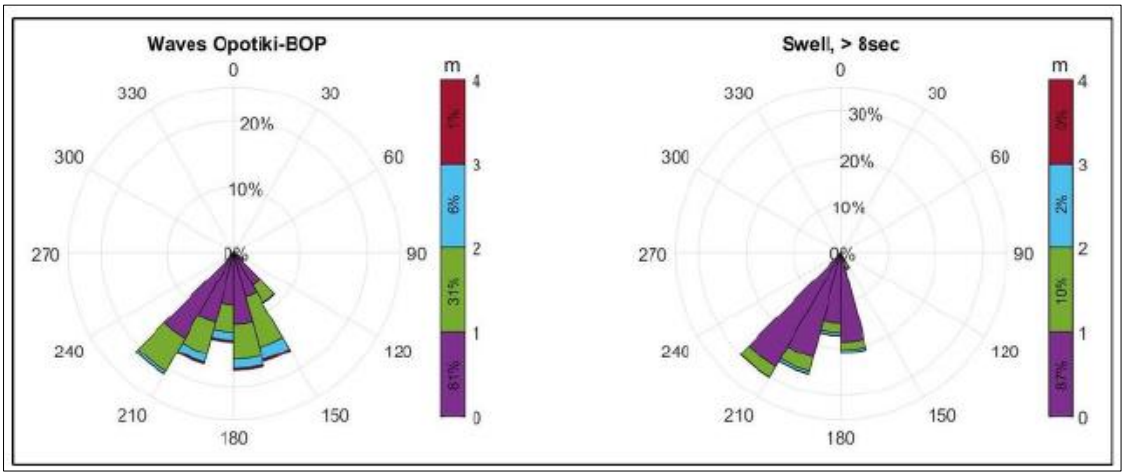


FIGURE 9: EASTERN SEAFARMS WAVE MODEL (SOURCE: CAWTHRON REPORT)

Wave conditions are an important factor in relation to operational considerations (access to the marine farm and associated viability factors) and wave-generated currents also influence the dispersal and resuspension of discharges from aquaculture activities.

There is little information available the effect of waves for aquaculture in New Zealand, consequently a monitoring approach is required.

3.2.4 BENTHIC ENVIRONMENT

In August 2022, Discovery Marine Limited undertook a bathymetric survey of the proposed marine farm site. The results from the survey are included in **Appendix 6**. The survey confirmed that water depths across the site range from 67m to 249m with a flat, featureless seabed. The survey also involved a limited number of grab samples of the seabed to verify the seabed composition. Grab samples were not successful in all locations due to the water depth, however samples recovered indicated a muddy sediment with little variation. The results from this survey provide an indication that the benthic environment within the site has similar characteristics to the Eastern Seafarms site, noting that further site-specific assessment is proposed to confirm this prior to the development of each stage of the marine farm.

The available information regarding the benthic environment in this location has been reviewed in the memorandum prepared by Professor C N Battershill (**Appendix 7**), which provides the following summary:

"Seabed assessments carried out by the Cawthron Institute (McGrath, 2021) are consistent with the general benthic domains as reported by Longdill 2007, as characterised by sedimentary ecological character. All three sites examined were defined by a homogenous silt/clay sediment, strongly oxidative, with no visible redox potential discontinuity's with increasing sedimentary depth (to the limit examined). They concluded there were no sensitive or high value habitats (in terms of unusual or special biodiversity assemblages) in any of the three sites surveyed. Video of benthic samples indicated a well bioturbated sedimentary regime with infaunal assemblages typical for the region. No epifauna were found (backscatter profiles indicate mostly a uniform sedimentary regime, with evidence of some comparatively courser material at site 2)."

An ecological survey of the Eastern Seafarms site undertaken in support of the resource consent application indicated two distinct animal communities within the benthic environment, which (based on preliminary benthic surveys) has similar characteristics to the Te Huata site. The offshore community consisted of a relatively diverse population of primarily invertebrate animals living both on, and within, the sediment surface. Deposit feeding sea cucumbers, brittle stars, scavenging hermit crabs and whelks were the most

abundant epifauna (found on the surface of the seabed). Sea cucumbers, brittle stars, deposit feeding polychaete worms and small crustaceans were the dominant infauna (found within the upper layer of seabed material).

The ecological survey did not identify any species, communities or habitats of particular scientific or ecological importance. The seabed was described as comprising a relatively homogenous muddy sediment. Sediment composition included some degree of coarser sediment types (e.g. medium sand to gravel) with increasing depth. The macrofaunal community was also characteristic of a typical soft-sediment environment. The most dominant taxonomic group comprised polychaete worms.

Bay of Plenty Regional Council has produced a series of maps identifying areas of significant value within the coastal marine area in the region to determine areas suitable for aquaculture. Whilst some of the data used in the preparation of these maps has been superseded by the Fisheries New Zealand map provided in Section 3.4 below, some of the data provided in the Coastal Use and Value maps is helpful in identifying areas of environmental value in the coastal environment. *Figure 10* below shows areas identified as having Significant Conservation Value based on RCEP planning maps together with rocky reef areas and other ecological values influencing aquaculture suitability.

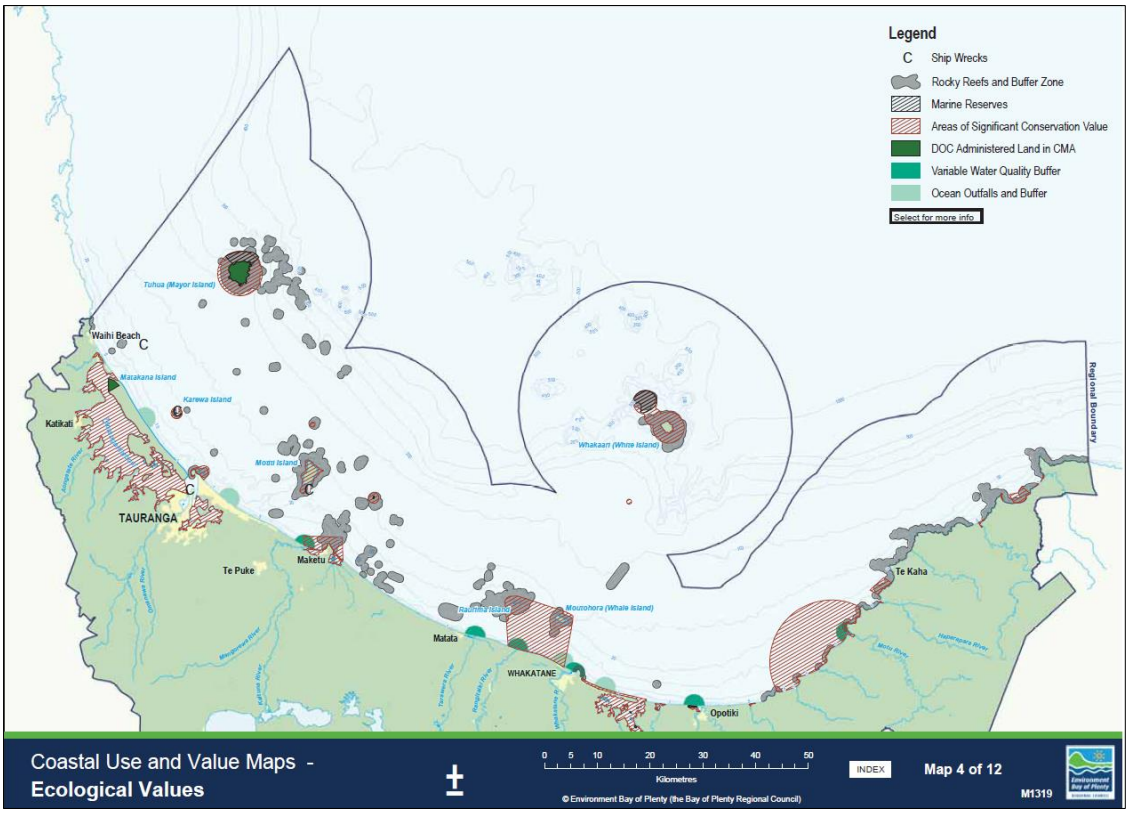


FIGURE 10: SIGNIFICANT ECOLOGICAL VALUES WITHIN THE BAY OF PLENTY COASTAL MARINE AREA (SOURCE: BOPRC)

3.2.5 PHYTOPLANKTON

The availability of phytoplankton is a critical consideration in determining the suitability of a site for aquaculture activities. Modelling of chlorophyll-a (a measure of phytoplankton abundance) within the Bay of Plenty undertaken by Longdill et al. (2006) indicated that the eastern area of the Bay of Plenty has lower phytoplankton abundance than western areas. This has been attributed to cooler surface water temperatures associated with upwelling to the west of Whakatane.

The analysis of this modelling in the Cawthron report determined that phytoplankton concentrations *"would be in the range of 1 to 2 mg/m^3. This is a value that is considered to provide 'moderate' growing conditions for green-lipped mussels".* The report notes that green lipped mussels can be considered a worst-case shellfish species for phytoplankton depletion and benthic effects.

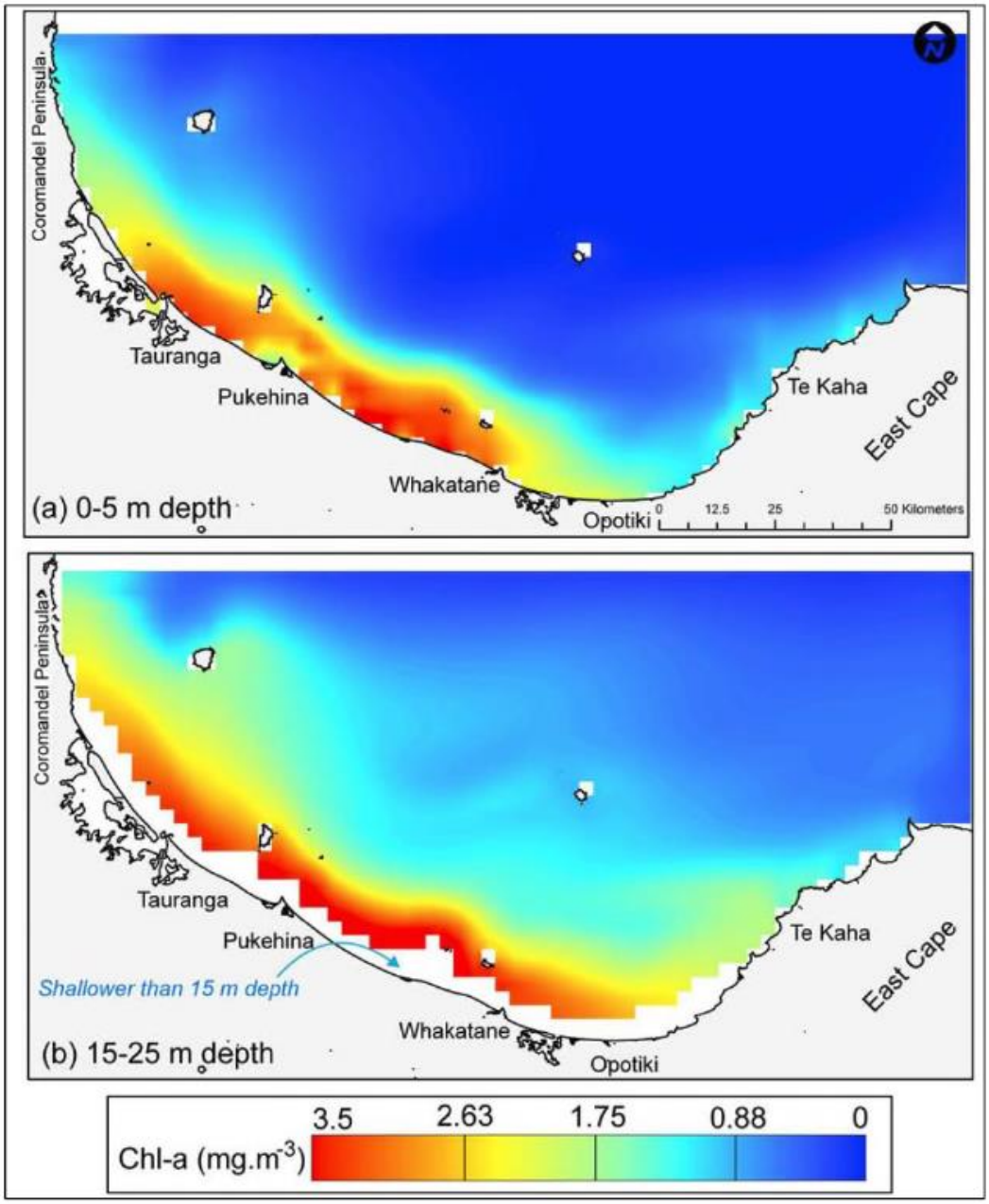


FIGURE 11: MEAN ANNUAL CHLOROPHYLL-A CONCENTRATIONS (MODELLED) AT 0-5M (UPPER) AND 15-25M DEPTHS (SOURCE: LONGDILL (2008) VIA CAWTHRON REPORT)

DHI has developed a water quality model of the Bay of Plenty region which simulates the dynamics of water column nutrients and by tracking the transfer of nutrients to and from the water column to phytoplankton, zooplankton and underlying seabed sediments. Details of the model are discussed in the framework report in **Appendix 13**.

3.3 MARINE MAMMALS

The Eastern Seafarms resource consent application provides a detailed description of the marine mammal species known to frequent the Bay of Plenty. Due to the relative proximity of this site with the proposed farm, the comments regarding the species present in the area are relevant to this application. The following provides a summary of the Eastern Seafarms marine mammal assessment.

A total of 22 species of seals, whales (baleen and toothed) and dolphins have been identified within the coastal waters in this area. Seal species recorded in the Bay of Plenty include New Zealand Fur Seals, Leopard Seals

and Southern Elephant Seals. Of these, fur seals are the most common and are generally seen between March and October and occupy haul out sites at Whakaari and Motuhora islands.

Seven species of baleen whales (blue, fin, brydes, minke, humpback and right) have been reported within the Bay of Plenty. Most sightings are on the edge of the continental shelf, around 10-15nm offshore (200m-500m depth). Brydes whale and the southern right whale are listed as threatened or at-risk in the New Zealand Threat Classification System.

Toothed whales include sperm whales, bottlenose and Ziphiid (beaked) whales which are infrequently observed in the Bay of Plenty. Orca are one of the most frequently reported whales in the Bay of Plenty, often within 10-15nm of shore. Pilot whales and false killer whales have also been recorded in the Bay of Plenty.

Three species of dolphin are known to inhabit Bay of Plenty waters. The common dolphin is the most prolific species and are likely resident within the Bay of Plenty. Their main feeding grounds are within 1-2nm of the 100m isobath. Bottlenose dolphins have been reported occasionally and the endangered Hectors dolphin have been sighted around the North Island so potentially frequent the Bay of Plenty.

3.4 COASTAL VALUES AND USES

As discussed above, BOPRC staff have advised that the 2006 Coastal Value and Use Maps referenced in the RCEP have now been replaced by more up to date information.

The map provided below in *Figure 12* has been obtained from Fisheries New Zealand and identifies areas of the Bay of Plenty where aquaculture activities are considered inappropriate (inappropriate areas shown in red).

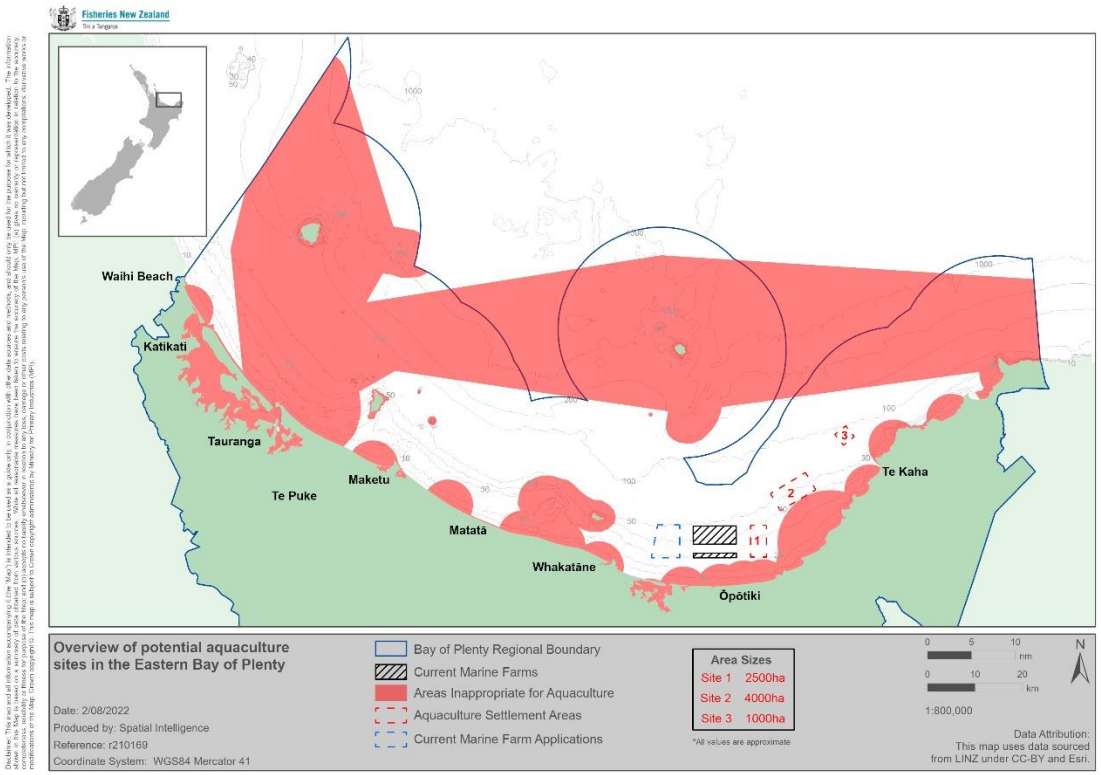


FIGURE 12: AQUACULTURE SUITABILITY MAP (SOURCE: FISHERIES NEW ZEALAND)

Figure 13 below indicates the location of the proposed marine farm relative to the areas identified as inappropriate for aquaculture based on the Fisheries NZ maps. The northern corner of the marine farm has been aligned to avoid the coastal shipping buffer area.

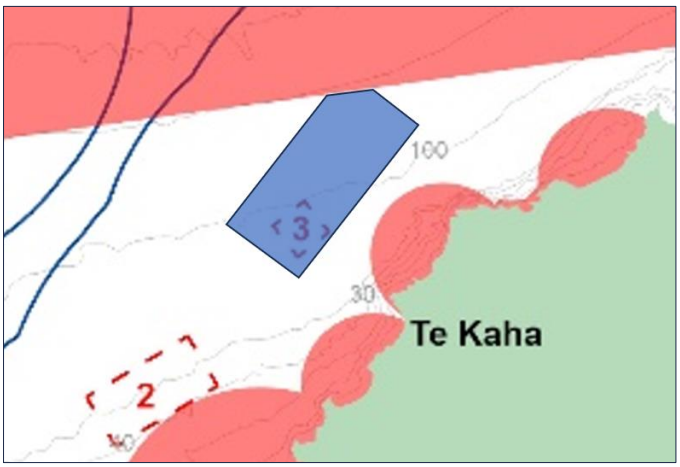


FIGURE 13: AQUACULTURE SUITABILITY MAP OVERLAID WITH PROPOSED MARINE FARM EXTENT

3.5 ZONING AND PLANNING OVERLAYS

The site is within the Coastal Environment Zone as defined by the Bay of Plenty Regional Coastal Environment Plan (RCEP). The site is clear of all significant features and planning overlays identified on the planning maps.

A map showing the planning zones and overlays is shown in *Figure 14* below.

FIGURE 14: REGIONAL COASTAL ENVIRONMENT PLAN SIGNIFICANT FEATURES AND OVERLAYS WITH LOCATION OF MARINE FARM SITE SHOWN IN BLUE

3.6 NAVIGATION

The proposed marine farm site is located outside the main commercial shipping lane and buffer areas, which are included in the Fisheries NZ aquaculture map. The marine farm is within a popular transit route for vessels travelling between Whakatane and East Cape, as indicated on the vessel traffic density map in *Figure 15.*

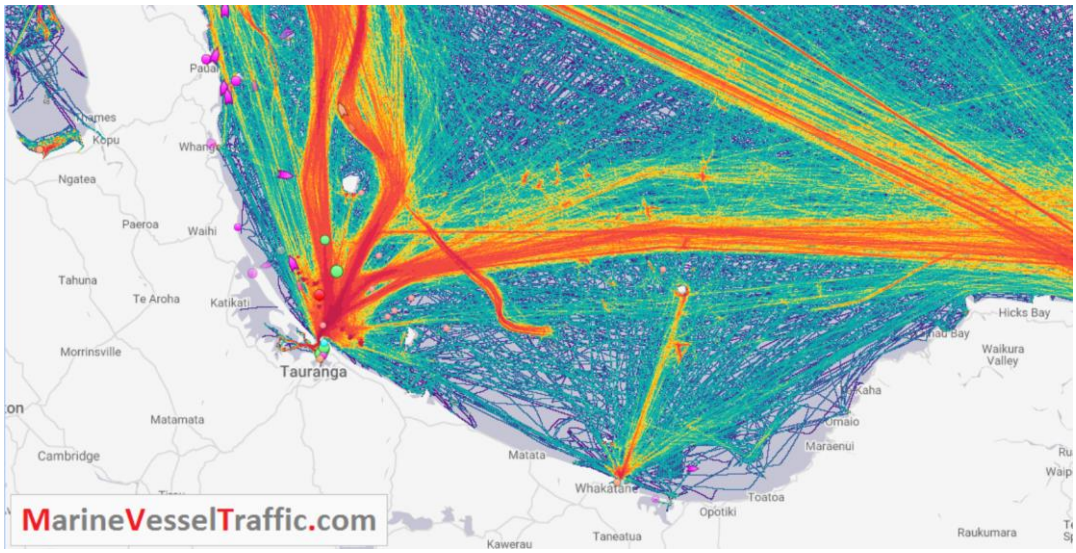


FIGURE 15: BAY OF PLENTY VESSEL TRAFFIC DENSITY MAP (SOURCE: http://www.shiptraffic.net/marine-traffic/bays/Bay_of_Plenty)

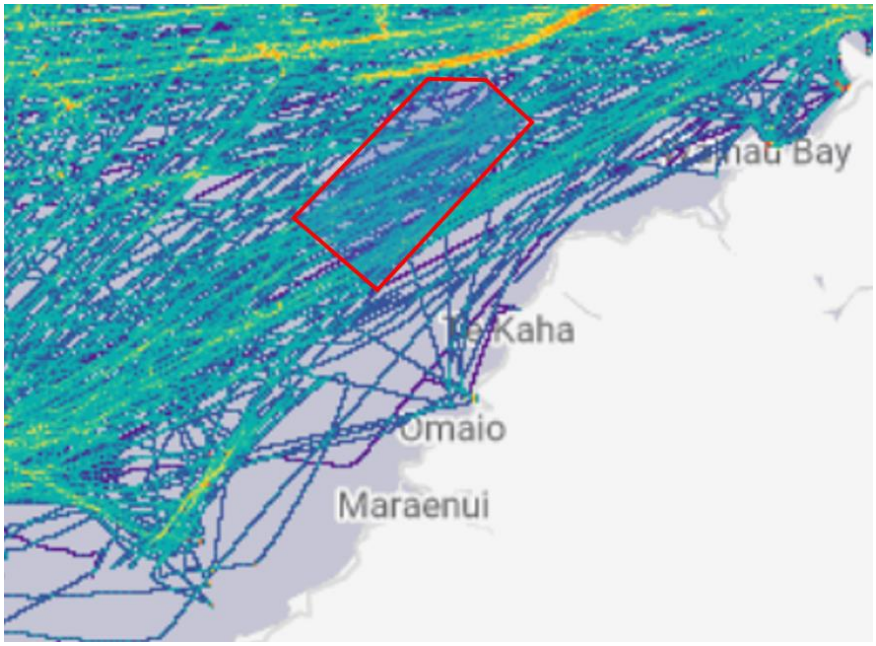


FIGURE 16: BAY OF PLENTY VESSEL TRAFFIC DENSITY MAP WITH PROPOSED MARINE FARM OUTLINED IN RED

4. PROJECT DESCRIPTION

4.1 OVERALL DEVELOPMENT CONCEPT

The project involves the staged development of a marine farm which at its maximum extent will occupy an area of up to 10,000 ha. An overall conceptual plan of the development is provided in **Appendix 2.** The total area of the consented marine farm space sought is 10,000 ha, while the total farmed area will be somewhat less than this (the structures will cover up to 9,000 ha). The usable area is still to be determined and will be finalised as part of the AMPF process (see section 4.4).

The main components of the marine farm are:

- Subsurface lines
- Buoys
- Screw or concrete anchors to the seabed
- Navigation markers

The design of the marine farm structures will be based on the system developed and used by Eastern Seafarms as it has been specifically tailored to the site conditions and tested and refined through the development and operation of the marine farm. The application also seeks the flexibility to allow innovation and the adoption of new farming technologies as they become available. This will be managed through the AMPF process.

4.2 SPECIES

This application seeks resource consent to farm the following species:

1. All permitted shellfish species, including Greenshell mussels, pacific oysters, and scallops; and

2. All permitted seaweed species, including the following seaweed species identified in the Fisheries Act:

    a. Species naturally settling on marine farming structures - Species classed as harvestable spat in Schedule 8A of the Fisheries Act 1996:

        • Bladder kelp (Macrocystis pyrifera)

        • Bull kelp (Durvillaea spp.)

        • Karengo (Porphyra spp.)

        • Lessonia (Lessonia variegata)

        • Pterocladia (Pterocladia spp.)

        • Sea lettuce (Ulva spp.)

        • Sea moss (Gracilaria spp.)

    b. Seaweed farming stock acquired from licenced fish receivers - Species listed in Schedule 4C of the Fisheries Act 1996. This includes species subject to a permit moratorium.

The applicant seeks a resource consent which does not preclude obtaining the necessary approvals for the use of all native (shellfish and seaweed) taonga currently subject to a suite of prohibitions, moratoriums and other legislative instruments. There are a several processes available which enable the farming of species which are subject to permit moratoriums. They include:

- A Special Permit (for research purposes)
- A Section 192A exemption for commercial aquaculture activities

- A Ministerial Exemption (or equivalent instrument) for aquaculture activities involving species that fall within the Biosecurity Act Sections 52 & 53 (e.g. Undaria)

4.3 STRUCTURES

The structures comprising the marine farm will comprise of the following:

- Single backbone of subsurface lines up to 500m in length from which the growing ropes will hang.
- 10 m long 'riser' ropes which will identify the location of the submerged backbone lines.
- Up to 50 buoys of 500 litre capacity and 300-500 mm diameter subsurface floats along the submerged backbone lines. The distance between the surface buoys will be a maximum of 25m.
- Orange buoys on the end of each backbone line with all other buoys coloured black.
- Screw or concrete block anchors on the seabed.
- The spacing between each of the backbone lines will vary between 50m and 100m depending on the species farmed.
- The lines will be grouped into blocks and separated by a distance of 400m-500m to enable vessel navigation within the farm.

The typical layout of the Eastern Seafarms marine farm (which this proposal seeks to replicate) is illustrated in *Figure 17* below.

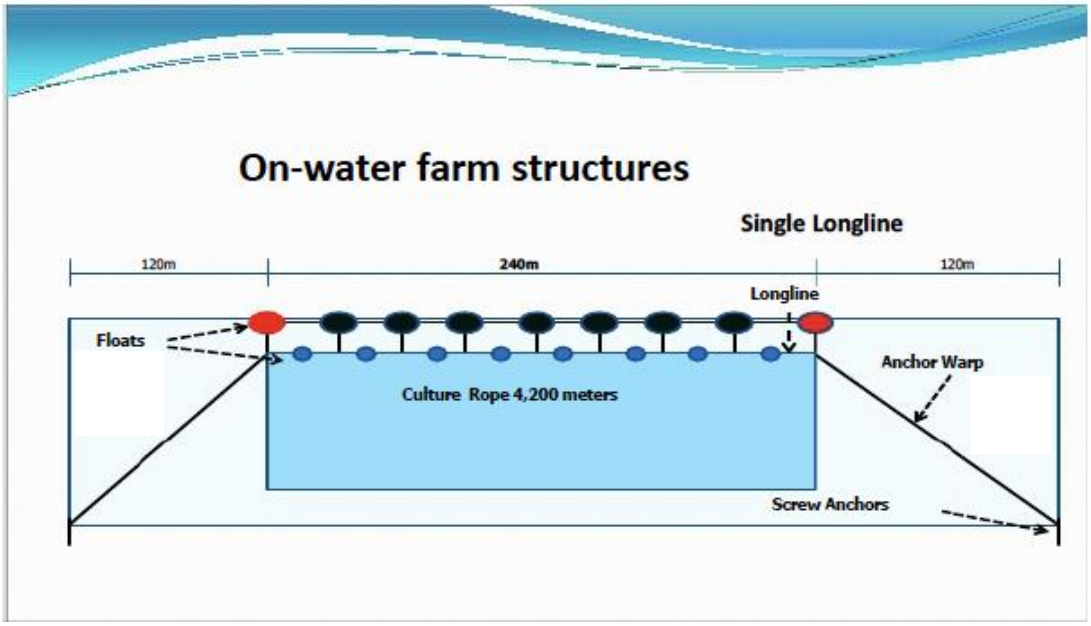


FIGURE 17: PROPOSED MARINE FARMING STRUCTURES

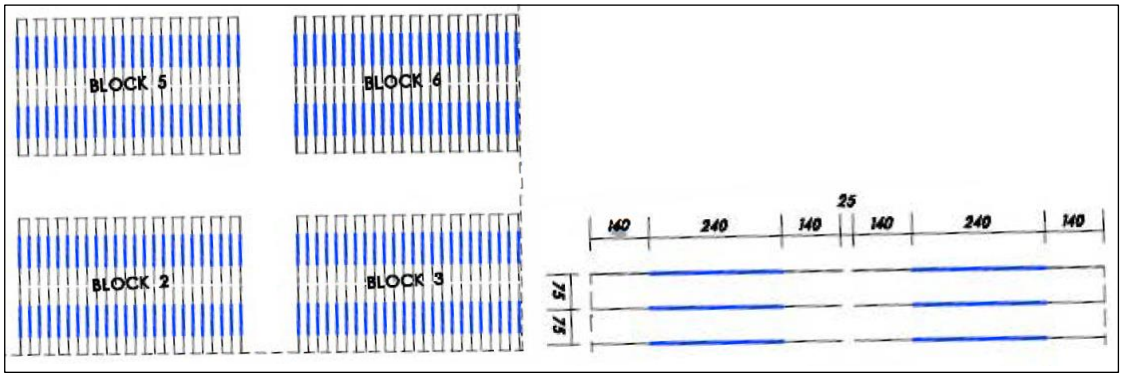


FIGURE 18: TYPICAL FARM LINE AND BLOCK LAYOUT (SOURCE: WHAKATOHEA MARINE FARM – PAKAHI TRADING LTD)

The development of the structures and facilities within the marine farm will occur in stages (and sub-stages) as the level of demand increases. It is proposed that a specific layout plan providing more detail on the design of each stage of the marine farm will be developed and submitted for certification prior to implementation.

The layout of the farm will be based on the design used for the Eastern Seafarms site, with the site divided into blocks of approximately 200ha in size with a gap of 400m-500m between each block. The density of lines will depend on the species being farmed and this will also influence the exact size of each block. The following table sets out the indicative development plan for Stage 1 of the marine farm based on 75m spacing between lines and blocks of 52 lines. This is subject to refinement through the detailed design process.

Table 2 below outlines the indicative development plan for Stage 1 of the marine farm, which is proposed to commence from the south western end of the site.

TABLE 2: INDICATIVE STAGE 1 DEVELOPMENT

YEAR	SUB-STAGE	AREA	BLOCKS	LINES	SPECIES
1	1a	50 ha	1	12	Single
2	1b	150 ha	1	36	Multiple
3	1c	400 ha	2	104	Multiple
4	1d	1,200 ha	6	312	Multiple
5	1e	5,000 ha	15	780	Multiple

Subsequent stages will be developed in a similar manner.

Environmental monitoring of the effects of each sub-stage on the water column and benthic environment will be undertaken with a requirement to demonstrate that the farming activities are not resulting in significant adverse environmental effects prior to commencing additional stages.

All structures will be designed and constructed to withstand hydrodynamic and other forces based on a 2% AEP storm event. Engineering design details, including calculations and plans prepared by a suitably qualified engineer will be provided through the AMPF process prior to commencement of works.

The proposed marine farm will be designed and operated to comply with the lighting and marking requirements of Maritime New Zealand's *"Marine Farm Guidelines: Navigational Safety 2018"* or subsequent document.

4.4 DEVELOPMENT COMPONENTS AND CONSTRUCTION ACTIVITIES

The methodology for installing marine farming structures will be based on the techniques that have been developed and applied at the Eastern Seafarms site, although an adaptive management approach is intended to allow the use of new, innovative technologies and farming systems that may emerge and are suited to the site conditions. Based on the system used by Eastern Seafarms, backbone lines and anchors will primarily be installed via a barge and support vessels. It is anticipated that the screw anchoring of the warp to the seabed will be completed with a hydraulically powered motor. This is a reasonably fast process can be undertaken using a light crane and without the need for divers.

Once the anchors are in place the barge will lay out the backbone lines and floats with a cable roller. The duration of works will be dependent on the proposed staging and weather conditions.

4.5 OPERATION

The main activities associated with the operation of the marine farm include the attachment of the spat / juveniles (in the case of shellfish farming), removal and re-attachment of the larger seed mussels etc, and harvesting.

The farming operations are typically seasonal with vessels working at the farm at key periods. In general, the frequency of vessels visiting the farm is expected to be several times a week to check on the progress of the crops (this will include collecting data from research monitoring equipment where applicable). The highest

frequency of access will be during harvest, and during these times vessels will visit the site at least daily (and possibly up to two or three times each day).

The vessels that will service the marine farm will be conventional seaweed or mussel harvesting vessels, similar to those used by Eastern Seafarms and will range in length from 20 to 40 m.

The proposed marine farm will be serviced by existing facilities in the eastern Bay of Plenty, with vessels likely to be berthed in the Opotiki Habour (once operational).

An Environmental Code of Practice has been developed by the New Zealand Mussel Industry Council in consultation with regulatory authorities and scientists. The New Zealand Greenshell Mussel Environmental Code of Practice (2007) directs best industry practices throughout the growing and harvesting cycle to minimise potential effects on the environment. The Code of Practice addresses all activities associated with the mussel industry, from the collection of spat, to the harvesting of mussels and the disposal of waste material. The proposed marine farming activities will be undertaken in accordance with the Code of Practice to ensure any environmental effects are minimised.

4.6 ADAPTIVE MANAGEMENT PLANNING FRAMEWORK (AMPF)

The assessment of environmental effects provided in section 7.3 of this report and in the environmental and technical reports included as appendices provide a suite of mitigation measures to ensure that the environmental effects of the project will be minimised to protect the significant environmental values within the site and in the surrounding area.

As is normal for a project of this nature, this application seeks flexibility in the design of the various marine farming structures proposed, the species and density of farming activities, along with the staging and operational details. This approach is necessary to enable refinements to the specific design details for the structures and to allow innovation in developing the most efficient and environmentally sensitive technologies. It is proposed to provide for this through an adaptive management planning framework (AMPF), outlined (conceptually) below.

The overall governance for the development and operation of the marine farm will be led by a Sea Farms Governance Panel, which will have membership from iwi, the consent holder, local authorities and relevant government agencies. The underpinning principles for the panel are based on the (post-settlement) relationship agreements Te Whanau-a-Apanui have agreed to with the Crown entities represented on the panel.

The implementation of the AMPF will be managed by the consent holder working in collaboration with a technical advisory panel (Sea Farms Technical Advisory Panel). The role of the panel will be to provide scientific and technical advice on all aspects of the design and operation of the marine farm, including monitoring. Consent conditions will specify the expertise required on the panel, purpose and terms of reference.

The panel will be responsible for reviewing and advising on the following matters.

1. Plans and design details for the farm layout and all structures prior to the commencement of works authorised under the consent and for each stage (and sub-stage) of the development. The plans shall be in general accordance with the plans approved under the resource consent.

2. Procedure for assessing species, density and location;

3. Operational considerations;

4. Monitoring requirements and triggers for commencement of additional stages;

5. Reporting requirements;

6. Stakeholder involvement.

It is anticipated that the specific contents and requirements of these plans, along with any additional management plans required to manage the effects of the project, will be developed in consent conditions

prepared in consultation with the consent authority as part of the processing of this application. A set of draft resource consent conditions is included in **Appendix 14**.

By adhering to the adaptive management framework and the associated monitoring and mitigation measures detailed in the proposed consent conditions, the adverse environmental effects of the proposed marine farming activities can be managed to ensure the effects are no more than minor.

5. REASONS FOR THE APPLICATION

5.1 REOURCE CONSENT REQUIREMENTS

This application seeks resource consent from the Bay of Plenty Regional Council (BOPRC) to authorise the installation of marine farm structures, the occupation of coastal space and to undertake aquaculture activities.

The project requires resource consent under the Bay of Plenty Regional Coastal Environment Plan (RCEP) for activities and structures within the coastal marine area.

A description of the resource consent requirements for the project is provided in *Table 3* below.

5.1.1 BAY OF PLENTY REGIONAL COASTAL ENVIRONMENT PLAN

Under the Bay of Plenty Regional Coastal Environment Plan (RCEP) the site is located within the Coastal Environment Zone and the Coastal Marine Area (CMA).

The following table summarises the resource consents required under the RCEP.

TABLE 3: RCEP RESOURCE CONSENTS REQUIRED

RMA	RULE	DESCRIPTION
	Rule AQ 6 Discretionary – New Commercial Aquaculture (outside high value areas and permanently navigable harbour waters) and other Non-commercial Aquaculture *Commercial aquaculture where the activity is not prohibited by Rule AQ 8, non-complying under Rule AQ 7 or controlled under Rule AQ 4; and* *Non-commercial aquaculture that is not a controlled activity under Rule AQ 1 a restricted discretionary activity under AQ 2, or a controlled activity under AQ 3 is a discretionary activity.* *For the avoidance of doubt, this rule includes:* *(i) Erection, reconstruction, placement, alteration, or extension of a structure that is fixed in, on, under or over the foreshore or seabed;* *(ii) Disturbance of the foreshore or seabed associated with the structure;* *(iii) Occupation of space in the common marine and coastal area;* *(iv) Discharge of contaminants to the coastal marine area; and* *(v) Deposition of material within the coastal marine area.* *In relation to this rule, 'commercial' means aquaculture where any species farmed is harvested for the purpose of sale.*	The proposal involves the construction of marine farming structures within the coastal marine area. The proposed site is not within a high-value area listed in Policy AQ 6, which includes: (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 (e) 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.

Overall, the proposal requires resource consent under Rule AQ6 of the RCEP as a **discretionary activity**.

5.2 OTHER CONSENT REQUIREMENTS

5.2.1 NATIONAL ENVIRONMENTAL STANDARDS

There are seven National Environmental Standards in force as regulations. The only standard applicable to aquaculture activities is the National Environmental Standards for Marine Aquaculture (NES-MA) which came into force on 1 December 2020. The purpose of the NES-MA is to provide a nationally consistent set of provisions to for considering applications for replacement coastal permits for existing marine farms, and for realignment and change of species applications.

As this application is for the establishment of a new commercial aquaculture activity, the NES-MA regulations are not applicable.

5.3 STATUS OF THE APPLICATION

In summary, the proposed development requires resource consent under the RCEP as a discretionary activity, as this is the most restrictive activity classification applicable.

6. CONSULTATION

This application is being made by tangata whenua on behalf of several Te Whānau-ā-Apanui hapū.

Settlement relationship agreements are in place, or being developed with, Department of Conservation, Land Information New Zealand (LINZ), Eastern Region Fish and Game Council

Letters of support have been obtained from the following parties:

- Whakatohea Māori Trust Board
- Ministry of Primary Industries
- Aquaculture New Zealand
- Waikato University (Professor Chris Battershill)

Copies of these letters are included in **Appendix 9**.

7. SCHEDULE 4 INFORMATION REQUIREMENTS

In accordance with Clause 1 of Schedule 4, in each case the information required by clauses 2, 3, 6 and 7, and which is included in this AEE, is specified in enough detail to satisfy the purpose for which it is required.

TABLE 4: SCHEDULE 4: CLAUSE 2 – INFORMATION REQUIRED IN ALL APPLICATIONS	
INFORMATION REQUIREMENT	**LOCATION ADDRESSED IN REPORT**
(1) An application for a resource consent for an activity (the activity) must include the following:	
(a) a description of the activity:	Section 4
(b) a description of the site at which the activity is to occur:	Section 3
(c) the full name and address of each owner or occupier of the site:	Section 1
(d) a description of any other activities that are part of the proposal to which the application relates:	Section 4
(e) a description of any other resource consents required for the proposal to which the application relates:	Section 5.2
(f) an assessment of the activity against the matters set out in Part 2:	Section 7.1
(g) an assessment of the activity against any relevant provisions of a document referred to in section 104(1)(b).	Section 9.1
(2) The assessment under sub-clause (1)(g) must include an assessment of the activity against—	
(a) any relevant objectives, policies, or rules in a document; and	
(b) any relevant requirements, conditions, or permissions in any rules in a document; and	
(c) any other relevant requirements in a document (for example, in a national environmental standard or other regulations).	
(3) An application must also include an assessment of the activity's effects on the environment that	Section 7.3
(a) includes the information required by clause 6; and	
(b) addresses the matters specified in clause 7; and	
(c) includes such detail as corresponds with the scale and significance of the effects that the activity may have on the environment.	

TABLE 5: SCHEDULE 4: CLAUSE 3 – ADDITIONAL INFORMATION REQUIRED IN SOME APPLICATIONS	
INFORMATION REQUIREMENT	**LOCATION ADDRESSED IN AEE**
An application must also include any of the following that apply:	
(a) if any permitted activity is part of the proposal to which the application relates, a description of the permitted activity that demonstrates that it complies with the requirements, conditions,	5.1

and permissions for the permitted activity (so that a resource consent is not required for that activity under section 87A(1)):	
(b) if the application is affected by section 124 or 165ZH(1)(c) (which relate to existing resource consents), an assessment of the value of the investment of the existing consent holder (for the purposes of section 104(2A)):	N/A
(c) if the activity is to occur in an area within the scope of a planning document prepared by a customary marine title group under section 85 of the Marine and Coastal Area (Takutai Moana) Act 2011, an assessment of the activity against any resource management matters set out in that planning document (for the purposes of section 104(2B)).	N/A

TABLE 6: SCHEDULE 4: CLAUSE 6 – INFORMATION REQUIRED IN ASSESSMENT OF ENVIRONMENTAL EFFECTS	
INFORMATION REQUIREMENT	**LOCATION ADDRESSED IN AEE**
(1) An assessment of the activity's effects on the environment must include the following information:	
(a) if it is likely that the activity will result in any significant adverse effect on the environment, a description of any possible alternative locations or methods for undertaking the activity:	N/A
(b) an assessment of the actual or potential effect on the environment of the activity:	Section 7.3
(c) if the activity includes the use of hazardous substances and installations, an assessment of any risks to the environment that are likely to arise from such use:	Section 7.3
(d) if the activity includes the discharge of any contaminant, a description of	Section 7.3
(i) the nature of the discharge and the sensitivity of the receiving environment to adverse effects; and	
(ii) any possible alternative methods of discharge, including discharge into any other receiving environment	
(e) a description of the mitigation measures (including safeguards and contingency plans where relevant) to be undertaken to help prevent or reduce the actual or potential effect	Section 7.3
(f) identification of the persons affected by the activity, any consultation undertaken, and any response to the views of any person consulted:	Section 6
(g) if the scale and significance of the activity's effects are such that monitoring is required, a description of how and by whom the effects will be monitored if the activity is approved:	Section 7.3
(h) if the activity will, or is likely to, have adverse effects that are more than minor on the exercise of a protected customary right, a description of possible alternative locations or methods for the exercise of the activity (unless written approval for the activity is given by the protected customary rights group).	N/A
(2) A requirement to include information in the assessment of environmental effects is subject to the provisions of any policy statement or plan.	

(3) To avoid doubt, sub clause (1)(f) obliges an applicant to report as to the persons identified as being affected by the proposal, but does not—	Section 6
(a) oblige the applicant to consult any person; or	
(b) create any ground for expecting that the applicant will consult any person.	

TABLE 7: SCHEDULE 4: CLAUSE 7 – MATTERS THAT MUST BE ADDRESSED BY ASSESSMENT OF ENVIRONMENTAL EFFECTS	
INFORMATION REQUIREMENT	**LOCATION ADDRESSED IN AEE**
(1) An assessment of the activity's effects on the environment must address the following matters:	
(a) any effect on those in the neighbourhood and, where relevant, the wider community, including any social, economic, or cultural effects:	Section 7.3
(b) any physical effect on the locality, including any landscape and visual effects	Section 7.3
(c) any effect on ecosystems, including effects on plants or animals and any physical disturbance of habitats in the vicinity	
(d) any effect on natural and physical resources having aesthetic, recreational, scientific, historical, spiritual, or cultural value, or other special value, for present or future generations	
(e) any discharge of contaminants into the environment, including any unreasonable emission of noise, and options for the treatment and disposal of contaminants	Section 11.1
(f) any risk to the neighbourhood, the wider community, or the environment through natural hazards or the use of hazardous substances or hazardous installations.	Section 7.3
(2) The requirement to address a matter in the assessment of environmental effects is subject to the provisions of any policy statement or plan	Section 9.1

7.1 ASSESSMENT AGAINST PART 2 OF THE ACT

Section 104 is subject to Part 2 of the Act, therefore the overriding determination of the proposal is its appropriateness in the context of the purpose and principles of the Act. Part 2 matters comprise of those matters specified in Sections 5, 6, 7, and 8 of the Act and contain many of the same considerations as in the assessment of the objectives and policies of the NZCPS, the RPS and RCEP which is provided in section 8.1 of this report and **Appendix 3, 4, and 5**. Additional consideration of these matters is provided below.

7.1.1 SECTION 5

Section 5 in Part 2 of the Act identifies the purpose of the Act as being the sustainable management of natural and physical resources. This means managing the use of natural and physical resources in a way that enables people and communities to provide for their social, cultural and economic well-being while sustaining those resources for future generations, protecting the life supporting capacity of ecosystems, and avoiding, remedying or mitigating adverse effects on the environment.

The project involves the establishment of an offshore marine farm which complements existing and consented aquaculture developments in the eastern Bay of Plenty and makes an important contribution to the establishment of a large-scale aquaculture industry within the Bay of Plenty. The social, economic and cultural

benefits of the aquaculture industry have been evaluated and shown to be significant. Aquaculture is a key focus area for regional economic development and the Bay of Plenty Aquaculture Strategy has been developed with the goal of growing an integrated and sustainable aquaculture industry in the Bay of Plenty with export sales of $250 million by 2025. Aquaculture is also seen by iwi as the foundation of employment for their people, providing income for whanau, and supporting improved outcomes for the entire community. Provided it can be established that the requisites to this objective of s5 are satisfied, then the Project clearly meets the purpose of the Act. These requisites are considered below.

Section 5(2)(a) – sustaining the potential of natural and physical resources to meet the reasonably foreseeable needs of future generations

The project has been designed based on the proven sustainability of the Eastern Seafarms marine farming operation coupled with an innovative adaptive management approach designed to ensure natural and physical resources are sustained intergenerationally. This has also applied to the selection of the site and the proposed farming methods. This sustains the reasonably foreseeable needs of future generations for an environment in which people are able to undertake recreational activities and harvest kaimoana.

The site is considered to be the most sustainable and appropriate location for the marine farm being outside of areas of identified environmental significance. The staged development approach and adaptive management framework provides additional safeguards to ensure long-term sustainability.

Section 5(2)(b) – safeguarding the life-supporting capacity of air, water, soil and ecosystems

The information provided in the assessment of environmental effects section of this report together with the proposed adaptive management approach will ensure that the life supporting capacity of coastal waters and ecosystems is safeguarded. The impact of offshore marine farming has been assessed in detail as part of previous resource consent processes for aquaculture developments in the eastern Bay of Plenty. The effects of these activities have been subsequently monitored during the development of the Eastern Seafarms marine farm to provide assurance regarding environmental impacts and ensure that the life supporting capacity of costal water and its ecosystems is safeguarded. The proposed AAMPF approach will enable design details to be evaluated prior to implementation.

Section 5(2)(c) – avoiding, remedying, or mitigating any adverse effects of activities on the environment

The assessment of environmental effects provided in section 7.3 below has set out proposed measures to avoid, remedy or mitigate the potential adverse effects of the project. The consideration of siting of the marine farm and the methodology for designing the project and the staged implementation is focused on the avoidance of adverse effects on the coastal marine area to the extent possible.

Where avoidance of effects cannot be achieved, practical and effective measures have been proposed to ensure that effects are monitored and mitigated to acceptable levels where required. The measures for avoiding, remedying, or mitigating the adverse effects of the project will be incorporated into the AAMPF process and consent conditions.

7.1.2 SECTION 6

Section 6 of the Act sets out a number of matters of national importance. The following are relevant to the proposal:

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;

Activities proposed within the coastal marine area are considered to be appropriate having regard to the information available regarding the environmental characteristics of the site and the adaptive management approach proposed. It is noted that the proposed marine farm is not located in an area of very high or outstanding natural character or an outstanding natural feature or landscape and is a significant distance from

the coastline and will not be readily visible from vantage points on land. Coastal processes are not expected to be impacted. For this reason, the project will not have significant adverse effects on natural character.

The site does not include any areas identified in planning documents or through previous environmental assessments as having significant indigenous biodiversity value. Effects on known significant indigenous habitats will be avoided and pre-commencement ecological surveys are proposed to verify this for each stage of development. It is acknowledged that the coastal waters of the Bay of Plenty provide habitat for marine mammals that are listed as threatened or at risk. The potential impact of offshore marine farms on marine mammals has been considered previously in relation to offshore aquaculture activities, including as part of the Eastern Seafarms resource consent process. Following consideration of these factors, it has been determined that offshore marine farms will not have a significant adverse effect on marine mammals.

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

The project site is outside commercial shipping lanes and navigation within the vicinity of the proposed farm is relatively low. As with other marine farms, public access will be provided within the farm and will provide recreational fishing opportunities.

d) The relationship of Māori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga.

g) The protection of recognised customary activities.

As has been discussed in previous sections of this report, this application has been made on behalf of hapu of Te Whanau a Apanui within an area that is considered Te Whanau a Apanui customary title under the MACA legislation.

h) The management of significant risks from natural hazards.

Natural hazard risks are not a significant consideration for offshore marine farming.

Overall, the proposal is consistent with the matters of national importance set out in Section 6 of the Act.

7.1.3 SECTION 7

Section 7 identifies several "other matters" to be given particular regard to in the consideration of any assessment for resource consent, and includes:

a) Kaitiakitanga;

aa) *The ethic of stewardship;*

The proposal has been designed to give particular regard to the responsibilities of Te Whanau a Apanui as kaitiaki.

bb) The efficient use and development of natural and physical resources;

The proposed marine farm represents an efficient use of natural and physical resources by utilising coastal waters that are suitable for aquaculture activities, without impacting significantly on other users of the coastal marine area or the significant environmental values of the coastal environment.

c) The maintenance and enhancement of amenity values;

The effects of the project on the amenity values of the surrounding area will largely be limited to people in vessels within or close to the marine farm. As discussed previously, it is unlikely that the marine farming structures will be visible from land. This is demonstrated by the existing Eastern Seafarms marine farm, where the surface farming structures are unable to be seen by a casual observer from land.

Based on the Eastern Seafarms marine farm (on which the current proposal will be modelled), the visibility of the farm structures within the seascape is limited by the relatively low profile of the surface structures and sea conditions.

Amenity effects are influenced by the perspective and values of the observer. In the case of an offshore marine farm, the recreational fishing opportunities provided by the Eastern Seafarms marine farm has proven to be a positive effect with regard to recreational amenity. The proposed farm is likely to have a similar effect.

d) Intrinsic values of ecosystems;

f) Maintenance and enhancement of the quality of the environment;

g) Any finite characteristics of natural and physical resources;

The project has been designed to have regard to ecosystem values through the siting and design of the marine farm together with the staged development approach and adaptive management framework. The ecological effects of the proposal have been considered other sections of this report.

Particular regard has been given to maintaining the quality of the environment in developing the methodology for the project and the package of mitigation measures.

h) The protection of the habitat of trout and salmon

The marine farm site does not provide habitat for trout or salmon.

i) The effects of climate change

Factors such as the potential for increased intensity of storm events with larger waves and strong winds as a result of climate change will be taken into account in the design of marine farming structures.

7.1.4 SECTION 8

Section 8 requires that the principles of the Treaty of Waitangi be taken into account.

The applicant is comprised of representatives of hapu with mana moana over the application site. The project is integral to achieving the vision of Te Whanau a Apanui in providing employment and restoring cultural practices.

In relation to the principle of active protection, the project has been designed to respect the mauri of the Tangaroa and minimising the impact on the use of coastal waters as a source of customary resources.

With regard to the principle of mutual benefit, the cultural benefits of the Project in realising the aquaculture interests of Te Whanau a Apanui and providing sustainable employment to its people has been discussed in other sections of this report. The social and economic benefits to the wellbeing of the wider community have also been noted.

7.1.5 SUMMARY

The proposal will sustain the natural and physical resources of the coastal marine area to meet the reasonably foreseeable needs of future generations (section 5(2)(a)). The proposed design of the farm and development approach will safeguard the life-supporting capacity of water and aquatic ecosystems (section 5(2)(b)) and ensure that potential adverse effects will be avoided, remedied or mitigated (section 5(2)(c)).

In overall terms, it is considered that granting the application is consistent with Part 2 of the Act and that in so doing the purpose of the RMA will be achieved.

7.2 PERMITTED BASELINE AND THE RECEIVING ENVIRONMENT

In assessing the actual and potential effects of the activity it is relevant to consider the permitted baseline and the receiving environment. Consideration of the permitted baseline and an analysis of the receiving environment are two different assessments.

The permitted baseline is a concept which allows a consent authority to disregard an effect where a plan permits an activity with that effect when considering an application under ss95D, 95E and 104(1)(a) of the Act.

The receiving environment is the environment on which an activity might have effects, being the future state of the environment that may exist at the time the activity is undertaken. This includes the future state of the environment as it might be modified by:

- the utilisation of rights to carry out permitted activities; and
- activities authorised by resource consents that have been granted at the time an application is considered, where it appears likely that those consents will be implemented.

The permitted baseline and receiving environment are considered in more detail below.

7.2.1 PERMITTED BASELINE

There is no relevant permitted baseline as Section 68A of the RMA requires that no aquaculture activities within the coastal marine area be included in a regional plan as a permitted activity.

7.2.2 RECEIVING ENVIRONMENT

The 'environment' upon which the effects of the proposal must be assessed is the environment as it is at the time of the application and the reasonably foreseeable future environment. The future environment takes into account the activities that could be carried out as of right as well as activities authorised by resource consents that have been granted but are yet to be undertaken (where it is likely that they will be given effect to).

EXISTING ENVIRONMENT

The site and surrounding area have been described in detail in section 3 of this report. The environmental values within the proposed marine farm site and surrounding area have been identified, along with the existing uses of the coastal marine area.

EXISTING RESOURCE CONSENTS

There are several existing resource consents authorising marine farming activities within the coastal waters of the eastern Bay of Plenty. For the purposes of this assessment, the resource consents granted to Eastern Seafarms Limited are of most significance.

The existing resource consents relevant to the site are set out in the table below.

TABLE 8: EXISTING RESOURCE CONSENTS RELEVANT TO THE PROJECT SITE		
RMA	**ACTIVITY**	**PLAN**
CONSENT HOLDER: EASTERN SEAFARMS LTD		
12(1)	**61234 – Coastal Permit** Disturb the Seabed as a Result of Anchoring of Marine Farm Structures Deposit Material on the Seabed as a Result of Anchoring of Marine Farm Structures And Deposition of Biological Excretions And Detritus Material	RCEP
12(1)	**61235 - Coastal Permit** Discharge Contaminants to The Waters of the Pacific Ocean	RCEP
12(1)	**61599 – Coastal Permit** Occupy the Coastal Marine Area with Marine Farm Structure	RCEP
12(1)	**61600 – Coastal Permit** Erect And Maintain Marine Farm Structures	RCEP
12(1)	**63736 - Coastal Permit** Spat catching permit	RCEP
12(1)	**63737 – Coastal Permit** Marine farming permit	RCEP
CONSENT HOLDER: WHAKATOHEA MAORI TRUST BOARD		
12(1)	**RM17-0488-C.02 - Coastal Permit** Erect and maintain marine farm structures	RCEP

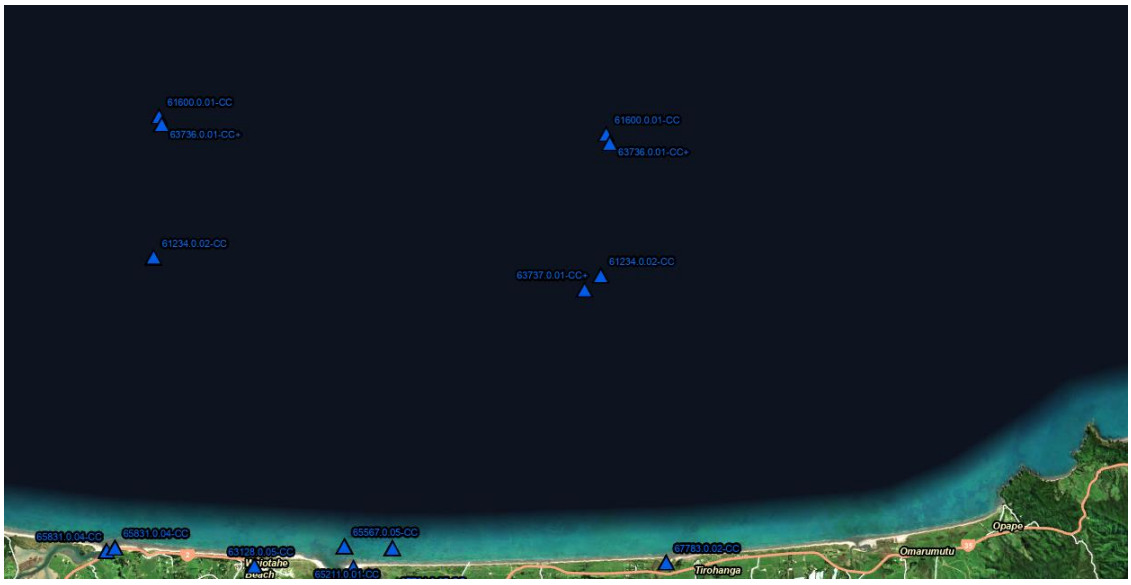


FIGURE 19: CURRENT RESOURCE CONSENTS FOR MARINE FARMING ACTIVITIES (SOURCE: BOPRC - BAY EXPLORER)

The receiving environment in this case includes coastal waters within which there are existing large-scale marine farms both operating and consented within locations that have similar environmental characteristics as the proposed site.

The marine structures used in the existing marine farm have proven to be suitable for the offshore conditions and the environmental effects of the existing farm have been monitored and assessed which provides verification that the activity is sustainable, and the environmental effects are as predicted.

PERMITTED BASELINE AND RECEIVING ENVIRONMENT SUMMARY

The key points from the above assessment of the receiving environment are summarised below.

- The effects on the carrying capacity of the coastal waters from the proposed expansion of aquaculture activities is recognised as an important consideration and is addressed in section 7.3 of this report.
- The selection of the proposed farm site has taken into account the need to provide sufficient separation from existing and consented marine farms to avoid adverse effects.
- The cumulative effects of the development of consented marine farm areas has been taken into account in assessing the effects of the proposal.

7.3 ASSESSMENT OF EFFECTS ON THE ENVIRONMENT

Section 104(1)(a) and Clause 2(3) of Schedule 4 requires an assessment of the activity's effects on the environment. The detail of this should correspond with the scale and significance of the effects that the activity may have on the environment.

The following assessment includes, where relevant, the information required by Clause 6 and the matters outlined in Clause 7.

7.3.1 EFFECTS ON CULTURAL VALUES

The proposed marine farm site is not identified as an Area of Significant Cultural Value in the RCEP.

The site is within the rohe of Te Whanau a Apanui and within the customary marine title area under the Marine and Coastal Areas (Takutai Moana) Act (MACA).

It is recognised that only tangata whenua can identify their relationship with their special places. This application is being made by the tangata whenua – on behalf of all Te Whānau-ā-Apanui (recognised as the seawater space of 3 hapū; Te Ehutu, Kaiaio, Kahurautao).

A Cultural Values Report has been prepared for Te Huata Charitable Trust and is included in **Appendix 11**. This report was prepared for the Te Huata Spat Hatchery, but provides a description of the cultural values of the area and of Te Whanau a Apanui which are universally applicable.

In addition, the resource consent applications for existing marine farms within the Eastern Bay of Plenty have considered the potential cultural effects of marine farming activities and the impact on tangata whenua of Te Whānau-ā-Apanui. The evidence heard as part of the resource consent process for these activities is equally relevant to this application.

By way of summary, the following points were noted,

- The marine farm provides for the culture and traditions of Te Whānau-ā-Apanui, particularly their traditions of rangatiratanga (exercising customary authority), kaitiakitanga (exercising obligations to maintain and enhance taonga), manaakitanga (hospitality, including the provision of food to visitors) and hokohokotanga (trading or commercial activities),
- The marine farm is consistent with Te Whānau-ā-Apanui Resource Management Plan, as well as with relevant tangata whenua provisions in the RMA and the relevant statutory planning documents, and,
- The marine farm is an important part of a rebuilding process for Te Whānau-ā-Apanui.

The following table provides an overview of the main principles identified for managing the cultural effects of the project, noting that as discussed above, these will be developed by Te Whanau a Apanui to ensure that cultural values are protected, and effects avoided or mitigated.

TABLE 9: CULTURAL EFFECTS MANAGEMENT

PRINCIPLE	ASSESSMENT
Recognise and provide for Kaitiakitanga	The design and methodology for the project has been developed with a focus on minimising environmental impacts. The project also supports the utilisation of resources to further expand a developing aquaculture industry. These are both key principles underpinning the concept of kaitiakitanga. Kaitiakitanga will be exercised throughout the implementation of the project.

Uphold tikanga and values of Te Whanau a Apanui	Appropriate tikanga will be adhered to for the duration of the project.
Protect all ancestral sites and areas of significance	The proposed site itself has not been identified as an ancestral site or area of significance. The project methodology has been developed with a focus on ensuring effects on the significant values within the wider coastal waters are avoided.
Protect and enhance resources of customary significance, including access to those resources.	Assessments of the benthic environment has determined that the site does not contain any significant habitats or values. It is acknowledged that the Bay of Plenty waters are frequented by a variety of marine mammal species and measures are proposed to ensure effects are avoided or mitigated where avoidance is not achievable. The proposed marine farm site has been selected to avoid impacts on customary fishing grounds.

7.3.2 NATURAL CHARACTER AND LANDSCAPE EFFECTS

The preservation of the natural character of the coastal environment and protection from inappropriate use and development is a matter of national importance[6]. This application seeks to authorise the establishment of marine farming structures, including surface structures within the coastal environment.

The areas where these works will occur are not identified in the Bay of Plenty Regional Policy Statement (RPS) as having high, very high or outstanding natural character values.

Offshore marine farming techniques used in the Bay of Plenty (specifically at the Eastern Seafarms site) involves structures which are mostly subsurface. As the proposed farm will utilise the same types of structures as the Eastern Seafarms site and in a location with comparable attributes (in particular the distance from shore) the effects on natural character, visual amenity and landscape values are expected to be similar. The Eastern Seafarms resource consent application was supported by expert evidence provided by landscape architect Rachel de Lambert of Boffa Miskell. This evidence is summarised in the Whakatohea (Pakihi Trading Company) marine farm resource consent application (RM17-0561) as follows:

"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."

The points made in this assessment are considered to be equally relevant to the proposed marine farm site, which is 6km from the coast at the closest point.

[6] Section 6(a) RMA

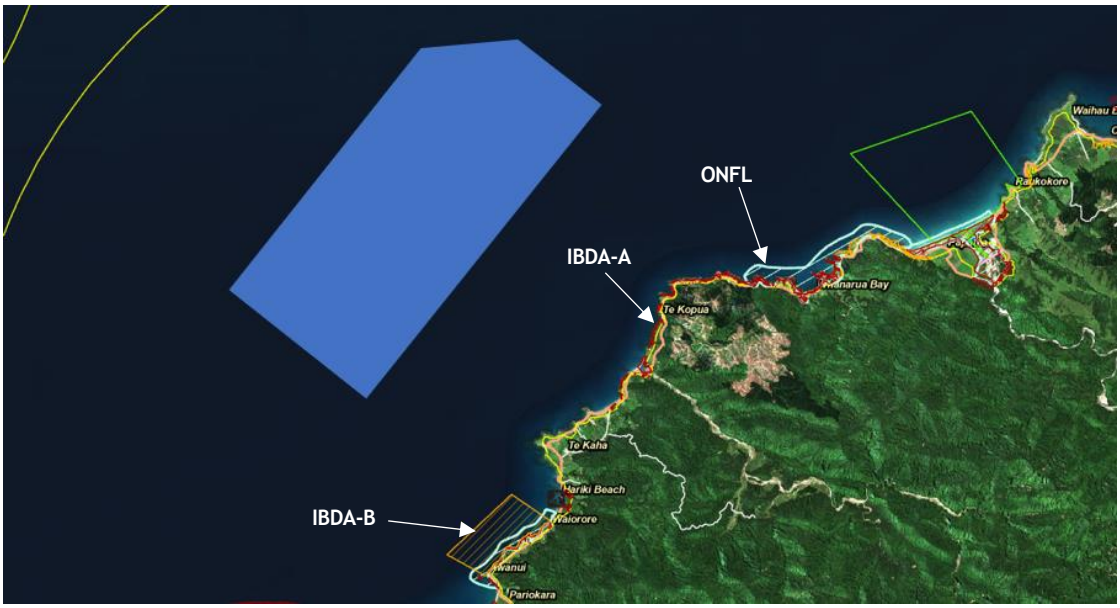


FIGURE 20: PROPOSED MARINE FARM SITE RELATIVE TO ONFL AND SIGNIFICANT INDIGENOUS BIODIVERSITY AREAS IDENTIFIED IN RCEP

The outstanding natural features and landscapes identified in the RCEP which are within 20km of the proposed marine farming sites include:

- Whanarua Bay
- Motunui Island and Associated Reefs
- Orangoihinui Point, Whitianga Bay to Ohae Point
- Motu River Mouth
- Maraenui Escarpment

These features form part of the landward backdrop to the marine farm however due to the distance offshore, the proposal is unlikely to impact on the significant values of these areas. Some of these sections of coastline are also identified as having very high natural character in the Bay of Plenty Regional Policy Statement as shown in *Figure 21* below.

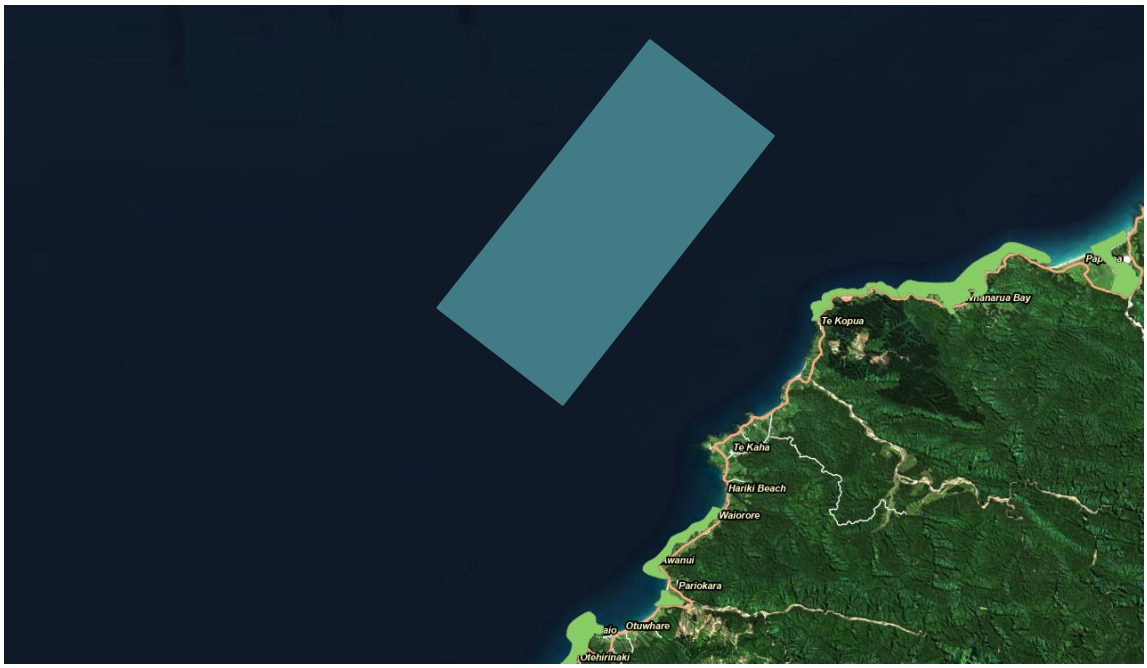


FIGURE 21: PROPOSED MARINE FARM SITE RELATIVE TO AREAS OF VERY HIGH NATURAL CHARACTER IDENTIFIED IN RPS

In addition, there is a functional requirement for marine farms to be located within the coastal marine area. The types of surface structures used within the farm are determined by technical requirements. Taking into account the location and design of the proposal, it is considered that the adverse effects of the project on the natural character and landscape values of the coastal environment will be no more than minor.

7.3.3 AMENITY VALUES

The RMA describes amenity values as *"those natural or physical qualities and characteristics of an area that contribute to people's appreciation of its pleasantness, aesthetic coherence, and cultural and recreational attributes"*. These values are largely attributed to an individual's perception and values associated with an area.

Amenity values are primarily managed through regional plan rules such as zoning, noise limits and other controls which are designed to achieve a minimum level of amenity and to minimise adverse effects. Cumulative effects can also impact on amenity values.

Given the nature of the site, access is limited to vessels and primarily those associated with recreational activities.

The Eastern Seafarms marine farm has proven to be a popular and productive area for recreational fishing. Fishing charter boats specialising in fishing within the marine farm have also established since the development of the farm. The proposed marine farm will offer similar recreational (and charter) fishing opportunities and therefore likely to be viewed as a positive effect of the development by people accessing the area for these types of recreational purposes. It is recognised, however, that not all recreational fishing methods are necessarily compatible with marine farms. For example trolling for large pelagic species such as marlin and tuna may not be practical within the farm due to the risk of entanglement. This has not been identified as a significant issue with the existing marine farms in the area.

The limited visibility of the site within the seascape beyond the immediate surrounding area has been discussed previously along with the lack of visual effects from land due to the distance offshore. These factors result in the effects on the visual attributes of amenity values being assessed minor.

Nuisance effects such as noise and lighting will be managed to achieve compliance with RCEP Rule NS 3. Lighting will be limited to navigational aids.

7.3.4 WATER COLUMN

HYDRODYNAMIC EFFECTS

Large-scale marine farms have the potential to affect ocean current speed and direction, with the degree of impact dependant on the size, layout and structures used. In most cases, the layout of farms are oriented parallel with the predominant current direction to minimise drag.

The potential hydrodynamic effects of offshore marine farms was considered in the Whakatohea marine farm resource consent application which explained that the effects of marine farms on hydrodynamics have generally found to be localised and confined to a few hundred metres beyond the marine farm. The report references unpublished modelling carried out by NIWA which 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.

In this case, the relatively low mean current speeds within the general area (as indicated in the Cawthron report discussed previously) mean that the proposed marine farm development is likely to require a similar low density development approach as has been adopted with Eastern Seafarms and Whakatohea marine farms. Low density in offshore marine farms equates to a line spacing of around 50 m, which is a higher density than what is proposed in this application.

Considering the predominant flow direction and the location of the proposed marine farm site a minimum of 6 km offshore, any effects on currents flows will be negligible and unlikely to result in material adverse effects on coastal processes.

PHYTOPLANKTON ABUNDANCE AND COMPOSITION

One of the main effect effects of concern from the farming of shellfish is the extraction of phytoplankton and organic particulates by the farmed shellfish. Selective feeding by shellfish also has the potential to alter the composition of phytoplankton, zooplankton, and meroplankton communities.

In 2006, BOPRC commissioned ASR Marine Consulting and Research to undertake modelling of the potential effects on phytoplankton based on the establishment of two, 5,000ha offshore mussel farms within the Bay of Plenty. This modelling provides a useful representation of the potential impact of offshore marine farms and has been referenced in resource consent applications for other marine farms within the Bay of Plenty in lieu of site-specific modelling.

The modelling found that the 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) averaged over a 12-month period. This depletion represents a decrease of approximately 0.04 mg/m^3 chlorophyll-based on a typical average value of approximately 4.5 mg/m^3.

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.

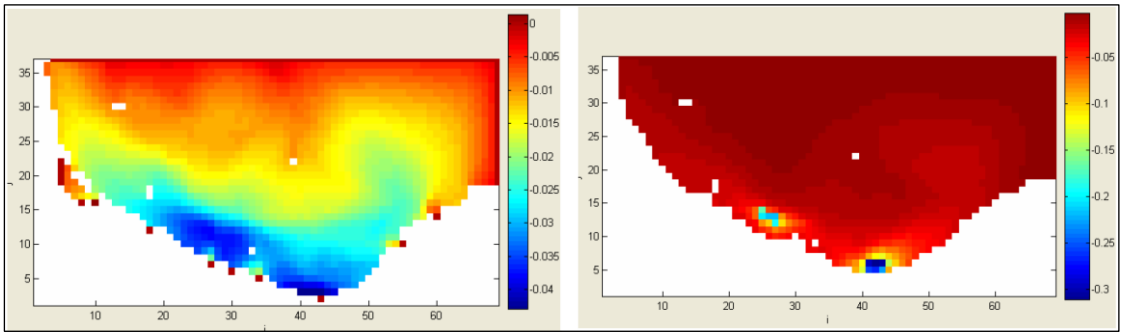


FIGURE 22: AVERAGE ANNUAL REDUCTION IN PHYTOPLANKTON RESULTING FROM TWO 5,000M^2 MARINE FARMS – LEFT: SURFACE (0-5M), RIGHT: 15-25M DEPTH) (SOURCE: ASR)

The area of reduced phytoplankton is proportionate to the total area and density of the marine farm. Total phytoplankton abundance is also influenced by factors such as water temperature and therefore subject to seasonal variations.

The ASR modelling concluded that the production carrying capacity within the Bay of Plenty is unlikely to be adversely affected even at the maximum depletion rates indicated by the modelling. The magnitude of the depletion recorded was well below the published threshold production carrying capacity for marine farms elsewhere in New Zealand.

The potential cumulative effect of additional marine farms beyond what has been consented is discussed in the Cawthron report which provides additional commentary on the work undertaken by ASR. The Cawthron report acknowledges the limitations in using this modelling as the basis for assessing the effects of additional large-scale marine farms in the eastern Bay of Plenty and suggests a staged approach when developing new areas. This has been reflected in the development of this proposal.

The Cawthron report includes particle tracking modelling to assess the potential connectivity between marine farms which is relevant when assessing the cumulative effects of additional marine farming areas on phytoplankton depletion as well as biosecurity and mussel spat interception. The modelling was based on marine farms situated 4-5km apart and both east and west of the Eastern Seafarms site. It should be noted that the proposed location of the Te Huata marine farm is around 19km east of the Eastern Seafarms site.

The Cawthron report provided the following summary of the key findings from the connectivity modelling:

"A typical doubling time for phytoplankton is about two days. Thus if mussel farming reduced phytoplankton density by 50%, the farms are placed such that significant recovery in phytoplankton density would be expected between farmed areas within a two-day time frame. The particle tracking shows that the phytoplankton in 90% of water parcels would have more than two days to recover from any reduction in density due to grazing in one farm before they encounter another farm."

Given the significantly greater separation distance between the proposed farm site and the existing Eastern Seafarms marine farm compared with the modelled scenario, it is considered that the likelihood of phytoplankton depletion from the proposed farm affecting the productivity of existing or consented marine farms is low as is the potential for cumulative effects resulting from the overall increase in marine farming activity in the eastern Bay of Plenty.

Modelling currently being undertaken by DHI considers the effects of the proposed marine farm on phytoplankton depletion in conjunction with all other existing and currently proposed offshore marine farms in the Bay of Plenty. This modelling will determine the individual and cumulative effects of the proposed marine farm on water quality parameters, including phytoplankton.

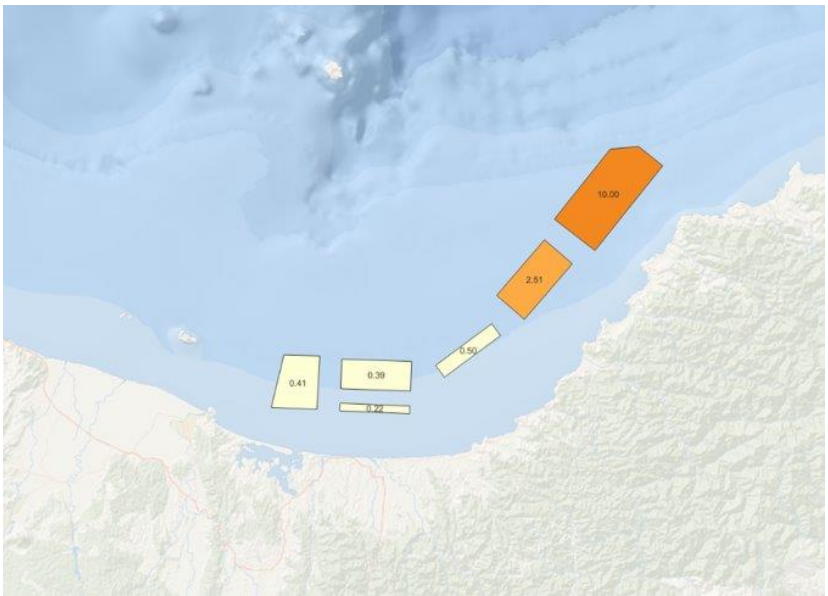


FIGURE 23: EXISTING AND PROPOSED MARINE FARMING AREAS USED IN MODELLING WATER QUALITY EFFECTS (SOURCE: DHI)

The ecological review by C N Battershill (**Appendix 7**) notes that the combination of seaweed farming with shellfish may mitigate any depletion of primary productivity in the vicinity of the farm and as well as assist in addressing any future ocean acidification issues.

NUTRIENT ENRICHMENT

Farmed shellfish release dissolved nutrients and organic particulates (faeces and pseudo faeces - undigested particles bound up in mucus) into the water column. These discharges have the potential to result in small scale, localised enrichment (primarily ammonia) and stimulate phytoplankton and macroalgal growth.

The ASR modelling results indicated that the marine farms assessed in the model increased the local ammonia concentration by approximately 0.001 g/m^3 and depleted 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.

A report on the ecological effects of marine farms produced by the Ministry of Primary Industries considers the potential impact of nutrient enrichment alongside other water column effects and notes that *"typically, the ecological effects on the water column from farming shellfish are generally only detectable within the farm and its phytoplankton depletion footprint and are of short duration." "In New Zealand, most mussel and oyster farms are located in areas that are well flushed, since production is dependent on the natural availability of phytoplankton. As such, nutrient enrichment beyond the farm boundaries is difficult to detect."*

Soft sediments are often colonised by communities of invertebrates that are well suited to effectively processing nutrients and organics (providing a valuable ecosystem service). These communities can adapt well to an increased level of organic deposition). Depths greater than 30 m increase the dispersion potential of wastes and minimise local impacts on the benthic environment, particularly in areas with high-flushing rates (MPI 2013).

Additionally, the sediment composition and infaunal communities at the proposed aquaculture areas are comparable to those described at other existing mussel farming in the Bay of Plenty[7] (Hopkins & Robertson 2001; Elvines & Taylor 2014).

Macroalgae require only dissolved nutrients and access to sunlight for growth and are therefore expected to have less ecological impact on the seabed than shellfish and finfish aquaculture (e.g. see MPI 2013). Drop-off of fouling organisms and farmed seaweeds (where the farmed species does not float) may theoretically cause some degree of seabed enrichment, however this would be expected to be much lower than that caused by shellfish farming.

Shading of the water column and seabed may be greater under seaweed farms than shellfish farms. Given the lack of multicellular primary producers on the seabed, and the featureless sediments observed across the region, environmental effects of shading are unlikely to be of concern."

HARMFUL ALGAL BLOOMS

A concern with water column nutrient enrichment is the potential for an increased occurrence of harmful algal blooms (HABs), including blooms of species that produce biotoxins. Some biotoxins can be directly toxic to fish, and others can accumulate in shellfish and affect consumers, often leading to restrictions in harvesting shellfish. This is a factor taken into account in the design of the marine farm (density and spacing) as well as ongoing monitoring to detect the presence of blooms.

SUMMARY

The key methods of managing the potential effects on the water column discussed above relate to site selection considerations, specifically selecting a site that is well-flushed, deep and productive. Beyond site selection, design and management factors such as density and orientation relative to current flows will influence the effects on the water column.

In this case, a site has been selected which has the attributes necessary to minimise the potential for adverse effects. The detailed design of the layout of lines and stocking density within the farm will take these factors into account and the proposed monitoring regime and adaptive management approach will ensure adverse

[7] Hopkins G, Robertson B 2001. Site assessment for a proposed marine farm site at Opotiki, Bay of Plenty. Part I: Benthic assessment. Prepared for Eastern Sea Farms Ltd. Cawthron Report No. 672. 34 p.

effects are identified and appropriate measures implemented as part of the development of the farm to ensure these effects are no more than minor.

7.3.5 BIOSECURITY

The introduction or spread of marine pests and diseases is a risk for all activities and uses of the coastal marine area. Marine farms have the potential to facilitate the establishment and spread of pests and diseases by providing habitat for species to colonise and subsequently spread. Vessels visiting farms can also provide a vector for the spread of pest organisms into the wider environment. This can result in a range of ecological effects: from minimal impact on species or ecosystem processes, through to species-specific effects or disruption of entire ecosystem processes.

Biosecurity incursions are a significant operational issue for the aquaculture industry. Biofouling pest organisms can increase drag on farm structures and anchoring systems, posing risk of gear failure and shellfish loss. Biofouling also has the potential to significantly reduce the flow of water by smothering the ropes or structures, reducing the amount of food and oxygen available to farmed species and potentially increasing likelihood of the outbreak or transmission of disease. Biofouling can impact all production stages, affecting the quality, yield and value of the shellfish crop, as well as impacting harvesting, and degrading product value.

The increased intensity of marine farming activities within the eastern Bay of Plenty and associated increase of aquaculture structures and vessel movements increases the importance of robust biosecurity management. Existing marine farms consented and developed within the Bay of Plenty have developed a biosecurity monitoring and management framework to address biosecurity risks. This involves incorporating appropriate mechanisms to minimise the spread of pests and diseases, identifying any new marine pests and isolating / containing any outbreaks, and reporting of any suspected new or notifiable pest or diseases to the Ministry for Primary Industries.

To mitigate the risk of establishment of aquatic pests within the marine farm, appropriate cleaning and inspection will be undertaken of plant and equipment used in the construction phase of the development. The movement of reproductive material, stock, equipment and industry vessel movements will be managed by following the Greenshell Mussel Industry Environmental Code of Practice 2007, the New Zealand Mussel Industry National Spat Transfer Programme (NZMIC 2002) and the recently released Aquaculture New Zealand .New Zealand Greenshell Mussel Industry Biosecurity Standards (September 2023).

A Draft Biosecurity Management Plan has been prepared and is included in **Appendix 12**. This plan is based on the Aquaculture New Zealand biosecurity standards and represents best practice in biosecurity practices for mussel farms.

Rule 1 of the Regional Pest Management Plan for the Bay of Plenty Regional Council requires that the occupier in charge of a craft moving to, or within Bay of Plenty waters must ensure the hull is sufficiently cleaned and antifouled, so that the hull has no more than a slime layer and/or barnacles. This is to support the progressive containment of clubbed tunicate and Mediterranean fanworm. This rule will apply to all vessels using the marine farm.

7.3.1 MARINE MAMMALS

Interaction between marine mammals and aquaculture activities has the potential to result in habitat exclusion, noise disturbance and entanglement with marine farming structures. These effects can occur when the marine farm location overlaps with habitat areas or migration routes and is largely dependent on the type of farming method and the characteristics of individual mammal species. Some species are sensitive to the disturbance caused by aquaculture activities (such as dusky dolphins) and will avoid an area, whereas other species (e.g., seals and common dolphins) may be attracted to the marine farm habitat. The aggregations of wild fish within marine farms can provide an attractant increasing the risk of physical interactions.

Marine farming structures pose a risk of entanglement in structures, ropes or waste materials (non-biological). The magnitude of risk depends on the characteristics of individual species, including size, agility, behaviour and ability to echolocate.

The Overview of Ecological Effects of Aquaculture report produced by MPI considers the potential effects on marine mammals and notes that the adverse effects of existing aquaculture activities on marine mammals is not considered a significant issue. The report notes that whilst there is some overlap with marine mammal habitats, aquaculture activities are generally not located within important habitats such as breeding and foraging grounds for whales and dolphins and haul out sites and colonies for seals. The consequences of a physical interaction are considered minor in most cases, as the outcomes are generally expected to affect individuals or result in only small-scale avoidance or attraction.

The proposed marine farm site is not within an area that is known to provide critical habitat for endangered, threatened, or range-restricted species (such as Hector's, Maui's and bottlenose dolphins, or whale species including orca, Bryde's, southern right and humpback whales). The proposed farm location is not within the migratory route of any large whale species and there have been no known issues of displacement or entanglement with the existing Eastern Seafarms marine farm. The farm has been sited outside the 6km marine mammal buffer which follows the coastline within the Bay of Plenty.

Potential effects will be minimised by adopting appropriate maintenance and operational guidelines and standards for farm structures, as well as any noise-generating equipment. This will include:

- Regular maintenance of farm structures, including keeping lines secured and anchor warps under tension;
- Ensure waste material and debris is collected and disposed of correctly;
- Monitoring of presence of marine mammal species in vicinity of farm; and
- Protocol for responding to entanglement.

These measures will be detailed in a Marine Mammals Management Plan, prepared prior to the development of the marine farm.

7.3.2 FISHERIES

The effects of aquaculture activities on wild fish and fisheries can potentially be both positive and negative. Marine farms, particularly shellfish farms create artificial habitats which attract wild fish species by providing refuge and food sources. Existing benthic habitats within marine farms can also be altered by the deposition of shell litter and deposition of waste particles. Other related effects include changes in the local distribution and productivity of wild fish populations, changes in recreational fishing patterns, and extraction of fish eggs and larvae by farmed shellfish. Marine farms can also affect commercial fishing activities by excluding areas and/or fishing methods.

The presence of marine farms can result in changes in recreational fishing patterns and pressure which in turn has the potential to affect wild fish populations differently than in the absence of the structures. It is well known that fish, particularly snapper and kingfish congregate around mussel farms due to the food supply provided by the mussel stock (particularly during harvest) and other fish species aggregating around the farms. This is evident at the Eastern Seafarms site which has become a popular and productive recreational fishing area since the establishment of the marine farm. A variety of species are regularly caught within the farm, including snapper, kingfish and terakihi.

The effects of the proposed marine farm on recreational fishing are considered to be minor for the following reasons.

- Anchored rod/line fishing could still occur within the proposed marine farm. Long line, drift and set net fishing may not be fully excluded. As noted previously, trolling for species such as marlin and tuna may be impeded by marine farming structures but may still be possible;
- Recreational fishing surveys and anecdotal information suggest existing mussel farms are popular recreational fishing locations; and
- There are other recreational fishing areas available in the eastern Bay of Plenty.

An important consideration when determining where to site a farm is to avoid spatial overlap with critical fish spawning grounds and nursery areas. The proposed marine farm site is not within any known spawning

grounds however it is understood that the general area is considered to be a potential nursery ground for snapper and trevally.

The resource consent application by Pakihi Trading Company (Whakatohea) for a large marine farm east of the Eastern Seafarms site lists the fish species taken by commercial fishing within the Bay of Plenty based on Ministry of Fisheries catch databases. They include jack mackerel, English mackerel, kahawai, trevally, snapper, skipjack tuna and terakihi.

The proposed marine farm is located within Quota Management Area 1 ("**QMA 1**") and comprises a habitat type which can be regarded as typical of inshore fishing grounds, being soft sediment. It is acknowledged that if marine farms are established in a location where commercial fishing occurs, then the owners of fishing quota may be concerned over potential reductions in the area available for fishing as well as increased costs through having to find new fishing areas and adjusting fishing plans vessels. There is also the cumulative effects of this marine farm in conjunction with the existing and consented farms affecting the availability of other fishing areas. In this case, the area occupied by the proposed farm represents a small fraction of the available habitat type (estimated at 1%) and therefore the proposal represents, at worst, only a minor impact on commercial fishing activities.

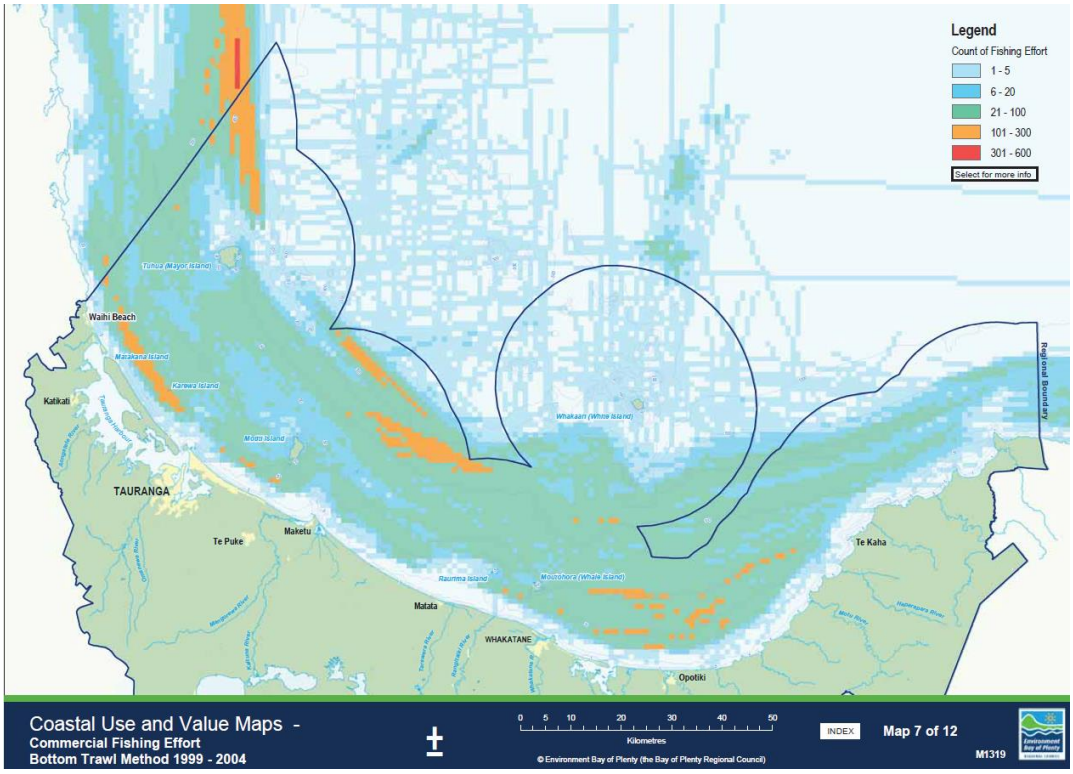


FIGURE 23: COMMERCIAL FISHING EFFORT WITHIN THE BAY OF PLENTY (SOURCE: BOPRC)

Concerns were raised during previous resource consent processes for Eastern Seafarms and Whakatohea that rock lobster puerulus settle on marine farming structures, and that when harvesting farmed stock such puerulus are generally lost to the wild rock lobster fishery. It is proposed to adopt a similar monitoring approach to what has been required for other resource consents. These resource consents contain conditions requiring monitoring of rock lobster settlement and growth on the marine farm. Similar conditions have been included in the set of proposed conditions provided in **Appendix 12**.

7.3.3 AVIFAUNA (SEABIRDS)

Aquaculture has the potential to result in a range of adverse effects on seabirds, including entanglement and collision risk with farm structures, reduced habitat for feeding as well as behavioural changes (e.g. attraction to artificial lighting). There are also potential positive effects, including the aggregation of small fish providing a food source for birds such as penguins, terns and shags.

Within New Zealand's aquaculture industry, there have been very few reports of seabird deaths due to entanglement and entanglement risk is generally very low at offshore marine farm sites. The greatest threat to birds is posed by loose and thin lines, whereas mussel farming uses longlines under significant tension.

The following measures have been proposed to ensure the potential adverse effects on seabirds are no more than minor:

- Operational requirements to ensure waste material and debris are collected and disposed of;
- Minimising lighting to the extent necessary to meet navigational requirements; and
- Monitoring and reporting interactions between seabirds and marine farm structures.

7.3.4 BENTHIC ENVIRONMENT

The proposed marine farm site is comprised of soft-sediment habitat where there are not particularly sensitive, vulnerable or special benthic communities. The farming of shellfish can result in changes to benthic habitat from the sedimentation of organic-rich, fine-grained particles (faeces and pseudo-faeces) as well as the deposition and accumulation of live shellfish and shells onto the seabed. These deposits have the potential to smother seabed communities or alter their composition by changing the sediment makeup and reducing the flow and exchange of water between the sediments and overlying water column. In some instances there can be increased aggregations of starfish and other benthic species.

Water depth and current speed are the primary factors influencing the ability of a site to disperse or assimilate biodeposits from mussel farming. In addition to reducing the accumulation of organic matter, strong currents have the added benefit of enabling more efficient breakdown by increasing oxygen supply. In this case, the proposed marine farm site has depths of between 50m and 200m and moderate current speeds. The water depth combined with the low-density farming method proposed are likely to result in a minor change in organic content in sediments and changes in habitat (shell deposition) within the farm. Benthic effects are usually difficult to detect within 50m of the farm site with shells and associated biota generally confined to within 10m of line structures.

The ecological review of previous ecological assessments undertaken by C N Battershill reaches a similar conclusion regarding the effects of the proposed marine farm on the benthic environment.

"The proposed marine farm site is not likely to contain benthic habitats or species that would be significantly affected by marine farming activities (mussels, fin fish or algae). Even in the shallower Sites (1 & 2), there would be enough depth and current movement to dilute any local scale enrichment of pseudo faeces (mussels) or fish excreta (mindful of farm management practices), that the surrounding area would not be significantly affected. Under mussel farms, there is likely to be a build-up of 'culch' over time as dead and living mussels fall to the sea floor. As evidenced in other mussel farms, even those in closed embayment's in the Marlborough Sounds, the effects (in terms of habitat change) are not noticeable on the seafloor within 50 m away from the farm location. In most cases, the enhanced biodiversity directly under farms can be beneficial to encouraging a localised highly productive benthic ecosystem (Keely et al 2009, pers observation/ NIWA Client Report, 1998)."

To ensure that no high value, or sensitive habitats fall within the proposed marine farm boundaries a further 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 to verify the results from the initial survey described in this application. The baseline survey to confirm suitability along with ongoing monitoring of the effects of farming activities on the benthic environment will ensure the effects are minor.

7.3.5 NAVIGATION

Although located outside commercial shipping lanes, the marine farm site is located within an area which has a high density of vessel traffic. There are limited facilities for vessels to launch between Opotiki and Waihau Bay, with the highest density of vessel traffic comprising transit in a direct line between Whakatane and Cape Runaway. Avoidance of the marine farm will require a slight deviation from this transit, however as demonstrated in Figure x below, the additional travel distance resulting from a deviation around the marine farm adds around 500m to the total distance travelled (an increase from 96.8km to 97.3km total distance).

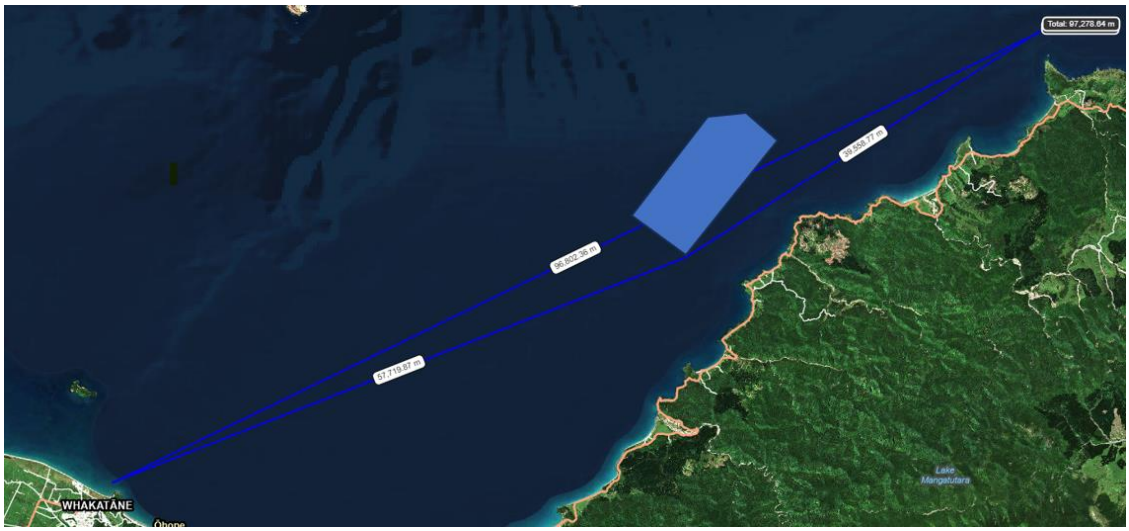


FIGURE 19: EXISTING AND PROPOSED MARINE FARMING AREAS USED IN MODELLING WATER QUALITY EFFECTS (SOURCE: DHI)

The marine farm will be provided with aids to navigation in accordance with the Maritime NZ Marine Farm Guidelines: Navigational Safety 2018 and under the direction of the BOPRC Harbourmaster and Maritime NZ. Consent conditions are proposed to this effect.

The following tables from the Maritime NZ guidelines set out minimum marking requirements for offshore marine farms. As the marine farm occupies an area with a high density of vessel transit, it is anticipated that lights with radar reflectors will be required on each corner of the farm.

TABLE 10: AIDS TO NAVIGATION REQUIRED FOR RECTANGULAR OFFSHOREMARINE FARMS (SOURCE: MARITIME NZ)

Example	X Axis (m)	Y Axis (m)	Area (m²)	Minimum marking requirements
A	≤ 2 500	≤ 500	n/a	One light on each sea corner; one daymark on each coast corner (consider radar reflector)
B	≤ 500	≤ 2 500	n/a	One light on one sea corner; one light on the diagonally opposite coast corner; one daymark on one sea corner and one daymark on the diagonally opposite corner (consider radar reflector)
C	> 500	≤ 2 500	≤ 1 250 000	One light on diagonally opposite corners; daymark on diagonally opposite corners (consider radar reflector)
D	> 900	≤ 2 500	> 1 250 000	One light on each corner (consider radar reflector)

Example	Minimum diameter (m)	Maximum diameter (m)	Minimum marking requirements
E	> 500	≤ 1 000	Two lights 180° apart on the circumference; two daymarks positioned 90° to the lights (consider radar reflector)
F	> 1 000	≤ 2 000	Three lights 120° apart on the circumference (consider radar reflector)
G	> 2 000		Three lights 120° apart on the circumference, three daymarks positions 60° to the lights (consider radar reflector)

Subject to the inclusion of the proposed consent conditions, it is considered that the effects of the proposed marine farm will be no more than minor.

7.3.6 POSITIVE EFFECTS

Several assessments have been undertaken to evaluate the economic, social and cultural benefits of the aquaculture industry on the local community and wider region. The establishment of an aquaculture industry within the eastern Bay of Plenty is transformational for the Opotiki community, Te Whanau a Apanui and Whakatōhea. They include quantifiable social benefits in the areas of increased employment and increased household income coupled with reduced welfare dependency within the Ōpōtiki District. Other non-quantifiable benefits of the combined projects include increased home ownership, reduced overcrowding, reduction in criminal offending, the revitalisation of Iwi, population growth, and an increased rating base[8].

Given the positive social and economic benefits for the Ōpōtiki District Community, the Eastern Bay of Plenty, the region and New Zealand as a whole, the Bay of Plenty Regional Council and Central Government are key supporters of the continued expansion of aquaculture activities in the area. The project is well aligned with the objectives of the New Zealand Aquaculture Strategy and Bay of Plenty Aquaculture Strategy.

Copies of various reports assessing the potential opportunities and benefits associated with the aquaculture industry are available online.

7.3.7 SUMMARY

The assessment of environmental effects provided above has evaluated the actual and potential effects of the proposed marine farm site which primarily relate to effects on the benthic environment and water column, wider ecological effects on fish, mammals, birds and biosecurity. Natural character, landscape, amenity and cultural effects have also been canvassed. Overall, it has been demonstrated that the actual and potential effects of establishing marine farming activities in the proposed location can be appropriately managed. The proposed adaptive management process provides the necessary assurance that the flexibility sought can be provided within the regulatory framework of the RMA with further assessments and design details provided for certification prior to commencement of the activity.

[8] Te Ara Moana a Toi – A path to the sea, Opotiki Harbour Update September 2019, Opotiki District Council

TABLE 10: ASSESSMENT OF ENVIRONMENTAL EFFECTS SUMMARY			
ASSESSMENT			
ENVIRONMENTAL EFFECTS	**KEY MITIGATION MEASURES**	**PROPOSED CONSENT CONDITIONS**	**DEGREE OF EFFECT**
Site Suitability / Design	Detailed benthic survey and environmental data obtained and analysed prior to commencement of works. Criteria to confirm suitability of site. Marine farming structures designed by suitably qualified engineer to suit the site conditions. Compliance with navigational safety requirements.	*Prior to commencing any deployment works under this permit, the consent holder shall submit to the Regional Council an engineering report and calculations, prepared by a qualified engineer experienced in open ocean marine design, together with a certificate signed by the qualified engineer stating that all the structures have been designed in accordance with accepted engineering practice and as such as to meet the conditions of this consent. This information should include the results of any test loading of representative anchor types.* *Buoys and growing structures shall be securely attached to longlines in a manner that ensures they will not break adrift or work along the line.* *All structures shall be constructed using appropriately treated materials of a non-corrodible nature, where practicable and shall be designed and constructed to withstand prolonged exposure to the marine environment at the site.* *Individual mussel longlines shall not exceed 500-metres in length, including anchorage.* *Buoys and growing structures shall be securely attached to longlins in a manner that ensures they will not break adrift or work along the line.* *The distance between surface buoys shall not exceed 25-metres.* *Surface buoys at each end of individual long lines shall be coloured orange or yellow, all other buoys shall be coloured black.*	Minor
Cultural Provides for kaitiakitanga Provides for cultural values and traditions of Te Whanau a Apanui Supports rebuilding of Te Whanau a Apanui	Provision for access to customary fishing areas and resources Adoption of appropriate tikanga	*The permit holder shall, in consultation with Te Whanau a Apanui, provide adequate mooring facilities above the traditional fishing grounds of Te Whanau a Apanui within the occupied areas of the consent, to encourage and facilitate customary fishing.* *In the event that a death occurs within the waters of the Te Kaha coastline and/or in the vicinity of the site, the following shall occur:* *(a) Harvesting work on the site shall stop immediately and a meeting will be held between the permit holder and the designated Te Whanau a Apanui Kaumatua to ascertain whether any rahui will be set which affects the harvesting of mussels on all or part of the site.* *(b) The outcome of the above meeting shall be recorded, in writing, and immediately forwarded to the Regional Council.* *(c) The harvesting of mussels may recommence on the entire site when the rahui has been lifted, or after a period of no less than 6-weeks from the time work on the site first ceased.*	Minor
Natural character and landscape values Introduction of man-made structures into the coastal marine area and increased vessel traffic and activities associated with aquaculture activities.	• Site selection avoids areas of outstanding or very high natural character as well as outstanding natural features and landscapes and is sufficiently far from shore to avoid impacting areas of the coastline identified as having significant values. • Surface structures will be designed to minimise visual impact.	*Surface buoys at each end of individual long lines shall be coloured orange or yellow, all other buoys shall be coloured black.*	Minor
Navigation	Compliance with Maritime NZ regulations and guidelines for navigational safety	*A farm layout plan confirming the location of the marine farming structures shall be provided to Council within two months of completion of each block. The farm layout plan shall be accurate to plus or minus 10m and shall show the structures in relation to the Approved Area.* *Maritime New Zealand (MNZ) and Land Information New Zealand (LINZ) must be provided with written notice of the details of the marine farming structures including their geographic location and method of navigation marking, within 3 months of completion of the farm construction. (c) The marking and/or lighting of the farm shall be in accordance with any relevant maritime rules prepared under the Maritime Transport Act 1994.*	Minor
Amenity Restrictions on the use of coastal areas for recreational activities. Visual amenity effects caused by marine farming structures.	Provision of facilities within the marine farm to assist recreational fishing.		Minor

Water Column Phytoplankton depletion and changes in planktonic community composition Dissolved nutrient and particulate release into the water column Effects from biofouling communities	• The water depth and currents at the proposed site will assist in minimising adverse effects on the water column • Farm design and orientation to maximise flushing and developing farm with appropriate stocking density • Monitoring for key plankton and nutrient parameters • Adaptive management through the AMPF	*Environmental Management and Monitoring Plan*	Minor
Biosecurity Potential to facilitate establishment and spread of pests and diseases	• Biosecurity Management Plan • Prevention of incursions through effective pathway management, including vessel and equipment maintenance, effective antifouling coatings, and hull inspections and cleaning • Prevention of incursions through appropriate on-farm management, including surveillance of farms and stock during activities, such as harvest, grading or transfer of stock • Effective responses to pests and diseases, including early eradication and appropriate disposal of pests from farm structures, where possible.	*The permit holder shall take all practicable measures to avoid the introduction of diseased spat or juveniles and any nuisance plants or animals.* *When introducing spat (scallops, Pacific Oysters, flat oysters) to the site from outside the Bay of Plenty coastal marine area representative samples of all spat shall be visually inspected by farm staff prior to release. Should the inspection result in any observation of disease symptom(s) that spat species may not be introduced to the farm without the written approval of the Regional Council.* *The permit holder shall be responsible for monitoring of disease as part of normal farming operations.* *Should the visual inspection identify disease, the permit holder shall complete the response/action from Table 1. Table 1: Response to observation of disease Rank Description Response/Action 1. Any disease listed in the Office International des Epizooties (OIE) International Aquatic Animal Health Code (2001)* *1. Immediately notify the Regional Council, OIE and the Ministry of Fisheries (MFish).* *2. Undertake a comprehensive investigation collecting 1,000 individuals of the shellfish of concern (500 inside and 500 outside the marine farming site.* *3. Undertake a review of the relationship between the marine farming activity and the disease incidence.* *4. Assess the need for remedial action and/or further monitoring following discussions with the Regional Council, OIE and MFish.* *5. Temporarily isolate the infected stock until the investigation in 4 above is completed and then undertake agreed action.* *2. Any disease listed in the MAF Biosecurity Report (2002) that is considered to be serious, but is not listed in the OIE International Aquatic Animal Health Code (2001).* *1. Immediately notify the Regional Council and MFish.* *2. Note the incidence of infected individuals and undertake a comprehensive investigation collecting 1,000 individuals of the shellfish of concern (500 inside and 500 outside the marine farming site).* *3. Undertake a review of the relationship between the marine farming activity and the disease incidence.* *4. Assess the need for remedial action and/or further monitoring following discussions with the Regional Council, OIE and MFish.* *5. Temporarily isolate the infected stock until the investigation in 4 above is completed and then undertake agreed action.* *3. Any disease listed in the MAF Biosecurity Report (2002) that is not considered to be serious.* *1. Immediately notify the Regional Council and MFish.* *2. Note the incidence and monitor at three-month intervals.* *3. Assess incidence in the region.* *To ensure that no harmful, toxic or nuisance organisms are transported to or away from the marine farm, the permit holder shall implement the following:* *- Mussel seed will be transported to or from the consent holder site in accordance with the New Zealand Mussel Industry Council (NZMIC) Code of Practice for Transfer of Mussel seed (Appendix A).* *- Stock will be sourced from areas that are not infested by species that pose a bio-security risk.* *- Stock will be visually inspected to check that species that pose a bio-security risk are not present and if they are present that stock will not be transferred to the farm without Regional Council approval.* *- Vessels used for marine farming operations at the farm site shall have their hulls regularly treated with approved antifouling and maintained in a clean condition.* *- Vessel operators will be issued with information cards to assist them in identifying the following species:* *European Shore (or Green) Crab (Carcinus maenas)* *Northern Pacific Seastar (Asterias amurensis)*	Minor

		Green Seaweed (Caulerpa taxiflora) *Seasquirts (Didemnum vexilluim, Ciona intestinalis)* *Hydroid (Amphisbetia bispinosa)* *Mediterranean Fanworm (Sabella spallanzanii)* *- If any of the species listed above are found on service vessel hulls or farm infrastructure, all traces will be removed and disposed of on land.* *- Only un-used or properly treated infrastructure (ropes, lines, buoys) will be used for the establishment of the farm.* *- If any equipment is re-used within the marine farm, it will be thoroughly checked for the presence of any of the species listed above, and if required will thoroughly treated, prior to redeployment.* *- The consent holder will work with other stakeholders to reduce the likelihood of other vessels transmitting bio fouling organisms to the farm.* *- All relevant existing and future developed or endorsed industry codes of practice and/or protocols are to be applied.* *If any species listed above are identified, the permit holder shall immediately notify the Regional Council, the Ministry of Fisheries and Biosecurity New Zealand and obtain information on the best methods of dealing with the species found.*	
Marine mammals • Habitat exclusion or modification leading to less use or less productive use • Potential for entanglement • Underwater noise disturbance	• Site selection avoids critical habitat areas and migration routes • Regular maintenance of farm structures, including keeping lines secured and anchor warps under tension • Ensuring waste material and debris is collected and disposed of correctly • Monitoring of presence of marine mammal species in vicinity of farm • Marine Mammal Management Plan	*The permit holder shall take all practicable measures to ensure that no inorganic or nonbiodegradable materials (including but not restricted to anchors, lines, droppers and buoys) are disposed of to the coastal marine area.* *In the event that inorganic or non-biodegradable materials are lost to the coastal marine area, the permit holder shall take immediate actions to recover such materials. Further, the permit holder shall ensure that any such materials are removed from the seabed, water column or foreshore as soon as practicable.* *The consent holder must prepare, implement, and comply with a Marine Mammal Management Plan:* *a) The Marine Mammal Management Plan shall be prepared by the consent holder four months prior to the first installation of structures under this consent.* *b) The Marine Mammal Management Plan shall be signed-off by a suitably qualified and experienced marine mammal scientist.* *c) The Marine Mammal Management Plan shall be provided to the Department of Conservation for comment.* *d) Three months after the date the Marine Mammal Management Plan is prepared, or after comments are provided by the Department of Conservation (whichever is sooner), the Management Plan shall be provided to the Bay of Plenty Regional Council, along with any comments provided by the Department of Conservation.* *The objectives of the Marine Mammal Management Plan must be to:* *avoid adverse effects and where it is not practicable to avoid effects to minimise those effects on marine mammals from the operation of the marine farm;* *a) minimise the potential for interaction of marine mammals with the marine farm;* *b) determine how the operation of the marine farm will be managed adaptively to avoid, remedy and mitigate adverse effects on marine mammals;* *c) ensure that the best practicable option is adopted to avoid entanglement of marine mammals, having regard to best international practice, ongoing research and allowing for technological improvements;* *d) establish recording, reporting and response procedures in the event of marine mammal interaction, entanglement, injury or death within the marine farm boundaries; and* *e) outline any requirements to monitor and record the presence of marine mammals in the vicinity of the marine farm.* *A written record shall be kept by the permit holder detailing all marine mammal sightings by its employees, subcontractors, or operators of the farm, giving details of dates, approximate numbers and where appropriate, behavioural patterns of such marine mammals.* *In the event of any marine mammal incident under the Marine Mammals Protection Act 1978, including dolphins or whales becoming entangled in marine farm structures, the permit holder shall immediately notify the Regional Council and the local office of the Department of Conservation.* *The permit holder shall, as soon as practicable, in conjunction with the Department of Conservation develop an agreed management procedure/plan to deal with any event of entanglement or injury to a marine mammal, and shall advise all those persons working on the farm of the procedure to be implemented if such an event occurs. This procedure plan shall be lodged with the Regional Council as soon as it is finalised.*	Minor

Fisheries • Attraction of wild fish to aquaculture structures (creation of artificial habitats) • Alteration of existing fish habitats	The site location has been selected to avoid critical fish spawning grounds and nursery areas Monitoring of the settlement of lobster pueruli	*Environmental Management and Monitoring Plan*	Minor
Seabirds • Entanglement • Habitat exclusion • Aggregation of prey fish	• The site location has been selected to avoid critical breeding and foraging habitats • Waste material and debris will be collected and disposed of correctly • Night time lighting will be minimised • Monitoring and reporting of negative interactions of seabirds with aquaculture structures	*The permit holder shall take all practicable measures to ensure that no inorganic or nonbiodegradable materials (including but not restricted to anchors, lines, droppers and buoys) are disposed of to the coastal marine area.* *In the event that inorganic or non-biodegradable materials are lost to the coastal marine area, the permit holder shall take immediate actions to recover such materials. Further, the permit holder shall ensure that any such materials are removed from the seabed, water column or foreshore as soon as practicable.* *The consent holder shall notify the Bay of Plenty Regional Council of any entanglements of:* *a) Seabirds; and / or* *b) Protected species under the Wildlife Act 1953. Notice shall be in writing within five working days of any entanglement. Notification information shall include:* *c) The date of the entanglement;* *d) The name of the entangled species; and* *e) Whether remedial actions were undertaken.*	Minor
Benthic Environment • Localised organic enrichment of the seabed beneath the farm • Smothering of benthic organisms by bio-deposits • Biofouling drop-off and debris altering the composition of the seabed • Seabed shading by structures which could affect localised algal productivity under the farm	• The water depth and currents at the proposed site will assist in minimising adverse effects on the benthic environment • Appropriate stocking rates will be applied to avoid over-crowding • Monitoring physiochemical and biological properties of sediments	*Prior to commencing deployment works under this consent, the consent holder shall submit an environmental monitoring plan for approval by the Chief Executive of the Regional Council, or delegate, to effectively monitor the environmental effects (including effects on fisheries resources) of the proposed marine farm. The monitoring plan shall include the following components:* *a. Staged baseline monitoring within area proposed for development.* *b. Annual interim monitoring of active marine farming areas.* *c. Stage Completion Monitoring undertaken following substantial (75%) completion of each stage or sub-stage of the marine farm development.* *Each component of the monitoring plan shall include details of:* *i. Water column and benthic surveys,* *ii. Monitoring of the settlement of lobster pueruli.* *iii. The procedures adopted to meet the requirements of the consent, and* *iv. The methods used to inform interested parties of the results of monitoring.* *In addition, the baseline monitoring report shall:* *i. Present and discuss the results of baseline monitoring; and* *ii. Recommend any amendments to the EMMP to change the location of a station(s) within the relevant zone or the monitoring parameters at each station, provided that the amended locations or monitoring parameters at the station better achieve the purpose of the EMMP.* *iii. The baseline monitoring report shall be provided to the AMP and the Consent Authority at least two months prior to the first commencement of marine farming activities.* *The purpose of the monitoring reports shall be to provide a full assessment of the significance of any environmental effects including effects on fisheries resources, and recommend any remedial or mitigation measures thought necessary to ensure that any adverse environmental effects are no more than minor. The monitoring reports shall be submitted to the Regional Council within four months of completion of each monitoring exercise.*	Minor

8. SECTION 104: RELEVANT PLANNING PROVISIONS

The matters Council must have regard to when considering an application for resource consent are listed in section 104 of the Act.

This section provides an assessment of the matters that are required to be assessed within section 104 of the Act and, by doing so, also meets the requirements of Clauses 2(1)(g) and 2(2) in Schedule 4.

8.1 RELEVANT STANDARDS, STATEMENTS AND PLANS

The policy and planning documents relevant to an assessment of this application under Section 104 of the RMA are:

- New Zealand Coastal Policy Statement
- Bay of Plenty Regional Policy Statement
- Bay of Plenty Regional Coastal Environment Plan

The following sections provide an assessment against the key provisions from these documents. A more detailed analysis is provided in the appendices to this report.

8.1.1 NEW ZEALAND COASTAL POLICY STATEMENT

The site is located within the coastal environment therefore the New Zealand Coastal Policy Statement (NZCPS) is applicable. The NZCPS contains policies to achieve the purpose of the RMA in relation to the coastal environment. An analysis of the relevant objectives and policies in the NZCPS is included in **Appendix 3** with a summary provided below.

In addition to Part 2 RMA matters, a number of general principles are set out in the NZCPS to provide for the special context of the coastal environment. The provisions of the NZCPS that are of particular relevance relate to:

- Safeguarding the functioning of ecosystems (Objective 1)
- Taking account of the principles of the Treaty of Waitangi and kaitiakitanga, recognising the ongoing and enduring relationship of tangata whenua over their lands, rohe and resources and protecting the characteristics of the environment of special value to tangata whenua (Objective 3 and Policy 2);
- Enabling people and communities to provide for their social, economic, and cultural wellbeing and their health and safety through development in appropriate places and forms and recognising the functional need for activities to be located in the coastal environment (Objective 6 and Policy 6)
- Recognising the significant existing and potential contribution of aquaculture to the social, economic and cultural well-being of people and communities (Policy 8)
- Protecting representative or significant ecosystems and indigenous biodiversity, including avoiding, remedying or mitigating adverse effects of activities on areas of indigenous vegetation (Policy 11)
- Preserving natural character and protecting natural features and landscapes (Objective 2 and Policy 13)

The parts of the coastal environment affected by the project are not recognised as having high, very high, or outstanding natural character in a regional planning context.

There will be some effects on natural character which are unavoidable if the project is to proceed. The project has a functional need to be within the coastal environment. The overall approach to preserving natural character set out in regional and district planning documents is consistent with Objective 2 and Policy 13 of the NZCPS.

The contribution of the project to the social, cultural and economic wellbeing of communities within the Eastern Bay of Plenty, and particularly Te Whanau a Apanui, has been discussed previously. The granting of resource consents for the project is therefore aligned with Policy 8.

The proposal will therefore not be inconsistent with the objectives and policies of the NZCPS.

8.1.2 BAY OF PLENTY REGIONAL POLICY STATEMENT

An assessment of the objectives and policies of the Bay of Plenty Regional Policy Statement is provided in **Appendix 4** with a summary of the key points from this assessment provided below.

As noted above, the RPS includes maps identifying the extent of the coastal environment and areas of outstanding, very high and high natural character. These maps are discussed in earlier sections of this report and a compiled map is appended to this report. The maps do not identify any areas affected by the Project as having high, very high or outstanding natural character.

The key provisions of relevance deal with the following matters:

- Integrated resource management
- Matters of national importance
- Natural character and the coastal environment
- Tangata whenua values

INTEGRATED RESOURCE MANAGEMENT

Policy IR 1B requires a precautionary approach to be adopted where there is scientific uncertainty and a threat of serious or irreversible adverse effects. The assessment of environmental effects provided above, and the information appended to this document have considered in detail the actual and potential adverse effects of the project.

The project methodology has been developed in recognition of the particular importance of avoiding significant adverse effects on the significant environmental values in the surrounding environment. The project is proposed to be implemented in a staged manner which represents an appropriately cautious approach.

A comprehensive package of measures has been developed to remedy or mitigate those unavoidable effects to an acceptable level including monitoring and contingency measures. The applicant is proposing an adaptive management approach which is consistent with a precautionary approach.

MATTERS OF NATIONAL IMPORTANCE

Matters of national importance under section 6 of the RMA are dealt with through a suite of policies in the RPS. These policies require s6 matters to be identified (Policy MN 1B) and assessed (Policy MN 3B) using the criteria set out in Appendix F and Appendix G (Policy MN 7B). The following criteria sets in Appendix F are applicable:

- Set 1 – Natural character
- Set 4 – Māori culture and traditions
- Set 6 – Public access

The relevant criteria listed in Set 1 and 4 have been addressed within section 7.3 of this report where relevant.

In respect of Set 6 – Public access, the site will provide public access for recreational activities within the marine farm. There will be a restriction on public access in the vicinity of operating vessels for reasons of public health and safety. This is entirely appropriate and is provided for by Policy MN 6B. Access and use of the coastal marine area outside of the project site will not be impacted.

NATURAL CHARACTER AND THE COASTAL ENVIRONMENT

The parts of the coastal marine area that have been identified as having significant landscape, natural character and indigenous biodiversity values have been identified and discussed in earlier sections of this report. The RPS contains provisions that reflect the NZCPS in terms of the preservation of natural character and protection of significant indigenous vegetation and habitats of indigenous fauna.

Policy MN 2B identifies the importance of the life-supporting capacity and intrinsic values of ecosystems in protecting significant indigenous biodiversity. The effects on ecological values on the site and surrounding area have been discussed previously.

In managing the effects on natural character, Policy CE 8B is aimed at ensuring the use and development in the coastal environment is appropriate to the natural character present. The project site is a located a significant distance offshore and is not identified as an area of outstanding natural character.

The project site avoids areas of the coastal marine area that have been identified as being inappropriate for aquaculture activities. There is a functional requirement for the marine farm to be located within the coastal marine area.

TANGATA WHENUA VALUES

The RPS contains provisions recognising and providing for the relationship of Māori and their culture and traditions and providing for tangata whenua involvement. Objective 17 aims to sustain or improve the mauri of land and water resources where degraded. Policy IW 2B states that proposals which affect the relationship of Māori and their culture and traditions must recognise and provide for traditional Māori uses and practices relating to natural and physical resources and the role of tangata whenua as kaitiaki. Appendix F of the Proposed RPS sets out criteria for assessing Māori culture and traditions (Set 4). Relevant components include Mauri, the historical and cultural significance of a place and the provision of customary resources.

The involvement of tangata whenua in the development of the Project has been discussed in section 6 of this report.

Overall, the project is consistent with the objectives and policies of the RPS.

8.1.3 BAY OF PLENTY REGIONAL COASTAL ENVIRONMENT PLAN

The site is within the coastal environment and therefore subject to the RCEP.

The relevant provisions of the RCEP are spread across the following chapters:

- Natural Heritage
- Iwi Resource Management
- Recreation
- Aquaculture

A detailed consideration of these matters is given in **Appendix 5**, with a summary provided below. The exception to this is the aquaculture provisions, which are of primary importance and are therefore a full assessment is provided below.

NATURAL HERITAGE

The Natural Heritage objectives and policies provide criteria for determining whether an activity may be considered appropriate within the coastal environment. In this case, the project has a functional requirement to be located within the coastal environment. Previous sections of this report have considered the appropriateness of the proposed site for a marine farm and determined that the installation and operation of the marine farm will not affect any identified areas of significant indigenous biodiversity, outstanding natural character areas or ONFLs. The installation of marine farming structures and operation of the marine farm will not result in significant adverse effects on natural processes, ecological functioning or landscape and natural character values. This is consistent with the requirements of Policies NH 1, NH 5, NH 6 and NH 15.

IWI RESOURCE MANAGEMENT

The site does not contain any particular areas of identified cultural significance. An ongoing process (through the AAMF) will ensure that any adverse effects on resources or areas of significance are avoided as part as practicable and that any unavoidable effects are remedied or mitigated. This is consistent with Policy IW 1.

In accordance with Objective 13, the principles of the Treaty of Waitangi have been considered in other sections of this report and it is considered that they have been taken into account in the development of the project.

RECREATION

The proposal will incorporate provision for public access within the marine farm, subject to some restrictions near operating vessels due to health and safety requirements. These restrictions are consistent with the situations outlined in Policy RA 4, clauses (f) and (j).

AQUACULTURE	
OBJECTIVE / POLICY	**ASSESSMENT**
Objective 37 Encourage and provide for the sustainable development of aquaculture in the Bay of Plenty.	The design of the project and the assessment of environmental effects provided in section 7 of this report has demonstrated that the proposed marine farm is a sustainable development. This is further supported by the aims of national and regional strategies for aquaculture which seek to enable the expansion of offshore marine farming and to support Māori aquaculture developments
Objective 38 Provide for tāngata whenua aspirations for sustainable aquaculture in accordance with tikanga Māori.	This application is made on behalf of Te Whanau a Apanui hapu as part of an initiative to develop an aquaculture industry to support economic independence and prosperity.
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; (g) The availability of the necessary land and water-based infrastructure to service the development; and (h) 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.	These matters have been addressed in Section 7 of this application.

Policy AQ 2 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.	The proposed marine farm adopts farming methods (including structures) that have been developed and are in use within existing marine farms in the Eastern Bay of Plenty. The proposal will also utilise land-based facilities under development and existing for the servicing of the marine farm and processing of mussels and other farmed species.
Policy AQ 3 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.	The primary purpose of the project is to provide economic opportunities for Te Whanau a Apanui, through research and training opportunities, employment and economic growth.
Policy AQ 4 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.	An adaptive management planning approach is proposed as detailed in earlier sections of this report. This will involve the development of management plans for the design, construction and operation of the marine farm. Initially the proposed farm will adopt the proven farming methods applied at the Eastern Seafarms site.

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.	The proposed farm will provide for recreational access within the farm, except in the immediate vicinity of working vessels for reasons of public safety.
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.	The location for the proposed marine farm is not within any of the areas listed in Policy AQ 6. These layers have been included in the Fisheries NZ map in section 3.4 of this report, or addressed separately in other sections of the application.

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 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.	The proposed marine farm will be developed in a staged manner in accordance with the principles outlined in Policy AQ 10. Information has been included with the application outlining the proposed staging.
Policy AQ 12 Where it is deemed necessary relative to risk, the Regional Council will require a reasonable assurance, or in the absence of a reasonable assurance a bond, for new aquaculture activities in the coastal marine area to cover potential costs associated with: (a) The removal of abandoned or derelict farms; (b) The restoration or reinstatement of the environment; and (c) Any emergency repairs or rescue undertaken by the Regional Council on behalf of the consent holder in the event of any part of the marine farm breaking loose or causing a potential navigational hazard.	It is anticipated that this will be assessed by BOPRC as part of the processing of this application.

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.	The matters listed in Policy AQ 13 have been addressed in Section 7.3 of this report.
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.	See section 3 of this report which discusses the suitability of the proposed site.

The proposed marine farm has a functional need to be located within the coastal marine area and the location of the site has taken into account the suitability for marine farming and environmental values of the site and surrounding area. This has been discussed in previous sections of this report. The assessment of environmental effects provided in earlier sections of this report has considered in detail the actual and potential effects of the project and determined that these effects will be no more than minor.

Overall it is considered that the project is consistent with the objectives and policies of the RCEP.

8.1.4 OTHER MATTERS

Section 104(1)(c) allows Council to consider any other matters that are relevant and reasonably necessary to determine the application.

MARINE AND COASTAL AREAS (TAKUTAI MOANA) ACT 2011

Section 62 of the Marine and Coastal Areas (Takutai Moana) Act 2011 imposes a legislative requirement to seek the views of parties with rights under the Act before a person may lodge a resource consent application in relation to a part of the common coastal marine area where an application for a customary marine title or right has been made.

In this case the application seeks to undertake activities in areas that are deemed to be common coastal marine area, therefore this requirement is applicable.

The following parties have been identified as having applications for Customary Marine Title or Protected Customary Rights affecting the location of the proposed marine farming activities.

- Michael Insley Whanau (Michael Paratene Te Aratahatu Insley)
- Wikaire Whanau Trust (The Wikaire Whanau Trust)
- Whanau a Apanui Hapu (Christina Davis)
- Te Whanau a Apanui (The Trustees of Te Runanga o Te Whanau on behalf of Te Whanau a Apanui)
- Te Whanau a Apanui Hapu (Larry Delamere on behalf of Te Whanau a Apanui Hapu)
- Hapu and Whanau of Te Whanau a Apanui (Awanui Haparapara No 1 Lands Trust)
- Te Whanau a Apanui (Karamea Insley)
- Ngai Tamahaua Hapu (Herewini)

In accordance with the requirements of the MACA legislation, the views of these parties has been sought and the outcomes from this process will be provided in support of this resource consent process.

There are no other matters that are relevant or necessary to assist Council in determining this application.

8.1.5 SECTION 104 ASSESSMENT CONCLUSION

The proposed activity is deemed to be a discretionary activity. Accordingly, after considering this application for resource consent the Council may grant or refuse the application and if it grants the application may impose conditions under s.104B relating to management of the effects of the proposed activities.

9. NOTIFICATION ASSESSMENT

9.1 PUBLIC NOTIFICATION

The following tables provide an assessment of the steps that a consent authority must follow to determine whether to publicly notify an application for resource consent.

TABLE 11: SECTION 95A - STEPS FOR DETERMINING WHETHER PUBLIC NOTIFICATION IS REQUIRED UNDER S95A			
STEP	**RMA SECTION**	**RESPONSE**	**COMMENT**
ONE: Mandatory public notification in certain circumstances	95A(3)(a) the applicant requests public notification of the application	No	The applicant requests public notification of the application.
	95A(3)(b) public notification is required after a s.92 request for further information as stipulated in section 95C	No	This is not a relevant consideration at this stage.
	95A(3)(c) an application is being jointly made to exchange recreational reserve land under section 15AA	No	This application does not involve the exchange of reserve land under the Reserves Act.

The notification assessment provided above has demonstrated that public notification is mandatory under Step One as it has been requested by the applicant.

10. CONSENT TERM

This application seeks a consent term of 35 years. This will allow for a staged development scenario and provides the certainty necessary for the investment required in establishing the marine farm.

11. CONCLUSION

The applicant seeks resource consent from the Bay of Plenty Regional Council to establish an offshore marine farm with a total maximum area of 10,000ha. The main marine farm is located a minimum of 6km off the coast of Te Kaha in the eastern Bay of Plenty. The project requires resource consent as a discretionary activity overall.

An assessment of this proposal has been prepared using Schedule 4 of the Act and covers the matters that Council must consider when making a decision on an application under section 104 of the Act. The assessment has:

- Demonstrated that the proposal is consistent with the purpose and principles of the Act;
- Found that the potential adverse effects on the environment of the proposal will be no more than minor and acceptable for the receiving environment;
- Concluded that the proposal is consistent with the relevant objectives, policies and assessment criteria of the applicable statutory documents.

Based on feedback received from BOPRC staff on the application and in recognition of the scale of the proposal and the likely public interest, public notification of the application is requested.

Taking all the above into account and subject to any matters that may be raised in submissions, BOPRC has sufficient information to make a decision on this application and it is appropriate for consent to be granted in accordance with section 104B of the Act.

LIMITATIONS

This report is for use by KTK Hapu Holdings for the purpose of a resource consent process under the Resource Management Act 1991 and should not be used or relied upon by any other person or entity for another project.

This report has been prepared for the particular project described to us and its extent is limited to the scope of work agreed between KTK Hapu Holdings and Fergusson Planning Limited. No responsibility is accepted for the accuracy of information provided by third parties and/or the use of any part of this report in any other context or for any other purpose.

APPENDICES

APPENDIX 1

RESOURCE CONSENT APPLICATION FORMS

APPENDIX 2

APPLICATION DRAWINGS

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NEW ZEALAND COASTAL POLICY STATEMENT ANALYSIS

APPENDIX 4

BAY OF PLENTY REGIONAL POLICY STATEMENT ANALYSIS

APPENDIX 5

BAY OF PLENTY REGIONAL COASTAL ENVIRONMENT PLAN ANALYSIS

APPENDIX 6
BENTHIC SURVEY (DML)

APPENDIX 7
ECOLOGICAL ASSESSMENT (C N BATTERSHILL)

APPENDIX 8
ADAPTIVE MANAGEMENT PLANNING FRAMEWORK

APPENDIX 9
CONSULTATION RESPONSES

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DRAFT MONITORING STRATEGY

APPENDIX 11
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APPENDIX 12
DRAFT BIOSECURITY MANAGEMENT PLAN

APPENDIX 13

DHI HYDRODYNAMIC AND WATER QUALITY MODELLING FRAMEWORK

APPENDIX 14
PROPOSED CONSENT CONDITIONS