Application for resource consent

Form A: Administration

Notes

- You must **fully** complete both this cover form and all other related forms. Provide as much detail as you can. We request that, where possible, you **provide electronic copies of any supporting information** (for example, on CD). Doing so may reduce administrative costs charged to you.
- Unless we advise otherwise, you should also consult with any person or party who may be interested in or affected by your proposal. You should provide details of this consultation, including written approval from these parties if possible. A form is available to help you with this, available on our website or by contacting our office.
- **You must pay the required initial deposit/fee when you submit your consent application forms.**
- **If Purchase Order numbers are required for any future invoicing relating to monitoring and annual charges then this is the responsibility of the Consent Holder to provide.**
- Failure to provide the required information and payment will delay the processing of your application. If you do not provide adequate information then we will not be able to process your application, and will return it to you. If you do not pay the required fees, we may stop processing your application until payment is received.
- Remember to sign and date all forms.

Please make sure you read and understand the information section at the end of this form. If you need any further help, please phone our Resource Use staff on **0800 800 402.**

Office use only

File: _____

Client ID: _____

Project: _____

Contact details

1 Applicant details

For **individuals**, you must provide the full names of all individuals (such as John Robert Smith and Mary Jane Williams).
For **companies and other incorporated entities** you must provide the company name and registration number. You must also provide the name of a person or persons who will represent your company and be responsible for the application.
For **partnerships** and **unincorporated entities** (such as private or family trusts or unincorporated societies) we must have the details of all authorised partners, trustees, members or officers. We may also request a copy of your society's rules to verify your status as a formal body or society.

Full name/s of applicant This is the name/s that the consent will be issued to. We will not accept applications made in the name of unregistered companies.	Te Tahuna o Aotea Moana Marie Farm Ltd Director/Minister/Chief Executive: Company registration number:
Applicant's postal address	326 Aotea Road ~~Aotea~~ RD1 Kawhia 3889
Applicant's residential address If different from postal address	as above
Primary contact person/s	Terewai Awhitu
Email address	terewai.mama@gmail.com
Phone number/s	Home: Business: Mobile: 021 918 602 Fax:

2 Application consultant/agent details (if applicable)

Name/company name	Robin Britton
Contact person	as above.
Postal address	PO Box 7016 Hamilton 3247
Email address	rbritton@wave.co.nz
Phone number/s	Home: Business: Mobile: 027 281 2969 Fax:

3 Partnership / Unincorporated entity details

For **partnerships or unincorporated entities** (such as private or family trusts or unincorporated bodies or societies) you must provide details of all authorised partners, trustees or members. Any consent granted will then include these names, and all individuals will be legally responsible for the consent and any associated costs. Should these persons change, then you must notify us.

Name of person: **Status** (such as partner or trustee): **Residential address:**	N/A
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Name of person: **Status** (such as partner or trustee): **Residential address:**	

Include details of any further partners/trustees/members on a separate page if necessary.

4 Who should we send application correspondence to?

○ Applicant ✓ Consultant/Agent

Preferred address for service

✓ Residential address ✓ Postal address ○ DX number ✓ Email ○ Fax

Note: all costs will be invoiced directly to the applicant

Resource consents sought

5 Provide a brief description of the activity to which your application(s) relates

Mussel spat farm

6 **Tick the type/s of resource consent/s you are seeking from Waikato Regional Council.**
If you are replacing any existing or previous consents, please also record the consent number(s) in the space below.
Remember that for each consent application you must complete the relevant 'activity form' (Form B). Depending on the scale and complexity of your application(s), you may also be required to prepare a further supporting assessment of environmental effects (AEE).

✓ **Coastal permit** For activities that are within the coastal marine area (CMA).	Previous consent number/s
○ **Discharge permit** For activities outside the CMA that may discharge contaminants into the air, water and onto or into land.	Previous consent number/s
○ **Land use** For activities and structures outside the CMA that are on land, or in, on or over a river or lake bed, or may result in nitrogen discharges within the Lake Taupo catchment area.	Previous consent number/s
○ **Water** For activities outside the CMA that involve the abstraction, impoundment (damming), diversion and/or use of water.	Previous consent number/s
○ **Change to an existing consent**	Consent number/s
○ **Location transfer of an existing consent**	Consent number/s

7 Are related consents required from other authorities (such as building or subdivision consents)? ○ Yes ✓ No

If **yes**, please provide details.

Consent required	Consenting authority (such as district or city council)	Date applied for	Date granted

8 Should your Waikato Regional Council application/s be granted, do you have a consent term or expiry date you would prefer for your consent/s?

Final checklist

13 **Have you?**
Please tick

☑ Filled in all parts of this form (Form A).

☑ Completed and attached all other related forms (Form B & Form C).

○ Applied for any district council consents that are also required for your proposal. N/A

☑ Included a sketch or location map that shows us exactly where your activity will take place.

☑ Supplied a detailed assessment of environmental effects.

☑ Consulted with all interested and affected parties, and included their comments and/or written approval (if possible).

☑ Paid the required deposit/fee.

○ Purchase Order Supplied (if required for invoicing purposes). N/A

Information: If application granted and unless advised otherwise this Purchase Order Number will be use for Annual Charges and any subsequent monitoring costs.

If you have already dealt with Waikato Regional Council staff regarding your proposal, please specify their name/s

Christin Atchison

Declaration

14 **I/we hereby certify that, to the best of my knowledge and belief, the information given in this application is true and correct. I/we also undertake to pay all actual and reasonable costs incurred by Waikato Regional Council in the processing of this application.**

Signature of applicant or applicant's agent

Date 8th March 2017

Important information – please read carefully

Official information

The information you provide with your application is official information. It is used to help process your resource consent application and assess the impact of your activity on the environment and other people.

Your information is held and administered by Waikato Regional Council in accordance with the Local Government Official Information and Meetings Act 1987 and the Privacy Act 1993. This means that your information may be disclosed to other people who request it in accordance with the terms of these Acts. It is therefore important you let us know if your application includes trade secrets, commercially sensitive material or any other information you consider should not be disclosed.

Under the Privacy Act 1993 you have right of access to personal information held by Waikato Regional Council.

Application and consent costs for applications that do not have a fixed fee

Waikato Regional Council operates a user-pays policy for the processing of resource consent applications. This means we will charge you (rather than the ratepayers) for the costs associated with the processing of your consent application. **We will charge you for these costs whether your application is granted or declined.**

The cost of processing your application will depend on the complexity of the issues and the level of work required to evaluate the impacts of your activity:

- simple, non-notified applications or notified applications that do not attract submissions usually cost in the vicinity of $500 - $2,500
- applications that are notified and receive submissions which are resolved without the need for a hearing usually cost $2,500 - $5,000
- applications with significant environmental effects that require public meetings and/or hearings will likely cost more than $5,000 to process.

Consent holder costs - all consents

Once granted, most resource consents will also incur a yearly 'consent holder' fee and compliance monitoring charges. Please contact us if you have any queries regarding your deposit/fee or processing costs or the yearly charges for your activity.

Consultation

Consultation with other parties who may be interested in or affected by your activity is encouraged. This involves discussing your activity with others who may have some concerns, listening to what others have to say, considering their responses and deciding what will be done.

If you have carried out your consultation before you submit your application to Waikato Regional Council we will require details of it. In many cases, the provision of written approval from other affected parties will help streamline the processing of your application and may help avoid the necessity for public notification.

Ongoing responsibilities

If your application is granted you will be responsible for complying with your consent's conditions and payment of your consent's charges until your consent expires. If you wish to cancel (surrender) your consent, transfer responsibility to another party or make changes to your consented activity before it expires, you must submit notice to us in writing or make an application to change your consent.

More information

For more information on the application process or resource consents, visit our website at www.waikatoregion.govt.nz or phone our Resource Use group on 0800 800 402.

Application for resource consent
Form B – Coastal activities

Notes

Coastal activities must meet all the conditions of any relevant Permitted Activity Rules in the Regional Coastal Plan or a resource consent from Waikato Regional Council is required. This form will help you apply for a resource consent.

Office use only

File No: _____

Client ID: _____

Project: _____

- You must **fully** complete this activity form and supply all the required information. Provide as much detail as you can where the questions are relevant to your activity. We request that, where possible, you **provide electronic copies of any supporting information** (for example, on CD). Doing so may reduce administrative costs charged to you.
- You must also supply **completed Forms A and C.**
- **You must pay the required $500 initial deposit when you submit this consent application.**
- Failure to provide the required information and payment will delay the processing of your application. If you do not provide adequate information then we will not be able to process your application, and will return it to you. If you do not pay the required fees, we may stop processing your application until payment is received. If you need any further help, please phone our resource use staff on **0800 800 402.**

Location

What is the name of the waterbody/harbour/bay surrounding or adjacent to the activity? (If the waterbody is unnamed, then what is the nearest named waterbody) Aotea harbour

If known, please supply relevant map coordinates of the activity or activities, preferably as New Zealand Transverse Mercator 2000 (NZTM2000) or New Zealand Geodetic Datum 2000 (NZGD2000) references. These locations must also be clearly identified on the location map you have supplied with Form A

As per survey plan attached

Types of resource consent sought

The resource consents sought relate to the following activities.

Please tick	*Previous consent number*
✓ Coastal permit – occupy (such as jetty, marine farm, reclamation).	
○ Coastal permit – discharge to water (such as stormwater, seepage water).	
○ Coastal permit – take surface water (for example, for dredging).	
○ Coastal permit – dam or divert (such as culverts, bridges, realignments).	
○ Coastal permit – dredge, renourish or disturb foreshore.	

You may require other consents if your activity involves other works. Please discuss other consent requirements with a resource officer from Waikato Regional Council prior to lodging your application.

Details of the activities

Purpose for which resource consent is sought:

◯ jetty ◯ boat ramp

☑ marine farm – please specify type (such as mussel, oyster or other): mussel spat

◯ dredging ◯ beach renourishment

◯ reclamation (please state area (m²) and for what purpose)

◯ other (please specify)

Is the structure or activity: ◯ existing ☑ proposed

If an existing structure or activity, when was the existing structure built (how long has it been there), or how long has the work been taking place? N/A

If a proposed structure or works, outline the reasons for the new structure/work.

Marine farm

Is the structure/work/activity to be permanent? ☑ Yes ◯ No

If no, how long is it intended to be left in place, and how will it be removed?

Description of proposed activity

Please provide a description of the proposed works or structure (dimensions, construction materials.)

As per attached AEE

Please provide information on how the works/structure will be marked (such as lighting, poles, buoys). Note: If there is a harbour master for the area concerned, please obtain written comment from him/her on any effects of the structure on navigation and safety. as attached

Please provide drawings or engineering plans of the proposed works/structure to scale or with approximate measurements and relevant features (such as low/high tide marks, parking areas, reserves, property boundaries).

Briefly outline how the proposed work will be undertaken/constructed/implemented (such as drilling, manual digging, machinery access to site). as attached

Who will undertake the work or provide supervision of construction? as attached.

What is the approximate date you expect to commence the activity? asap

How long will the works/structure take to complete, or what is the approximate completion date? N/A

What alternative locations have been considered for the activity? as per attached

What alternative construction methods have been considered? N/A

Please describe the maintenance programme that will be undertaken to ensure that any environmental effects from the activity/structure are avoided or minimised. (Include who will undertake the maintenance and how often, what aspects of the activity maintenance is likely to address, how access will be gained, where maintenance materials will be stored and how they will be transported to the site). as attached

What sector of the community is the proposed activity for? ○ private ○ public ✓ commercial

Assessment of effects on the environment

What effects could the works/structure have on the environment? (such as erosion, increase flooding, removal of vegetation)..

as per attached

What onshore effects would be generated (such as increased use of boat ramp, traffic, noise at night).

as per attached

What measures would be put in place to reduce these effects? (such as stop banks, filter cloth, timing of works).

N/A

Will any other measures be undertaken to reduce impacts on the environment?

as per attached

Within the surrounding environment of the works (within a reasonable distance), are there any:

Yes	No	
○	✓	obvious signs of indigenous flora and fauna? (such as fish eels, bullies, insect life, crayfish, aquatic plants, nesting sites, feeding grounds)
○	✓	areas where food is gathered? (such as fish, kaimoana)
○	✓	wetlands? (such as saltmarsh, mangrove or swamp like areas)
✓	○	recreational activities carried out (such as swimming, fishing, canoeing, boating)
○	✓	areas of particular aesthetic or scientific value (such as scenic views, archaeological sites)
✓	○	areas or aspects significant to iwi – located in front of marae + Iwi owned farm land

- ○ ☑ will the proposed activity increase the risk of subsidence, erosion, inundation or flooding
- ○ ☑ will hazardous or toxic chemicals, or hydrocarbons be used or stored on site (such as fuel)
- ○ ☑ will the water quality be affected (such as sediment disturbance, discharge)
- ○ ☑ will public access to the coastal area be affected
- ○ ☑ will recreational use by the public be restricted or affected

If you ticked yes against any areas or aspects within the surrounding environment, please describe how your proposal may affect those surroundings and the steps you have taken or will take to reduce these effects. If you ticked no against everything, please briefly outline why you believe there will be no effects from your activity.

Refer attached AEE

Apart from those already documented, are there any other areas or aspects in proximity that may be disturbed by the activity and/or considered significant?

refer attached

Consultation

Identify and consult with any parties that may be potentially affected by or interested in your activity. This generally involves your immediate neighbours. It may also include local authorities, iwi and interest groups such as local recreational and care groups. If you are in doubt about who you should be talking to, then call Waikato Regional Council staff.

Make sure you provide everyone with sufficient information that they can fully understand what it is you want to do and how they may be affected by it. This could include a copy of this application form once it is completed and and/or any plans or maps. Make sure you make yourself available to explain the application, answer any questions and discuss options for resolving any concerns.

Identify the parties that may be potentially affected by or interested in your activity and consent application

Party details/relationship
(such as neighbour, local iwi, interest group) Refer attached AEE

Contact person

Postal address

Phone number/s Home: Business:
Mobile: Fax:

Party details/relationship
(such as neighbour, local iwi, interest group)

Contact person

Postal address

Phone number/s Home: Business:
Mobile: Fax:

Party details/relationship
(such as neighbour, local iwi, interest group)

Contact person

Postal address

Phone number/s Home: Business:
Mobile: Fax:

Final checklist

Have you? (please tick)

- [x] Filled in all parts of this form (Form B) that are relevant to your activity, provided all the information required, and completed and attached any other related activity forms.
- [x] Completed and attached Forms A and C.
- [ ] Applied for any district council consents that are also required for your proposal. N/A
- [x] Consulted with all interested and affected parties, and included their comments and/or written approval (if possible).
- [x] Included or paid the required **$500** deposit fee for this application.

Consultation form

Photocopy this form for each person or group to be consulted

Applicant: _____

Description of proposal: _____

_____

Person/group consulted in regard to this proposal

Name of contact person: _____ Contact phone number: _____

Name of group (if appropriate): _____

Postal address: _____

_____

Street address: _____

Email address: _____ Fax: _____

Consulted party's views on the proposal (to be completed by person/group consulted).

If you would like Waikato Regional Council to know your views on the applicant's proposal, and/or if you consider you may be adversely affected, please indicate your views below (attach additional pages if necessary). Consider the following: how do you consider you will be affected? How would you like the applicant's proposal to be modified to take account of your views? What other comments do you have on the proposal that you would like Waikato Regional Council to consider in making a decision on these resource consent applications?

_____

_____

_____

_____

Applicant's response to views of consulted parties (to be completed by applicant).

Please indicate how your proposal can be modified to take account of the views of the party you have consulted with (or why the proposal may not be able to be modified to take account of those views).

_____

_____

_____

_____

Consulted party's response to the proposal (to be completed by person/group consulted). *(Please tick one only.)*

◯ I/we give my/our approval for the proposal.

◯ I/we do not give my/our approval for the proposal.

◯ I/we are not affected by this proposal.

Signed: _____ Date: _____

Waikato Regional Council, 401 Grey Street, Private Bag 3038, Waikato Mail Centre, Hamilton 3240.
Phone our enquiries officer on 0800 800 402. www.waikatoregion.govt.nz

Waikato
REGIONAL COUNCIL

Application for resource consent

Form C – Other matters

Notes

- The following information requirements were introduced by the RM Amendment Act 2013 and took effect on 3/3/2015.
- Questions 1-4 are mandatory requirements for all applications. Question 5 also applies to applications for replacement consents.
- Questions 1, 3 and 4 require varying degrees of familiarity with the RMA and documents produced under the RMA. Please contact the Resource Use Directorate on our freephone if you need help accessing these documents.

If you need any further help, please phone our Resource Use staff on **0800 800 402**.

Office use only

File No: _____

Client ID: _____

Project: _____

Related permitted activities

A) List any activities that are part of your proposal and are permitted (allowed without a resource consent) under the Waikato Regional Plan and/or the Waikato Regional Coastal Plan.

N/A

B) Provide information that shows how each permitted activity will comply with the conditions of the relevant rule

N/A

Waikato Regional Council, 401 Grey Street, Private Bag 3038, Waikato Mail Centre, Hamilton 3240.
Phone our enquiries officer on 0800 800 402. www.waikatoregion.govt.nz

Waikato REGIONAL COUNCIL

Other polices, rules and requirements

Assess your proposal against any relevant provisions of:

- national environmental standards
- other regulations
- national policy statements
- the Waikato Regional Policy Statement (RPS)
- the Waikato Regional Plan (WRP) and/or Waikato Regional Coastal Plan (WRCP).

Note: If your application is for a **controlled activity** then you do not need to provide any assessment against the RPS or WRP (or WRCP).

Refer attached AEE

Value of consent holder investment

Important: You must complete this question if your application is intended to replace a currently operative resource consent, **and** this application will be lodged with Waikato Regional Council at least 3 month before that consent expires.

Provide an assessment of the value of your investment. You need to

- specify the value of investment of the activities/infrastructure that are reliant on the resource consent/s you are applying for here. This must be the 'book value' of the investment (not the replacement value).
- include evidence that supports the assessment.

N/A

5 Purpose

(1) The purpose of this Act is to promote the sustainable management of natural and physical resources.

(2) In this Act, **sustainable management** means managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural well-being and for their health and safety while—

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

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

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

6 Matters of national importance

In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall recognise and provide for the following matters of national importance:

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

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

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

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

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

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

(g) the protection of protected customary rights

7 Other matters

In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall have particular regard to—

(a) kaitiakitanga:

(aa) the ethic of stewardship:

(b) the efficient use and development of natural and physical resources:

(ba) the efficiency of the end use of energy:

(c) the maintenance and enhancement of amenity values:

(d) intrinsic values of ecosystems:

(e) *[Repealed]*

(f) maintenance and enhancement of the quality of the environment:

(g) any finite characteristics of natural and physical resources:

(h) the protection of the habitat of trout and salmon:

(i) the effects of climate change:

(j) the benefits to be derived from the use and development of renewable energy

8 Treaty of Waitangi

In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall take into account the principles of the Treaty of Waitangi (Te Tiriti o Waitangi).

Assessment of Effects on the Environment

Resource Consent Application

Te Tahuna O Aotea Moana Marine Farm Ltd

Spat Catching Area

Aotea Harbour

Prepared By:
Robin Britton
Resource Management/ Planning Consultant
PO Box 7016
Hamilton

February 2018

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Resource Consent Application

By Te Tahuna O Aotea Marine Farm Ltd

For Mussel Spat Catching at Aotea Harbour

Assessment of Effects on the Environment

February 2018

Prepared in accordance with Section 88(2)(b) and Schedule 4 of the Resource Management Act.

1. Introduction

1.1 This assessment of effects on the environment ('AEE') is in respect of the application by Te Tahuna O Aotea Moana Marine Farm Ltd ('the applicant'), for consent for a spat catching area in Aotea Harbour.

1.2 The application relates to one block of 5 hectares as indicated on the attached survey plan (Appendix 1a). The application area is inclusive of all structures (anchors, lines and buoys).

1.3 The area being applied for would be used to catch mussel spat (larval and juvenile *Perna canaliculus*).

1.4 Ngati Te Wehi are keen to develop an economic basis for their iwi based on aquaculture and located within Aotea harbour. This application is supported by iwi and other residents around Aotea Harbour (refer Appendix 5) and would enable Ngati Te Wehi to develop within their rohe. New sources of spat are required to support the industry in the Coromandel (in particular) as the supply of spat from Northland is under pressure from high mortality rates. There is an existing spat catching farm in the harbour, owned by Mr Ross Dockery, and he is providing support and advice to the applicant in this proposal.

1.5 The operative Waikato Regional Coastal Plan (RCP) provides for spat catching as a discretionary activity (Rule 16.5.1). No other resource consents are required for this activity.

1.6 This AEE is structured using the guidance in the Fourth Schedule to the Resource Management Act.

2. Description of the Proposal

2.1 Resource consent is sought to use and occupy space in the CMA for conventional longline structures for the purpose of spat catching (species: *Perna canaliculus* otherwise known as the New Zealand greenshell mussel™), including associated discharges to water and disturbance to and deposition on the seabed. The area being applied for is located 88 metres off the southern edge of the Harbour (as shown in Appendix 1b).

2.2 Mussel larvae are microscopic when spawned and float in the coastal currents until eventually alighting on suitable substrates. Spat are not visible to the "naked eye", but are determined to have "alighted" on the spat catching ropes, through assessments under a microscope. Once it has been confirmed by microscope that the spat has been "caught", the spat catching lines are removed from the water and transported to consented marine farms elsewhere for on-growing.

2.3 The main spawning period is generally autumn, usually April, May and spring which is generally August, September and October. While spawning times cannot be accurately predicted, it is generally triggered by changes in weather.

2.4 Spat catching lines are particularly "hairy" to provide a broader area for the spat to alight on. Mussels cannot be on-grown on spat rope. Aotea Harbour has proven to be a suitable Harbour for spat catching.

2.5 Spat catching culture ropes are placed in the water when it is estimated that a spawning event may occur. However, if the ropes do not catch any spat they are removed from the water and re-set again, at the next anticipated opportunity. The reason for this is to avoid, as much as practical, the fouling of the ropes by other marine species. Fouled rope makes it extremely difficult to remove the spat without damaging it. Therefore the spat catching lines and ropes would not be kept in the water all the time.

3. Description of the Layout & Infrastructure

3.1 **The area** subject to this application:

- is located in waters that are 4-6 metres in depth
- is located over a substrate of sand and broken shell gravel
- has a tidal flow that is parallel to the shoreline
- at the closest point, is approximately 88 m from the shore line.

3.2 **Spat Catching Description**: The spat catching area would consist of:

a) Longlines:

- All longlines are surface lines and are oriented parallel to tidal flows (i.e. running north-west to south-east)
- Longlines used will be double backbone longlines
- The lengths of the longlines to be used would be – approximately 150 – 160m
- The density of lines would be: an average of 2.2 longlines per hectare, and a maximum of 3 per hectare
- The separation between mussel lines is approximately 20 metres
- The backbone and mooring line rope used is quality equipment Duradan (synthetic rope)
- Refer Appendix 1c for layout plans

b) Floats:

- The floats used to support the longlines will be either 110/200 litres in volume
- An average of 18 floats per line

- The floats used will be a mix of navy blue or black and orange
- Orange floats will be located at the end of each line and in the middle of the lines located at the end of each block

c) Structure Anchors:

- The anchors used to secure the structures to the seabed are screw anchors, buried below the seabed, plate size and shaft length to be determined or concrete block anchors
- The warp line length is approximately 45-50m at either end (refer Appendix 1c)

d) Spat Catching Rope

- Spat catching rope will be hung from the back bones to a depth of approximately 3-5 metres

e) Lighting/ Navigation:

- The spat catching block would be lit as one unit. It is proposed that there would be 2 special marks + lights on the two corners furthest from land
- There would be orange corner boys and orange buoys used in the middle of the outer edge lines.

3.3 **Infrastructure**: The applicant would use the existing launching area at Aotea for unloading/loading product and equipment.

3.4 Subject to the outcome of this resource consent application, the applicant would also locate an area on iwi owned land (currently a land-based farmed area) for the storage of spare floats, rope and other related equipment, and look to obtain any District Council consents as required.

4. Consideration of Alternatives & Appropriateness

4.1 The Resource Management Act requires a description of any possible alternative locations or methods for undertaking the activity for which consent is sought, where it is likely that the activity will result in "any significant adverse effect" on the environment.

4.2 It is contended that the proposed area in the location being sought would not create any "significant adverse effects" on the environment.

4.3 Alternative sites were considered by the applicants however they wished to locate the spat catching area off-shore from their tribal land, as this was considered by them to be the most appropriate location.

4.4 The area being applied for would achieve efficient use of the space by maximising the use of the space within the overall boundaries of the area being applied for. It also recognises the need to allow for current circulation and access for vessels between the lines and up the channel past the proposed spat catching block, and is an appropriate distance from the existing marine farm.

4.5 Based on the above considerations, it is considered that the proposed area is the most appropriate location for spat catching. In addition, the experience of the existing marine farmer is indicative of the area being suitable for mussel spat catching.

4.6 Appropriateness is also considered in terms of the Government's policy to promote aquaculture, which is also reflected by the WRC plan provisions. (Refer further discussion in section 9).

4.7 As a further indicator of appropriateness, there is a functional need for the activity to be located in the coastal marine area.

5. Assessment of actual or potential effects

5.1 Introduction

5.1.1 This part of the AEE deals in detail with the actual or potential effects of the proposed activity, on the environment, and addresses the matters, where relevant, outlined in the Fourth Schedule to the Resource Management Act.

5.2 Any effect on those in the neighbourhood and, where relevant, the wider community including any socio-economic and cultural effects

5.2.1 **Socio-economic and cultural perspective:** It is widely accepted that aquaculture creates and supports direct employment opportunities. In the context of the Aotea Harbour community and in particular iwi supporting this application, there are currently limited economic development opportunities. This proposed spat catching area would make a significant contribution to the social and economic wellbeing of both the iwi involved and the district,

while also recognising the cultural associations that the applicant has with the area. In respect of this application, potential socio-economic effects include local employment to develop and maintain the spat catching area, equipment and vessel, through to the transporting of spat ropes for on-growing on other farms, and the subsequent flow-on effect for other farmers to grow, harvest, process and market mussel products. The proposed spat catching area would build capacity within the iwi to undertake aquaculture and the associated business learning. In this respect Ngati Te Wehi have already developed an industry support network to assist them in this process.

5.2.2 **Neighbourhood perspective**: from a landward perspective the proposed spat catching area is located in an area where the neighbouring land is iwi owned and marae land. There is another marine spat catching area located to the north-west of the proposed site. There is no commercial fishing within this area of the harbour and the proposed spat catching area is not located in an area of customary fishing. It is commonly known that recreational line fishing is generally enhanced, by the presence of aquaculture, as the structures provide a "reef-like" structure and predation opportunities. It is concluded that the proposed area will not create an undue adverse effect on fishing, and due to its small size and distance from the other existing spat catching area, will have minimal cumulative effects on the area.

5.2.3 **Wider Community**: From a navigation safety perspective, the proposed spat catching area will be marked with coloured floats and lights as described above. The proposed area does not occupy the full channel width thereby providing for other vessels to navigate past the spat catching block at low tide (in particular). The channel is estimated as being approximately 375 metres wide at low tide, leaving approximately 125 metres of free water space on either side of the proposed spat catching area. The proposed site could be accessed by vessels at low tide, however very few vessels venture up this channel at low tide. Potential adverse effects on navigation safety and other recreational activities would be minimal due to the size of the proposed spat catching area, its location within the channel, lighting and the provision of navigable corridors through and around the spat catching area. (Refer also to Appendix 4.)

5.2.4 The background landward area is owned by Ngati Te Wehi. Access to or along the shore is limited, with most access being through private property. There are limited viewing opportunities from the land, as there is limited road access. Due to the low-lying nature of the structures and the seasonal nature of spat catching, it is contended that the impact of the spat catching area on the landward community would be negligible. (Refer also to Appendix 2 & 2A landscape & natural character reports).

5.2.5 It is also noted that members of the community, including elders from Okapu Marae and Mr Dockery, recall the existence of a small mussel farm in the 1980's, in the similar location to this application. Mr Mansergh and Ms Trentham note in the landscape report accompanying this application that aerial photography from 1984 shows the existence of this farm.

5.3 Any physical effect on the locality, including any landscape and visual effects

5.3.1 An assessment of landscape and natural character has been undertaken in support of this application and is attached as Appendix 2A.

5.3.2 Mr Mansergh and Ms Trentham have concluded that the proposed development can successfully integrate into the harbour without affecting its existing natural character values or ONC rating. In particular they conclude:

a) The proposed spat farm will not affect the overall ONC rating of the harbour

b) In terms of effects on landscape, seascape character, natural character and visual amenity values, the actual effects are likely to be insignificant.

c) The effects on natural character will be negligible – very low

d) Visual effects will be very low, with the site having a very good visual absorption capability

e) Effects on the adjacent ONF are avoided

f) Overall adverse effects on natural character and visual amenity were negligible to low.

5.3.3 Taking into account the conclusions reached by Mr Mansergh and Ms Trentham, in my opinion the overall impact of the proposed spat catching area on the natural character, landscape and visual amenity of the marine area is negligible – low. This is due to the compact nature of the spat catching area, the small area of the proposed block, the low profile the structures have in the water, the lack of landward general public access (including from a scenic perspective), the existing degree of modification of the landward area and the presence of another fam in the vicinity.

5.3.4 Orange floats would delineate the ends of each line of the spat catching area and the middle of the line at the end of each block, as required by Maritime New Zealand guidelines. This not only identifies each block but it also has a significant safety role, as it serves to warn other users of the marine environment of the boundaries. The remaining floats are navy blue or black and their level of visibility would be dependent on weather, height of observation, location and viewing distance. The two proposed lights would be visible at night, however to a very limited number of viewers.

5.3.5 The servicing vessels used for the spat catching operation would be visible from sea and land. It is contended that the presence of the vessel would be comparable to any recreational or fishing vessel in the vicinity. The vessel to be used would be the existing vessel used on the existing farm and therefore is not an increase in vessels.

5.3.6 In my opinion, and drawing on the information provided in the assessment of landscape, natural character and visual amenity (Appendix 2A) the adverse effects of the proposed spat catching area these matters would be negligible - low.

5.4 Any effect on ecosystems, including effects on plants or animals and any physical disturbance of habitats in the vicinity

5.4.1 The attached scientific report addresses this matter in more detail (Appendix 3). The conclusions from this report support the contention that any effect on the ecosystem, from

granting the consent sought for mussel spat catching would be less than minor and such a spat catching area would be ecologically sustainable in the long term with minimal adverse ecological effects.

5.4.2 Based on the information in Appendix 3 it is considered that the effects of the proposed area subject to this application, on the ecosystem would be less than minor.

5.4.3 The report notes that the seabed comprises sand and broken shell, with some patches of silts/ muds and that there were no significant features located within the proposed spat catching area.

5.4.5 As a matter of comparison, the report discusses the expected effects from a full mussel farm. The report then draws the conclusions that for spat catching, given the water depth, likely currents, the seasonal nature of the activity and having relatively lower biomass and reduced rates of filtration, respiration and excretion, the environmental effects likely to result from the proposed spat catching facility are considered to be less than minor (p. 21).

5.4.6 It is also noted that the Mussel Farming industry in New Zealand is subject to various stringent requirements in respect of the quality of the marine waters in which farms are located (including food and health standards which are set by the United States Food and Drug Authority and implemented by NZ's Health Authorities). Therefore these industry systems will also result in the on-going review and maintenance of high operating standards within the proposed area. The applicant would comply with all relevant Industry best practice guidelines when exercising the consent sought.

5.4.7 Physical disturbance to the benthic area would result from the insertion of anchors, however this would only be a temporary disturbance.

5.4.8 The proposed line layouts for the spat catching area meets industry standards and will serve to ensure sufficient water flow to the lines to provide adequate opportunities to catch spat.

5.4.9 In my opinion, the scale of the proposed spat catching area and the distances from shore, along with the conclusions in Appendix 3 indicate that the potential impact of the proposed spat catching area are less than minor.

5.4.10 In relation to biosecurity issues, the spat catching area would use new equipment, including anchors, floats, ropes and back-bone lines. The vessel servicing the area would initially be the same vessel currently used for the existing consented farm. Therefore there would be no opportunity for new pest species from outside the area to be introduced into the proposed spat catching area. In addition, staff servicing the spat catching area would be trained in identifying any new or unusual species appearing on the lines. Any such biosecurity risk would be notified to the Council and to Ministry of Primary Industry (Biosecurity). (Refer also to Appendix 3.)

5.5 Any effect on natural and physical resources having aesthetic, recreational, scientific, historical, spiritual, cultural, or other special value for present or future generations

5.5.1 Drawing on the information provided in the Otorohanga District Plan and the WRC RCP, the area of the proposed spat catching area is not located in any area specially identified for aesthetic, scientific, historical, spiritual, cultural, or other special values for present or future generations. (NB: the relevance of the ASCV annotation for Aotea Harbour is further discussed in section 9.)

5.5.2 As with all parts of the coastal marine area, the area does have value for recreational use, however due to the low level of use and the location and size of the proposed spat catching area, it is considered that any adverse effect on recreational values is minimal, and indeed there could be positive effects of the area to fishers. As discussed above, the use of appropriate navigation lighting and coloured floats will ensure that recreational and other marine users would have sufficient warning of the location of the spat catching area. Public access through the spat catching area will not be restricted.

5.5.3 Ngati Te Wehi has identified their relationship with Aotea Harbour, in the history and background supplied in Appendix 2. However, to reiterate: Ngati Te Wehi is the principal iwi within Aotea harbour. The people have endured and lived here for 100's and 100's of years, and have a close affinity to the area's land and harbour. The people of Ngati Te Wehi have taken on board the age-old concepts of kaitiakitanga which allow Māori and non-Māori to reflect on their relationship with a specific area, and enables and encourages all people to be consciously aware of the surrounding environment and to care for it in a way that upholds the practices of their predecessors. 'He Kaitiaki katoa tātou" *we are all guardians of our lands, moana and our environments.*

The applicant does not consider that there are any heritage values which would be adversely affected by the proposal.

5.6 Any discharge of contaminants into the environment, including any unreasonable emission of noise and options for the treatment and disposal of contaminants

5.6.1 Any discharge associated with spat catching is extremely limited. It would relate to either a) "drop-off" of spat – which is microscopic and as such unable to be quantified compared to the natural spat floating in the water; or b) other marine life that may settle on the ropes and fall off when the ropes are being removed from the water. However due to the limited time the ropes would be in the water, this natural marine material would also be of insignificant quantity. Therefore it is considered that due to the seasonal nature of spat catching and the short period of time that spat lines are kept in the water the environmental effects would be less than minor (see Appendix 3). The report in Appendix 3 also notes that the receiving environment has low sensitivity to such discharges, due to the low biomass of the spat and the tidal currents at the proposed site .

5.6.2 Operating, in accordance with the Mussel Industry's Code of Practice, on the proposed spat catching area, the service vessel would ensure that there is minimal overboard loss of non-degradable materials. Regular maintenance checks of the area would be undertaken to ensure security of lines (particularly given the high economic investment in the structures). Any waste material would be taken to shore for land disposal.

5.6.3 There will be no unreasonable emissions of noise from the proposed activity. The only noise resulting from the activity would be from the servicing vessel and would therefore be intermittent.

5.7 Any risk to the neighbourhood, the wider community, or the environment through natural hazards or the use of hazardous substances or hazardous installations

5.7.1 Any risks arising from the above matters in relation to this application could include:

(i) potential hazardous installations in the form of the longlines and navigation equipment and the potential, albeit minor, resulting hazard to marine users; and

(ii) the effects of natural hazards, in the form of adverse weather conditions, or a change in sea level.

5.7.2 The proposed longline structures are secured to the ocean floor by anchors at each end of each longline. The anchors do not pose any threat to vessels, as they are on/in the seafloor.

5.7.3 There is sufficient room between the longlines to provide safe navigable channels for small vessels and service vessels. The spat catching area would be lit and have coloured buoys according to Maritime NZ requirements. Therefore, in my view recreational vessels that are under competent control would be able to navigate freely past the proposed spat catching area, without undue risk, including in adverse weather conditions. This opinion is supported by the Harbourmaster (Refer Appendix 4).

5.7.4 In terms of any storm events that may cause damage to the spat catching operation, technological changes in recent years in terms of anchoring and type of ropes used, have significantly reduced the occurrence of breakages. Should there be a rope break, however, the proposed separation between the lines within the block will provide a clear path to avoid entanglement of the lines. In addition, the spat catching area will be regularly maintained to ensure security of lines and floats. As the structures are floating, the effects of sea level rise will be negligible.

5.7.5 There will be no hazardous substances used by the spat catching operators in exercising the consent applied for by this application.

6. Description of mitigation measures

6.1 A description of the mitigation measures (safeguards and contingency plans where relevant) to be undertaken to help prevent or reduce the actual or potential effects of the proposed activity is required by the Resource Management Act. The applicant has put in place an industry network of people to assist them in building capacity and knowledge of mussel spat catching. The proposed spat catching area would be operated in a sound commercial manner and in compliance with the industry standards that are designed to ensure efficient management of the area and to ensure long term financial viability and environmental sustainability.

6.2 The applicant would comply with the Code of Practice of the NZ Mussel Industry Council (which was developed by the Mussel Industry Council in consultation with regulatory authorities and scientists). This code promotes good practice farm management and identifies various mitigation measures to be undertaken in the event of accidents or disease. It should be noted that operators are audited by the Aquaculture New Zealand in respect of implementing this Code of Practice.

6.3 A rigorous maintenance regime would be undertaken to ensure the security of the structures as the cost of lost and damaged lines, buoys and mussel product is economically significant. Regular checks and maintenance are also carried out for the lights.

6.4 While deemed to be negligible – low, the visual effects would also be mitigated by ensuring a compact block is maintained, while aiming to ensure efficient use of the proposed area andby the lower number of floats to be used for spat catching (compared to a farm involved in growing).

7. Consultation

7.1 The applicant has undertaken extensive consultation. Documentation relating to responses received from parties is attached in Appendix 5.

7.2 There is significant support for the proposed spat catching area. Some additional consultation forms may be sent separately directly to WRC.

7.3 The Department of Conservation was approached for consultation, but preferred to wait until an application was lodged, before responding.

8. Monitoring

8.1 The Resource Management Act requires a description of the monitoring that would be undertaken, where the scale and significance of effects are such that monitoring is required.

8.2 Based on the science report in Appendix 3, the applicant contends that the scale and significance of environmental effects from spat catching is negligible and that the level of monitoring required of other marine farms is not warranted. The reasons for this include:

- this application is for spat catching only
- the size of the spat catching area is 5 hectares
- spat catching would only occur seasonally and intermittently
- there is limited opportunities for discharges of natural marine material, and much of it would be microscopic.

9. Relevant Planning Provisions

9.1 Introduction

In accordance with s104(1)(b) and Schedule 4 of the Resource Management Act, this part of the application sets out the relevant planning framework.

9.2 Regulations

9.2.1 The Fisheries (Commercial Fishing) Regulations 2001 defines spat as meaning:

> *…a lifecycle stage or size range of fish, aquatic life, or seaweed that is declared by the chief executive by notice in the Gazette to be spat*

9.2.2 Gazette No. 10699 Fisheries (Declaration of Species as Spat Notice (No.2) 1993 further defines "spat" for the Green-lipped mussel/Greenshell mussel species *perna canaliculus*. It states:

> ***For the purpose of any spat catching permit** issued pursuant to section 67q of the Fisheries Act 1983, spat is hereby defined as: (a) any stage of the lifecycle of the following molluscs:….iv. Green-lipped mussel/Greenshell mussel less than 40mm in length.*

9.2.3 It is reiterated from information provided above that spat catching lines cannot be used for on-growing.

9.3 New Zealand Coastal Policy Statement (2010)

9.3.1 The operative New Zealand Coastal Policy Statement (NZCPS) (2010) includes a strong management directive for Aquaculture, in Objective 6 and Policy 8 in particular. Together these policy directives recognise that aquaculture (including as envisaged by this application) is an appropriate use of the coastal marine area and they recognise the important value aquaculture can provide for social and economic well-being. In particular the first bullet point in the Objective is identified as a key point, while the criteria in Policy 8 have been addressed in the context of this application document.

9.3.2 The NZCPS states in Objective 6

To enable people and communities to provide for their social, economic, and cultural wellbeing and their health and safety, through subdivision, use, and development, recognising that:

- ***the protection of the values of the coastal environment does not preclude use and development in appropriate places and forms, and within appropriate limits****;*
- *some uses and developments which depend upon the use of natural and physical resources in the coastal environment are important to the social, economic and cultural wellbeing of people and communities;*
- *functionally some uses and developments can only be located on the coast or in the coastal marine area;*
- *the coastal environment contains renewable energy resources of significant value;*
- *the protection of habitats of living marine resources contributes to the social, economic and cultural wellbeing of people and communities;*
- *the potential to protect, use, and develop natural and physical resources in the coastal marine area should not be compromised by activities on land;*
- *the proportion of the coastal marine area under any formal protection is small and therefore management under the Act is an important means by which the natural resources of the coastal marine area can be protected; and*
- *historic heritage in the coastal environment is extensive but not fully known, and vulnerable to loss or damage from inappropriate subdivision, use, and development.*

9.3.3 The NZCPS states in Policy 8:

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

a. including in regional policy statements and regional coastal plans provision for aquaculture activities in appropriate places in the coastal environment, recognising that relevant considerations may include:
    i. the need for high water quality for aquaculture activities; and
    ii. the need for land-based facilities associated with marine farming;

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

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

9.3.4 In addition, Objective 2 seeks to preserve the natural character of the coastal environment and protect natural features and landscape values, through recognising contributing characteristics and qualities and identifying areas where use and development would be inappropriate. This objective provides clear guidance for interpretation of the subsequent Policies 13 (preservation of natural character) and 15 (natural features and natural landscapes). It is noted that at present, the RCP does not identify areas where spat catching would be inappropriate. It is further noted that the report Council has commissioned on Natural character, has not been subject to public input, nor included into any statutory plans. This topic area is discussed further in Appendix 2 and Appendix 2A.

9.3.5 Given that the area being applied for is small and the nature of the structures are low lying in the water, it is considered that the proposed site is consistent with these policies as it is not identified in any statutory planning documents as being an "inappropriate use" in the application area. This aspect is also discussed further in relation to the Regional Coastal Plan and the Otorohanga District Plan (as per below).

9.3.6 Other NZCPS policies of particular relevance to this application include: Policies 4 & 6 (in relation to the integration of land and water activities of marine farming and use of renewable resources); and Policies 21 & 23 (in relation to water quality). As described above, there is an integrated approach to the spat catching area and land based facilities; it is clearly catching a renewable resource; and will support high water quality.

9.3.7 Policy 6 is particularly important as it provides guidance on "appropriate" use and development in the coastal marine area. Policy 6(2)(a) highlights the need to recognise potential contributions to the social, economic and cultural well-being of people and communities from use and development. This is a significant development for Ngati Te Wehi and the social and economic well-being of their people. It is contended that all other matters raised in Policy 6(2) have been addressed in the context of this application document.

9.3.8 In addition Objective 3 and Policy 2 are particularly relevant to this application. Ngati Te Wehi are kaitiaki of this application area, and have an enduring relationship with this harbour. It is contended that Policy 2 is directive in recognising Ngati Te Wehi's relationship with this area, and in providing opportunities for them to exercise kaitiakitanga.

9.3.8 In considering the above objectives and policies, it is clear that the spat catching area subject to this application is an appropriate use in this area. It is considered that this application is consistent with the directions of the New Zealand Coastal Policy Statement and would meet the purpose of the Act. It is considered that this proposed spat catching area is an appropriate use of the area.

9.4 Waikato Regional Policy Statement (RPS) (2016)

9.4.1 The coastal objective is set out in chapter 3.7 and emphasises the need for integrated management, including preserving natural character and protecting natural features and landscape values of the coastal environment; recognising the interconnections between marine and land-based activities; and recognising the dynamic, complex and interdependent nature of natural biological and physical processes. This is supported in particular by Policy 7.1 which emphasises efficient use of space in the coastal marine area and that space is allocated in a way that recognises ecosystem values as well as people's aspirations. Opportunities for aquaculture are specifically recognised. Objective 3.13 (supported by Policy 7.2) addresses the mauri and health of marine waters, including enabling people and communities to provide for their social, economic and cultural well-being.

9.4.2 It is considered that this application is aligned with these objectives and policies with particular reference to the information contained in this AEE and the supporting reports.

9.4.3 Additional objectives of particular relevance are:

3.1 (supported by Policy 4.1) emphasises the need to manage resources in a way that recognises in particular the relationships between environmental, social, economic and cultural well-being. This directive on managing resources is particularly important in the context of this application.

3.2 (supported by Policy 4.4) recognises the role of sustainable resource use and development and its benefits in enabling the 4 well-beings (mentioned above); including access to resources to provide for regionally significant industries and primary production. Aquaculture is a regionally significant industry for the region, and spat catching is a sustainable activity in the marine environment.

3.8 (supported by policy 11.4) which requires the range of ecosystem services of associated resources to be recognised and maintained or enhanced – to enable their on-going contribution to regional well-being. This spat catching proposal will have minor or negligible effects on the wider ecosystem of Aotea harbour.

3.9 (supported by policy 10.2) the relationship of tangata whenua with the environment is recognised and provided for. This is supported in particular by Policy 4.3 which seeks that tangata whenua have opportunities to enhance their relationship with their rohe. This is of particular significance to this application, and the relationship Ngati Te Wehi have with this area is outlined above and in Appendix 2.

3.10 which covers the sustainable and efficient use of resources. This proposal meets this policy directive.

3.12 seeks an integrated approach to the built environment, enabling positive environmental, social, cultural and economic outcomes. This is supported in particular by Policy 6.2 which sets out criteria for planning for development in the coastal environment. It is contended that this proposal meets these policy directives.

3.20 (supported by Policy 12.1) requires that the values of outstanding natural features and landscapes are protected from inappropriate subdivision, use and development. This is discussed further in Appendix 2A, however it is noted that there is an emphasis on values.

3.21 (supported by Policy 12.3) requires amenity qualities and characteristics to be maintained or enhanced. It is contended that the proposed spat catching area would maintain amenity qualities and characteristics, due to the small size of the proposed area, the low-lying nature of the buoys and the limited access and viewing opportunities.

3.22 (supported by Policy 12.2) which requires that natural character is protected from adverse effects of inappropriate subdivision, use and development. This is discussed further in Appendix 2A and below. It is contended that the proposed spat catching area is an appropriate use in the proposed location within Aotea Harbour.

3.23 (supported by Policy 12.5) seeks that public access is maintained and enhanced. There would be no reduction in access as a result of the proposed spat catching area, as discussed above.

9.4.4 These objectives and related policies identify the importance of managing the environment while also meeting the 4 well-beings. The proposed spat catching area which is subject to this application is clearly of significance to the cultural, social, economic and environmental well-being that Ngati Te Wehi have with this area. Spat catching is a regionally significant industry, it is a sustainable and efficient use of the area, it has the support of Aotea iwi and the applicant has sought to address concerns about landscape and natural character through the proposed size and location.

9.4.5 It is considered that this application meets these objectives and policy directives. Particular reference is made to the information contained in this application and to the supporting reports.

9.5 Waikato Regional Coastal Plan (2005/7)

9.5.1 The RCP was made operative in 2005, with the exception of some matters relating to marine farming (subsequently made operative in part in 2007 and 2012). This plan specifically addresses aquaculture. The Issue and Objective in Chapter 6 of the plan support the further development of marine farming. Marine farming is recognised as an important industry within the Waikato region. There is an emphasis on sustainable management and efficient use of space, and avoiding adverse effects *as far as practicable*.

9.5.2 There is a range of policies to implement the objective, including:

6.1.1 which requires a precautionary approach to be taken by avoiding adverse effects as far as practicable, and otherwise remedying or mitigating the effects.

6.1.2 which requires a location that does not compromise safe recreation and navigation

6.1.3 which promotes integration between aquaculture-related marine and land activities

9.5.3 The proposed activity and location subject to this application meets these policy requirements.

9.5.4 Other Objectives and policies of particular relevance to this application include:

Objective 2.4 which recognises the relationship tangata whenua have with the coast, and is supported by policy 2.4.1 regarding a kaitiaki role. This is of particular significance for this application, as expressed by Ngati Te Wehi above and in Appendices 2 & 5.

Objective 3.1 preserving natural character by protecting it from inappropriate subdivision, use and development. The area subject to this application has not been identified as being regionally significant (in accordance with Policy 3.1.1), nor does it meet the criteria for "inappropriate" as set out in Policy 3.1.4 or 3.1.4A. Policy 3.1.2 requires that adverse effects are avoided or remedied on natural features, landscapes

and landforms that define natural character. NB: further discussion on natural character is found in Appendix 2A. However, it is contended that the proposed spat catching area would have minimal effects on the natural character features recently identified in the Boffa Miskell report (prepared as information to inform future policy development, but not yet discussed in a public forum, and not implemented through a statutory plan).

Objective 3.3 refers to maintaining amenity values, including in Policy 3.3.1 recreational opportunities and open space qualities.

Objective 4.1 (and related policies) address maintaining or enhancing water quality

Objective 9.1 (and related policies) emphasises maintaining or enhancing public access

9.5.5 It is considered that this application meets these objectives and policy directives. Particular reference is made to the information contained in this application and to the supporting reports.

9.5.6 Rule 16.5.1 classifies spat catching buoys and lines as a discretionary activity. This rule sets out a range of standards and terms. It is considered that this application and the way it would be implemented would meet all the relevant standards and terms in this rule.

9.5.7 It is considered that all the relevant information requirements set out in Appendix I and 1A of the plan have been covered in this AEE and the supporting reports.

9.5.8 In my opinion, this application is consistent with the objective and policies of the Regional Coastal Plan, and is an appropriate use in the proposed location.

9.6 Assessment against RMA Part 2 Matters

9.6.1 In accordance with section 104(1) of the RMA, this section considers RMA Part 2 matters, and assesses whether the proposed spat catching area would achieve the sustainable management purpose of the RMA as expressed in section 5.

9.6.2 Sections 6(a) and (b): The proposed application area is located off-shore from land owned by Ngati Te Wehi that is currently marae or predominately modified farm land. As noted above and in Appendices 2 & 3, the effects of the proposed spat catching area are considered to be minimal, due to having no adverse effects on the natural character matters identified in the Boffa Miskell report, along with the small size of the proposed spat catching area, the low nature of the structures in the water, and the lower number of buoys due to spat catching activities. In my opinion, any adverse effects (including cumulative effects) on natural character or landscape/ seascape would be less than minor. Marine farming is an activity which is considered through the planning documents to be an appropriate activity in the coastal marine area.

9.6.3 Section 6(d): addresses the maintenance and enhancement of public access to and along the CMA. In my opinion, the proposed spat catching area would have a less than minor effect on public access. The proposed area is only accessible by vessel and is not in any direct

navigation route or anchorage area. While the presence of the proposed spat catching area clearly impedes the total freedom of vessel access, the layout provides for accessways between the lines and around the block in the channel at low tide. The spat catching area would be marked with corner navigation aids, to assist with navigation safety. Refer also to the Harbourmaster's comments in Appendix 4. I consider that public access would not be affected by the additional presence of the proposed application area.

9.6.4 Sections 6(e), 7(a) and 8: These three provisions deal collectively with Maori cultural and spiritual values. Section 6(e) requires that the relationship of Maori with their culture and traditions, including ancestral lands and water, be recognised and provided for. Section 7(a): requires that particular regard is given to kaitiakitanga. With respect to Section 8, there is a requirement to take into account the principles of the Treaty of Waitangi. This application is being made by Ngati Te Wehi and they have expressed their kaitiaki relationship over the land and the adjacent water of the proposed spat catching area. The proposed area would recognise their relationship with Aotea harbour while also providing for their cultural, social and economic well-beings. In addition, they are currently part of Tainui Treaty negotiations relating to the west coast, and including the Aotea harbour.

9.6.5 Section 7(aa): requires particular regard to be given to the ethic of stewardship. From the information provided within this AEE, the adverse environmental effects have been identified as being less than minor. Ngati Te Wehi's expression of kaitiakitanga along with the Marine Farming Industry Code of Practice are ways that would be used to promote the ethic of stewardship and best practice operations.

9.6.6 Section 7(b): In my opinion the proposed application area would be an efficient use of the space as the proposed spat catching area is compact, but provides for access and tidal flow.

9.6.7 Section 7(c): The maintenance and enhancement of amenity values, relates in particular to the visual effects, and the effects on fishing and other recreational activities. Visibility of the spat catching area is affected by elevation and distance, however there are limited viewing opportunities of the proposed area. Recreational fishing activities are commonly associated with aquaculture structures, and this is a positive effect. I consider that the overall the effects on amenity values would be less than minor and that the current recreational opportunities would be maintained and the recreational fishing values enhanced.

9.6.8 Section 7(d): Mr S White has detailed the effects on the ecosystem in the attached scientific report in Appendix 3, and based on this, I consider that the intrinsic values of the marine ecosystems will not be adversely affected by the proposed application.

9.6.9 Section 7(f): In my opinion, consideration of the maintenance and enhancement of the quality of the environment has been addressed in the consideration of visual and recreation amenity values, as well as of the effects on the ecosystems, and that the effects are minimal and are acceptable.

9.6.10 Section 5 requires consideration of whether the proposed spat catching area would appropriately enable people and communities to provide for their wellbeing, health and safety, both now and in the future. Consideration must also be given to the environmental

matters in sections 5(2)(a) – (c). The information presented in this AEE has discussed the economic, cultural and social benefits of the proposed application areas. In my opinion, overall adverse effects are less than minor.

9.6.11 With respect to section 5(2)(a), I consider that the proposed application area would not have any effect on the CMA natural and physical resources or use of space, in any way that would impede the reasonably foreseeable needs of future generations, nor preclude access to or through the spat catching area by others. Rather I consider the proposed application would have significant social and economic benefits for Ngati Te Wehi. With respect to section 5(2)(b): Mr S White's evidence supports that the effects of the proposed application area are less than minor and I consider that the life-supporting capacity of the existing marine ecosystems will be safeguarded. With respect to section 5(2)(c), the AEE has considered the adverse effects and identified that the application area is located and designed to avoid or mitigate these effects, in particular there are no adverse effects on the characteristics and values identified in the Boffa Miskell report, the spat catching area is located away from from viewing opportunities, the nature of the proposed spat catching area is that it has a low profile, and boating access ways and safe navigation are provided for.

9.6.12 In my opinion, the application is consistent with the relevant provisions of Part 2 of the RMA and would meet the purpose of the Act.

9.7 High Court Decision

9.7.1 WRC drew attention to the High Court case Davidson Family Trust v Marlborough District Council [2017] NZHC52 [31 January 2017], as having implications for this application. Potential implications are therefore discussed below.

9.7.2 An appeal to the High Court was lodged following an Environment Court decision relating to a proposed farm application in Beatrix Bay, Marlborough Sounds. The Environment Court declined the application due to the potential detrimental effects on the endangered species, NZ King Shag, resulting from an additional marine farm. It is noted that there are no NZ King Shags in Aotea harbour. (Refer Appendix **). Based on the information provided in this AEE and supporting documentation (in particular the landscape, natural character and visual amenity report in Appendix 2A), it is contended that the cumulative environmental effects of the proposed spat catching area considered together with the existing spat catching area is negligible-low. There are no other marine activities in this area that would trigger cumulative effects.

9.7.2 One question raised was whether the Environment Court erred in failing to apply part 2 of the RMA, when considering the resource consent. In brief the High Court decision reinforces that the NZCPS "gives effect to" the matters in part 2, and by association the RPS gives effect to the NZCPS etc through the planning hierarchy. The NZCPS was released in 2010, the Waikato RPS is therefore to be considered as giving effect to the NZCPS and to Part 2 RMA. However the RCP predates the NZCPS and cannot be considered as "giving effect to" the NZCPS or RPS, even though it is an operative planning document. This presumably triggers

the High Court statement that: "*Where, however, as the Supreme Court held, there has been invalidity, incomplete coverage or uncertainty of meaning within planning documents, resort to Part 2 should then occur*". It is therefore suggested that as the RCP is "incomplete" in that it does not give effect to the NZCPS, reference to Part 2 of the RMA in any decision-making is appropriate.

9.7.3 A further matter raised was that the "overall judgement approach" in relation to the implementation of the NZCPS (in particular) was rejected by the Supreme Court [King Salmon], and that this approach was appropriately applied to a resource consent [Davidson]. It is only where there has been "invalidity, incomplete coverage or uncertainty of meaning within planning documents, resort to Part 2 should then occur". This also indicates that it is appropriate to consider Part 2 matters.

9.7.4 The RCP is "incomplete" as it does not identify areas of "outstanding natural character" as required by the NZCPS. The technical report prepared by Boffa Miskell that indicates Aotea harbour may be an outstanding area, has not been subjected to any public process, and in particular no involvement from iwi of the Aotea area. As such, it is non-statutory information of a broad-brush nature. The landscape, natural character and amenity report (Appendix2A) has also assessed that the proposed farm would have negligible-low effects on the matters identified in the Boffa Miskell report, and therefore that adverse effects had been avoided.

9.8 Notification

9.8.1 The applicant requests that the application be processed as a non-notified application.

9.8.2 It is considered that the Council has sufficient information regarding the effects of spat catching, and taking into account the extensive consultation that has been undertaken, it is contended that public involvement is not warranted from either a public interest or information perspective.

10. Conclusions

10.1 The key points of this application are:

- The applicant is a company set up under the auspices of Ngati Te Wehi.
- The application is made in respect of an area that is off-shore from marae and iwi-owned farmland.
- The application is for mussel spat catching for a period of 35 years.
- The activity is assessed as being a discretionary activity under the RCP.
- The application area is consistent with the relevant policy directives and meets the relevant criteria of the planning documents discussed above.
- The application has been assessed against the matters in Part 2 RMA and in my opinion is sustainable, appropriate in the location and any adverse effects are acceptable and less than minor.
- Based on the scientific information attached as Appendix 3 to this AEE, the environmental effects of undertaking spat catching at the site is considered to be less than minor, acceptable and appropriate.
- Based on the landscape and natural character information attached as Appendix 2A to this AEE, the environmental effects of undertaking aquaculture at the site are considered to be minor, acceptable and appropriate.
- The application represents efficient use of the CMA and will result in positive effects on the economic, cultural and social well-beings of the local communities, and in particular for Ngati Te Wehi.
- The scale of the proposed spat catching area is minimal compared to the overall area of Aotea Harbour.

List of Appendices

Appendix 1a: **Survey Plan**

Appendix 1b: **Location Plan**

Appendix 1c: **Proposed Layout Plans**

Appendix 2: **Assessment of Landscape and Natural Character (informal)**

Appendix 2A: **Assessment of Effects on Landscape and Natural Character and Visual Amenity**

Appendix 3: **Scientific Report**

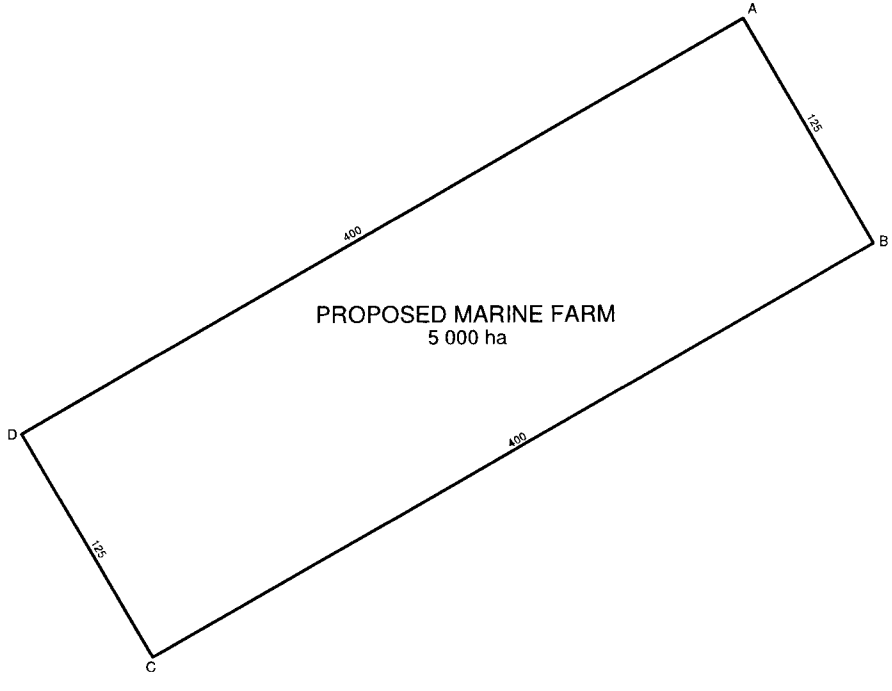
Appendix 4: **Harbourmaster's Comments**

Appendix 5: **Consultation Responses**

Appendix 6: **Video of Area & Script**

Appendix 1a: Survey plan

	NZ Transverse Mercator Northing	NZ Transverse Mercator Easting	World Geodetic System 1984 Latitude	World Geodetic System 1984 Longitude	World Geodetic System 1984 Latitude	World Geodetic System 1984 Longitude
A	5791926 7	1761631 6	38 00 21 38 S	174 50 27 72 E	38 00 3564 S	174 50 4620 E
B	5791817 1	1761691 7	38 00 24 90 S	174 50 30 27 E	38 00 4150 S	174 50 5046 E
C	5791624 8	1761341 0	38 00 31 36 S	174 50 16 06 E	38 00 5227 S	174 50 2676 E
D	5791734 4	1761280 9	38 00 27 84 S	174 50 13 50 E	38 00 4641 S	174 50 2251 E



SURVEY OF PROPOSED MARINE FARM

TE TAHUNA O AOTEA MOANA MARINE FARM - AOTEA HARBOUR

DATE	INITIAL	AMENDMENT
20 5 16	SG	MARINE FARM

DUNWOODIE & GREEN SURVEYORS LTD

LAND DEVELOPMENT SPECIALISTS

541 POLLEN ST THAMES

Ph (07) 868 7587 FAX (07) 868 8252

SCALE 1:2000 (A3)

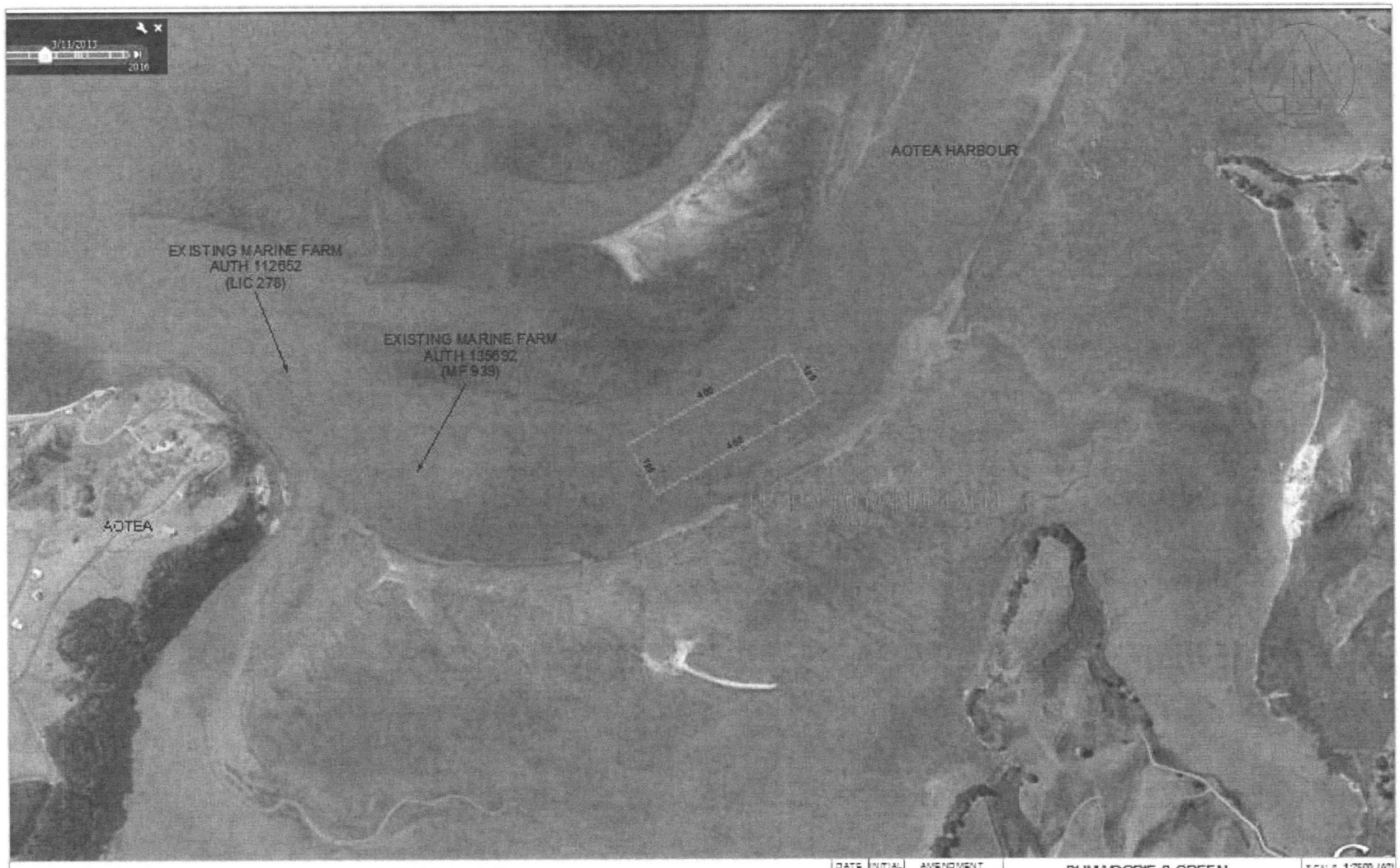
DATE MAY 2016

SHEET 2

FILE 6435

CCAD 6435 Marine Farm

Appendix 1b: Location Plan



OVERVIEW OF
PROPOSED MARINE FARM
TE TAHUNA O AOTEA MOANA MARINE FARM - AOTEA HARBOUR

DATE	INITIAL	AMENDMENT
20.5.16	SG	MARINE FARM

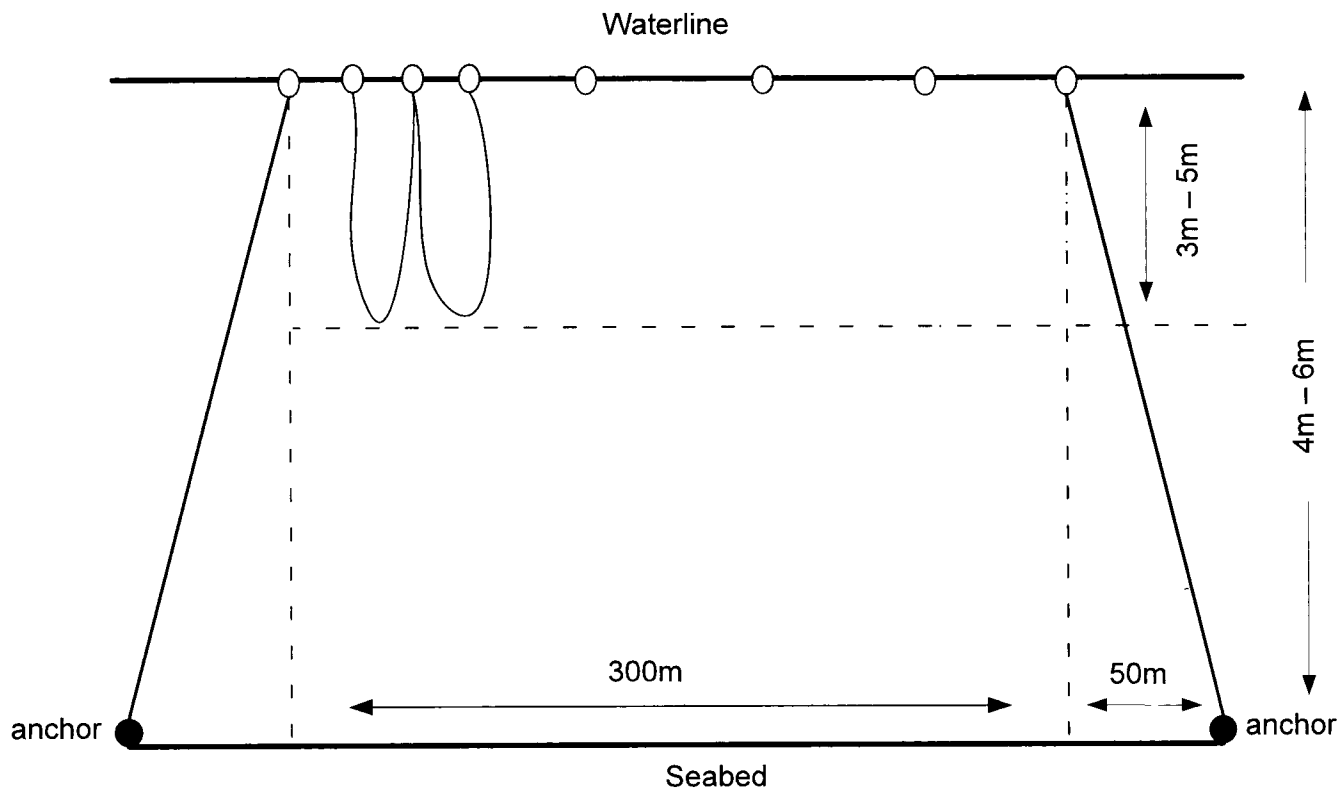
DUNMOODIE & GREEN
SURVEYORS LTD
LAND DEVELOPMENT SPECIALISTS
641 POLLEN ST THAMES
Ph (07) 868 7557 FAX (07) 868 6252

SCALE 1:7500 (A3)
DATE MAY 2016
SHEET 1
FILE: 6435
O:\6435 Aotea Marine Farm

Appendix 1c: Proposed Layout Plans

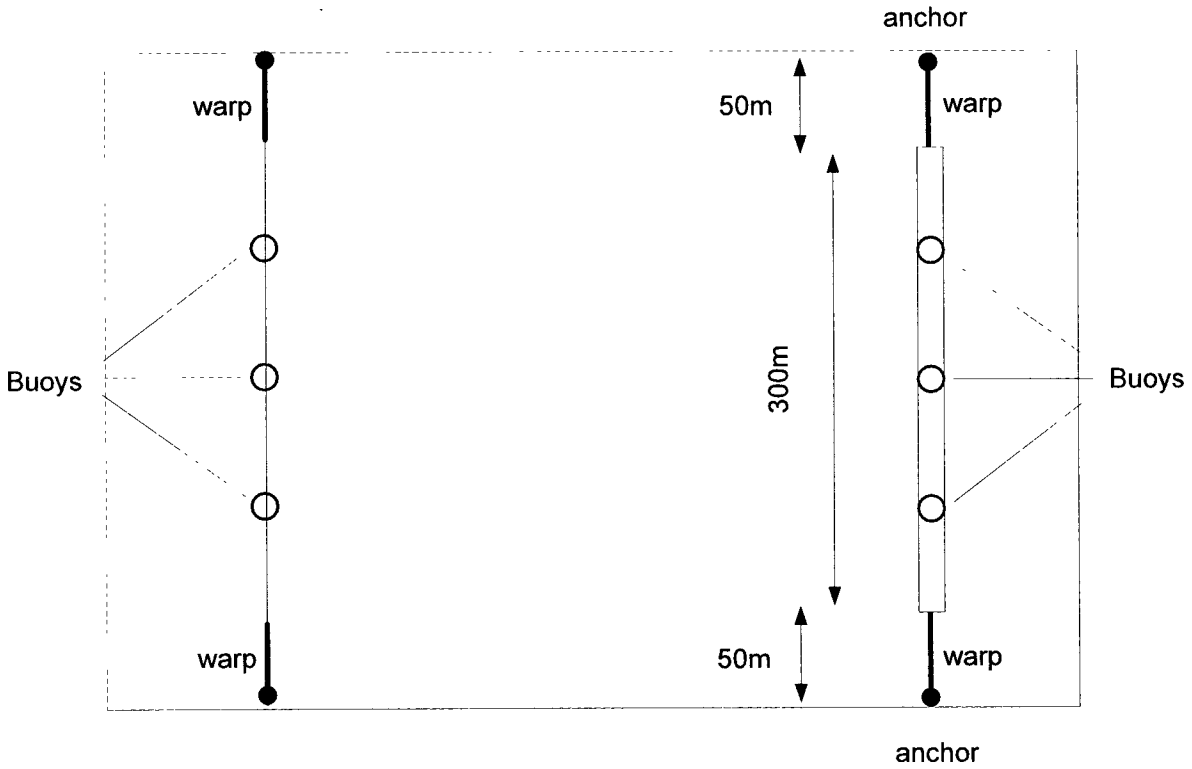
Te Tahuna O Aotea Moana Marine Farm Ltd.
Spat Catching Structures

Diagram 2.
Side View
(not to scale)



Te Tahuna O Aotea Moana Marine Farm Ltd.
Spat Catching Structures

Diagram 1.
Top View
(not to scale)



- Either single or double backbones would be used
- Approx. 20m between each line
- Average 2.2 – 3 lines per ha.

Appendix 2: Assessment of Landscape and Natural Character

Te Tahuna O Aotea Moana Marine Farm Ltd

Landscape and Natural Character Overview

of proposed farm site in

Aotea Harbour

Prepared by

Robin Britton & Terewai Awhitu

January 2017

1. INTRODUCTION

1.1 This report has been prepared by Robin Britton (planner) and Terewai Awhitu (applicant). Neither person has a professional landscape background. The reason for undertaking a low-key approach to this report is to reflect the size of the area being applied for, the low-lying nature of the structures, the information gathered and provided by the applicant and the presence of an existing farm in the area. This report is accompanied by an aerial video of the existing farm and the proposed site in the vicinity (Appendix 6 to the AEE).

1.2 The report covers:

- History and Background
- An overview description of the wider area and the area of the proposed farm site
- A description of the proposed activity
- Commentary on the Boffa Miskell Natural Character report
- Planning commentary on the relevant statutory provisions
- Overall conclusions from a planning perspective.

2. HISTORY AND BACKGROUND

2.1 Ngati Te Wehi is the principal iwi within Aotea harbour. The people have endured and lived here for 100's and 100's of years, and have a close affinity to the area's land and harbour.

2.2 We are honoured and privileged that reports suggest that the natural character of our harbour has a pristine acknowledgement but as long term residents we have noted that over time the natural character of our harbour has changed and is changing progressively.

2.3 Due to extensive farming and agricultural practices, deforestation, the clearing of land and natural environmental impacts we as a people have seen dramatic changes to our harbour over the years

2.4 We the people have taken on board the age old concepts of kaitiakitanga.

2.5 Kaitiakitanga allows Māori and non-Māori to reflect on their relationship with the natural character of a specific area, and enables and encourages all people to be consciously aware of the surrounding environment and to care for it in a way that upholds the practices of our predecessors.

2.6 'He Kaitiaki katoa tātou" *we are all guardians of our lands, moana and our environments*

2.7 We do not suggest or belittle the ideology that Aotea harbour has a pristine classification, but wish to acknowledge that our application for a mussel spat farm would not indirectly or directly impact on the pristine classification or natural character of Aotea Harbour.

3. DESCRIPTION OF AREA

3.1 This report is based on on-site visual assessments and is supported by photography supplied in association with this application. It does not seek to repeat work undertaken in the Boffa Miskell report. Reference is made to the findings of the Boffa Miskell report later in this document.

3.2 Wider Context

The Aotea harbour is located on the west coast of the Waikato region. It is a shallow harbour with extensive intertidal areas and a low energy harbour coastline, with areas of mangroves, salt marsh and spartina in varying locations around the harbour. The surrounding land is a combination of native bush and farmed vegetation, with a small settlement of about 100 properties, predominantly holiday homes, with approximately 40 full-time permanent residences. During the summer period the population of the village expands 10-fold to around 400 people

The village is located on the southern shores of the harbour, near the harbour entrance.

There is limited road access, with one road into the settlement.

3.3 Site Specific Context

The proposed marine farm of 5 ha is to be located in a channel lying approximately east - west, to the east of the existing boat access and to the east of the existing farm.

The channel is estimated as being approximately 375 metres wide at low tide, leaving approximately 125 metres of free water space on either side of the proposed farm.

The proposed site could be accessed and by-passed by vessels at low tide, however very few vessels venture up this channel at low tide.

The immediate landward backdrop to the proposed site is farmed and marae land, which rises from sea level to some low level backdrop hills. There are some small pockets of regenerating vegetation. The proposed site would not be visible from any other residences in this part of the hinterland. There are no public roads providing for viewing positions in this area.

4. PROPOSED ACTIVITY

4.1 The proposed farm of 5 ha, is to be used for spat catching. It is a low level structure consisting of buoys and longlines. The number of surface buoys would depend on when the spat catching rope is hung. Spat catching rope is retrieved if no spat is caught in order to avoid undue bio-fouling. A maximum of 3 lines per ha would be potentially used, making the maximum number of lines 15 in total.

4.2 The proposed site is not visible to land-based residences (other than the marae), the channel is not commonly used, the proposed site is a very small proportion of the whole harbour area. It is considered that the low lying nature of the farm structure would be absorbed within the wider landscape without impacting on the current identified values of the area.

4.3 A small level of cumulative effects would arise from the nearby proximity to the existing farm blocks. The existing blocks have been in place for a considerable period of time. While the addition of another farm is proposed, the low lying nature of the structure and the small size of the farm would in our opinion, have minimal additional effects over and above the current farm blocks.

4.4 While the proposed farm is a change in the landscape, the authors' opinion is that it would not detract from the landscape values of the wider or immediate areas.

5. NATURAL CHARACTER COMMENTARY

5.1 Waikato Regional Council commissioned Boffa Miskell to prepare a report on natural character[1] (referred to as "the report"). This report identified the whole of the Aotea harbour as being of outstanding natural character (ONC), except for a small area discussed below.

5.2 The report identifies the following matters when describing the ONC of the Aotea harbour:

- Coastal Marine Area:
    - a general assessment is first made of the combined area of the CMA associated with Raglan, Aotea and Kawhia Harbours. In particular, it is noted that Aotea Harbour is 31.9km^2, of which 74% is intertidal (p 195). Specific characteristics at this level of assessment (level 3 include: coastal dune features and modification being mostly along the southern coast (with particular reference made to reclamation and erosion control measures). (p 200)
- Coastal terrestrial (Coastal Significance Zone + coastal context:

[1] Boffa Miskell Limited, 2016. Natural Character Study of the Waikato Region.

- a general assessment is made of the land surrounding the combined areas of Aotea and Kawhia Harbours. From an abiotic perspective: Aotea is noted for its dune fields (nationally important geopreservation site), (p243, 244). From a biotic perspective, of note are the seven identified areas of regenerating forest/ indigenous scrubland, identified as key ecological sites (p 245, 249). From an experiential perspective, human modification is noted around the southern shores and settlement of Aotea, and the low level of naturalness attributed to areas of pasture. No specific characteristics were identified for the southern coastal area of Aotea harbour. (p 247, 248, 249).

5.3 The proposed farm site is in the southern harbour area – which is noted above for its "low level of naturalness", and where the hinterland is farmed.

5.4 Section E of the report then further assesses areas of outstanding natural character. Aotea harbour was identified as being outstanding in its entirety except for a small area surrounding the settlement and which may also exclude the existing marine farm. (uncertain from scale) (p 307). The natural character values of this level 4 assessment is further detailed on p308 and includes:

- Abiotic values: dune systems, largely unmodified intertidal zone, except for the settlement, natural estuarine and wetland features, inner harbour islands.
- Biotic values: regenerating forest and indigenous scrubland, sand dunes, dune scrubland, native bush cover on harbour margins
- Experiential values: high perceived naturalness due to limited modification, high experiential values associated with abiotic and biotic processes, especially dune processes, lack of access and remoteness (mid to northern areas); lack of human modification.

5.5 The following comments are made about the proposed site, with reference to the natural character values identified above:

- From the abiotic values identified: The proposed farm is located in a channel which retains water at all levels of the tide. It does not impact on any values associated with the dune system (located to the north of the harbour) or on harbour islands or wetland features. The proposed site is located at a significant distance from the dune formations.
- From the Biotic values identified: the proposed farm site has a hinterland of farmed land, with very small pockets of regenerating scrubland. It is primarily a modified landscape.
- From the experiential values identified: The southern areas of the Aotea harbor have been developed, both by the settlement of Aotea as well as by land and marine farming. There is an existing marine farm in the vicinity. Access is limited by nature of the land being held by tangata whenua, and by association does have a remoteness associated with the area. It is noted that no tangata whenua or public input was included in the Boffa Miskell assessment. (p22).

5.6 The assessment in the report is undertaken with the presence of two existing farm blocks in the vicinity of the proposed application site, however it is unclear from the scale of the maps whether the existing farm is included/ excluded from the area classified as outstanding.

It is the authors' opinion that the natural character values summarised above, would not be affected by the addition of a further farm in the similar vicinity of the existing farm. Given the low lying nature of mussel farm structures and the small area of the proposed farm, it is considered that the proposed farm would have an insignificant footprint in the context of the overall assessment of the harbour values and overall size of the harbour.

5.7 This opinion was discussed with Rebecca Ryder of Boffa Miskell and her response is attached as an Annex to this report. The response received outlined that:

- WRC would provide the policy direction, and NZCPS provides direction through Policies 13 & 14, while the King Salmon case law provides guidance on "avoidance".
- An assessment should be made on a case basis against the identified values and characteristics. ONC is a land/sea management tool – the values that underpin these areas are critical in understanding the effects of new development.
- Notes that the proposed farm is likely to have some adverse effects and notes that the existing farm is excluded from the ONC.

5.8 Discussion of Boffa Miskell response:

- It is acknowledged that there is no policy guidance at present, arising from the Boffa Miskell report. It is also acknowledged that the NZCPS has not as yet been embedded into the Waikato RCP. Therefore there is at present, a mismatch between the operative national and operative regional policy. It is also noted that because the results of the Boffa Miskell report have not as yet been applied at a policy level, the Boffa Miskell report is of an information nature and not a statutory nature.
- In addition it is noted that there is a wide range of interpretations that have been made as a result of the King Salmon case law. The planning provisions are discussed in more detail below.
- The authors of this report have assessed the site in respect to the ONC values and characteristics identified in the Boffa Miskell report, and are of the opinion that the proposed site does not adversely affect the characteristics and values identified as the basis for ONC definition. In particular, the modified hinterland and the presence of existing farms in the area of the proposed site are reiterated, along with the small scale of the proposed farm.
- The authors consider that the proposed site would not have any adverse effects on the characteristics and values that are identified as defining the areas as ONC.

6. PLANNING PROVISIONS

6.1 New Zealand Coastal Policy Statement 2010 (NZCPS)

The NZCPS 2006 policy 13 addresses the "preservation of natural character". It directs that natural character is to be protected from inappropriate subdivision, use and development, including by avoiding adverse effects of activities on outstanding natural character areas.

While this policy directive is not reflected in the current operative RCP, it is nevertheless required to be considered in the consent process.

The area identified as being outstanding in the Boffa Miskell report is primarily the whole harbor (31.9km$^{2)}$, of which the proposed farm site is an area of 5 ha. Due to the differences in scale, and the discussion in sections 4 & 5 above, it is contended that the proposed farm site would not have any adverse effects on natural character values identified for Aotea harbour.

Policy 14 promotes restoration of natural character and lists a range of options for undertaking this. It is contended that this policy is not applicable to this application.

6.2 Regional Policy Statement (RPS)

The RPS in Objective 3.20 directs that the "values" of outstanding natural features and landscapes are to be identified and protected from "inappropriate subdivision, use and development". Objective 3.22 directs that the natural character of the coastal environment is to be protected from the adverse effects of "inappropriate subdivision, use and development".

Policy 7.1.1 requires that the RCP shall "establish criteria to determine the appropriateness of different activities within the coastal marine area and where necessary identify areas that are appropriate for different purposes or activities including areas to be protected from development....". This policy has not as yet been implemented as the review of the RCP is only just underway.

However, it is noted that particular regard is to be given to opportunities for the development of aquaculture, and on avoiding adverse effects on natural character values. In light of the discussion in sections 4 & 5 above, and bearing in mind that there is no current prohibition based on natural character values, it is contended that this policy directive has been met. It is also noted that the Aquaculture strategy referred to in 7.1.4 has not as yet been developed.

Policy 12.2 requires that adverse effects are avoided on outstanding natural character, and ensuring that activities are appropriate with respect to the level of natural character. The discussion in sections 4 & 5 above supports that contention the values associated with outstanding natural character for Aotea harbour would not be adversely affected by the type and scale of development being proposed.

It is further contended that the proposed farm of 5ha is an appropriate use in the CMA, in its proposed site.

6.3 Regional Coastal Plan 2004 (RCP)

The RCP addresses natural character under Objective 3.1 and policy 3.1.2. The emphasis is on ensuring any use and development avoids or remedies adverse effects on those elements that define natural character. Drawing on the discussion in sections 4 & 5 above, it is considered that this policy directive is achieved. Policy 3.1.1 requires that use or development avoids adverse effects on remote and isolated characteristics. It is contended that the proposed site, in the near vicinity of an existing farm and with a hinterland of farmland, does not adversely affect the remote or isolated characteristics that would be associated with other areas of the harbour, particularly those areas that are at further distance from the southern more developed shores.

In accordance with Policy 3.1.4, the proposed farm does have a functional need to locate in the CMA.

6.4 Otorohanga District Plan 2014 (ODP)

In Objective 2.2.1 the ODC plan seeks to preserve natural character values of the coastal environment from inappropriate subdivision, land use and development. The terrestrial natural character values have been identified in the Boffa Miskell report, and have been discussed in sections 4 & 5 above.

It is considered that the terrestrial values would not be adversely affected by the proposed marine farm.

There are no areas of outstanding landscape or natural character shown on the planning maps for the land near the proposed marine farming site.

7. CONCLUSIONS

It is acknowledged that the Boffa Miskell report is a non-statutory report prepared to inform the development of appropriate policy guidance in the review of the operative RCP. It is also noted that it is a non-statutory document that has not as yet been tested through iwi and public consultation.

Notwithstanding the above comments, based on an assessment of the values identified in the Boffa Miskell report and the provisions in the relevant planning documents, it is considered that:

- the values identified for outstanding natural character in the Aotea harbour coastal environment would not be adversely affected by the proposed marine farm

- the scale of the proposed farm is minimal compared to the overall natural character assessment made for the harbour

- the outstanding classification does not mean a prohibition on marine farming, as the policy references are to "inappropriate use and development" as well as to avoiding adverse effects on the natural character values ("appropriateness" is discussed elsewhere in the AEE)

- there is an existing farm in the vicinity of the proposed farm site, and the southern shores and hinterland of the harbour are modified by settlements and farming.

Overall it is considered the proposed marine farm does not adversely change, nor adversely affect the outstanding natural character values of the Aotea harbour coastal environment. In particular it is noted that:

- Ngati Te Wehi is the principal iwi within Aotea harbour and the people have a close affinity to the area's land and harbour.

- Kaitiakitanga allows Māori and non-Māori to reflect on their relationship with the natural character of a specific area, and enables and encourages all people to be consciously aware of the surrounding environment and to care for it in a way that upholds practices of our predecessors.

- 'He Kaitiaki katoa tātou" *we are all guardians of our lands, moana and our environments*.

- Ngati Te Wehi wish to acknowledge that their application for a mussel spat farm would not indirectly or directly impact on the pristine classification or natural character of Aotea Harbour.

- The proposed farm is not significantly visible, due to the highly limited viewing opportunities from land.

- The farm is a low-lying structure in the water, covering a small footprint.

- the hinterland is Maori-owned land currently farmed.

It is also noted that this assessment must be read in conjunction with other planning matters raised in the AEE.

Annex to Landscape Report: Boffa Miskell Correspondence

From: Rebecca Ryder <Rebecca.Ryder@boffamiskell.co.nz>
Subject: Outstanding Natural Character - Without Prejudice
Date: 23 December 2016 at 10:28:11 AM NZDT
To: Robin Britton <rbritton@wave.co.nz>
Cc: Graeme Silver <Graeme.Silver@waikatoregion.govt.nz>

Hi Robin

As discussed I have finally sorted replying to your email of the last day of the year! Following on from our discussion at the NZPI and Coastal Societies evening I have responded to your questions below.

- *how do you envisage (from your perspective) that the classification of this whole harbour as outstanding will be implemented through policy guidance for structures such as marine farms?*

WRC will provide the policy direction and Policy 13 and 14 of the NZCPS provide direction I am aware that MPI have a paper prepared by BML and others that discusses marine farming and natural character I am unsure if this is available at this point but is on their radar as a matter that requires a specific assessment approach

- *e.g., are all marine farming activities envisaged to be prohibited or is the focus on managing adverse effects on the attributes identified for Aotea harbour?*

As a new marine farm the correct route would be to undertake an assessment and assess the merits of each application against the identified values and characteristics. Cumulative effects would be important too. Outstanding Natural Character (ONC) is effectively a land/ sea management tool and it is the values that underpin these areas that are critical in understanding the true effects of new or ongoing development. The King Salmon Case Law has given guidance on the *avoidance* of adverse effects on outstanding natural character areas Therefore understanding these is critical to the evaluation of the effect. Attached is a think piece post King Salmon from BML that may assist

- *if the latter, do you consider that the proposed farm (at 5 ha, low lying structures, southern edge of harbour) likely to result in any adverse effects on the attributes identified?*

In its current arrangement yes it is likely to have some adverse effects You will see that the existing marine farm is excluded from the ONC area

I trust this answers your questions at this point. I am back at work on the 16th of January 2017 If you have any questions prior to this please either talk with Graeme Silver or possibly James Bentley of our Christchurch office who has had involvement in the Waikato NC study and is also an expert in marine farm effects assessment, as an expert for Marlborough District Council's many marine farm applications.

Kind Regards
Rebecca

Boffa Miskell

Rebecca Ryder | Senior Principal | Landscape Architect

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PO BOX 13 373 | LEVEL 2, 116 ON CAMERON | CNR CAMERON ROAD & WHARF STREET | TAURANGA 3141 | NEW ZEALAND
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From: **Robin Britton [mailto:rbritton@wave.co.nz]**
Sent: **Friday, 18 November 2016 12:44 PM**
To: **Rebecca Ryder <Rebecca.Ryder@boffamiskell.co.nz>**
Cc **Robin Britton <rbritton@wave.co.nz>; Terewai Awhitu <terewai.mama@gmail.com>**
Subject: **Assistance with interpretation please**

Dear Rebecca

I am helping an iwi group apply for a marine farm in Aotea Harbour The description of the proposal & map is shown in the attachment below (used for initial consultation purposes - it is located to the east of the existing farm) Graeme Silver passed me your name as contact within Boffa Miskell. so I hope you don't mind me sending this email

In a meeting with WRC consents staff, they indicated I needed to contact you in respect to the Natural Character Study Boffa Miskell has done for WRC (as part of the information that would go towards the RCP review).

In the report Aotea Harbour has been identified. almost in its entirety. as an area of outstanding natural character (map 44. pp307-8)

WRC is concerned about implementing policy 13(1)(a) NZCPS in the context of this report given that it is now in the public domain (albeit acknowledging that it is non-statutory at this point in time). They have asked that I check in with you re: this proposed marine farm and that I include a response from you in the application (which is still being worked on).

So I would appreciate your advice/ views on the following please

- how do you envisage (from your perspective) that the classification of this whole harbour as outstanding will be implemented through policy guidance for structures such as marine farms?
- e.g., are all marine farming activities envisaged to be prohibited or is the focus on managing adverse effects on the attributes identified for Aotea harbour?
- if the latter, do you consider that the proposed farm (at 5 ha. low lying structures, southern edge of harbour) likely to result in any adverse effects on the attributes identified?

If you would like to discuss this further can you please ring me on 027 281 2969, or send me a contact ph number for you and suggest a suitable time to ring.

Many thanks for your help

cheers
Robin

Robin Britton
Resource Management/ Planning Consultant
027 281 2969
PO Box 7016 Hamilton
rbritton@wave.co.nz

Appendix 3: Scientific Report

White S 2016. Ecological Effects Resulting from a Proposed Mussel Spat Catching Facility: Ohinau Marine Farms. Prepared by Pacific Coastal Ecology.

(Provided as separate document)

Appendix 4 Harbourmaster's Comments

From: Chris Bredenbeck <Chris.Bredenbeck@waikatoregion.govt.nz>
Subject: RE: Aotea
Date: 30 November 2016 at 9:18:00 AM NZDT
To: "Robin Britton (Agendas)" <rbritton@wave.co.nz>

Hello Robin,

My apologies for the delay in responding.

Aotea Harbour is mainly utilised by small power driven vessels with increasing boating population over the summer months. There are commercial flat fish boats operating, so I do expect there to be fairly frequent vessels operating in the channel where the farm is planned but not heavy traffic.

I believe the smaller vessels I am describing should be able to navigate through the farm relatively unencumbered. I would expect the farm would have some lighting to highlight the risk for low light and night navigation, and possibly some temporary signage at the boat launching area to highlight the new farms after they have been installed.

Happy to discuss further if necessary.

Kind Regards

Chris Bredenbeck | Senior Harbourmaster | Maritime Services | **Waikato Regional Council**
0800 800 401 | DDI 07 859 2724 MOB 027 677 2107 | Private Bag 3038, Waikato Mail Centre, Hamilton 3240

Appendix 5: Consultation Responses

This Appendix includes a summary table plus the signed consultation forms. These are not presented in any order.

Summary Table of Consultation Undertaken

Name	Organisation	Approval Given(AG)/ Approval not given(ANG)/ Not affected (NA)	Iwi Affiliation
Suzanne Mariassouce (Secretary)	Trustees Okapu F2	AG	Ngati Te Wehi
Ross Dockery	Aotea Marine Farms	AG/ Supported	Aotea Marine Farm Owner
Raymond Turner	Local Resident	NA	Ngati Maniapoto
Annette Gane (neighbouring property)	Local Resident	AG	Neighbour
Dianna Awhitu	Okapu Marae	AG	Ngati Te Wehi
Loretta Mahara	Te Tahuna O Aotea Marine Farm Ltd	AG	Ngati Te Wehi
Karmen Awhitu	Okapu Marae	AG	Ngati Te Wehi
Marisa Mahara	Te Tahuna O Aotea Marine Farm Ltd	AG	Ngati Te Wehi
Peter McLean	Local Resident	AG	Local Resident
Peggy R Nelson	Te Tahuna O Aotea Marine Farm Ltd	AG	Ngati Te Wehi
Carol Awhitu	Okapu Marae	AG	Ngati Te Wehi
Delphia Awhitu	Okapu Marae	AG	Ngati Te Wehi
Hakaraia Hemara	Taumaranui	AG	Ngati Maniapoto
Raymond Neil Crake	Local Resident	AG	Local Resident
Karoha Moke	Te Tahuna O Aotea Marine Farm Ltd	AG	Ngati Te Wehi
Robin Nelson	Otawhiwhi Marae	AG	Hauraki Whanui
Ian Shadrock	Okapu Marae/ Makomako Marae	AG	Ngati Te Wehi
Ben Mihiad Mahara	Okapu Marae	AG	Ngati Te Wehi
Arthur Apiti	Ngati Te Wehi	AG	Ngati Te Wehi

Name	Organisation	Approval Given(AG)/ Approval not given(ANG)/ Not affected (NA)	Iwi Affiliation
Tilena Mahara	Ngati Te Wehi	AG	Ngati Te Wehi
John Mahara, Kaumatua	Okapu Marae	AG	Ngati Te Wehi
Pioi Temara	Okapu Marae	AG	Ngai Tuhoe
Doug Mahara	Okapu Marae	AG	Ngati Te Wehi
Tatautau June Mahara	Ngati Te Wehi	AG	Ngati Te Wehi
Claude T Apiti, Kaumatua	Okapu Marae	AG	Ngati Te Wehi
Patrick Bennett		AG	Waikato
Billy Taylor	Okapu Marae	AG	Ngati Te Wehi
Stan Mahara	Okapu Marae	AG	Ngati Te Wehi
Nancy Te Nani Awhitu, Kaumatua	Okapu Marae	AG	Ngati Te Wehi
Liz Mahara	Ngati Te Wehi	AG	Ngati Te Wehi
Teira Awhitu	Ngati Te Wehi	AG	Ngati Te Wehi
Brandon Awhitu	Okapu Marae	AG	Ngati Te Wehi
Te Rauri Mahara	Ngati Te Wehi	AG	Ngati Te Wehi
Mrs Wini Scott	Tepapatapu Marae	AG	Ngati Te Wehi/Ngati Mahanga
Te Tahi o Hurae Rangiawha	Chairman Motakotako	AG	Ngati Te Wehi/Ngati Mahanga
Miki Rion Apiti	Chairman Okapu Marae	AG	Ngati Te Wehi
Pita Te Ngaru	Ngati Patu Pio	AG	Ngati Patu Pio
G L Witters	Local Resident	AG	Local Resident
D & S Forsythe	Local Resident	AG	Local Resident

Pacific Coastal
ECOLOGY

Ecological Effects Resulting From a Proposed Mussel Spat Catching Facility

Te Tahuna o Aotea Moana Marine Farms

January 2017

Prepared by S. White, Pacific Coastal Ecology

www.pacificecology.co.nz

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EXECUTIVE SUMMARY

The proposal seeks to establish an additional, small mussel spat catching facility in Aotea Harbour. Spat catching is a seasonal activity and spat catching ropes would be deployed at times of predicted spat fall. Spat would be allowed to develop at the site until they reached about 35 mm shell size. A successful spat catching facility in this location would provide a diversified source of spat for the mussel cultivation industry and reduce the reliance upon spat sourced from Ninety Mile Beach in Northland.

The site of the proposed spat catching facility is well away from complex reef structures and rocky shore biological communities and is sited in water depths of 4 to 6 metres over a seabed of sand and broken shell gravel with strong tidal currents. No significant structures or shellfish beds were found within the area proposed for the spat catching facility, and benthic biological communities in the area were low in diversity and abundance but dominated by polychaete worms and amphipods. Sediment quality in the area was clean with low nutrient concentrations. Given the history of the area and the surrounding land use, it is expected that there has been minimal influence of anthropogenic contamination in the area. The Harbour waters, despite high ambient turbidity, are regarded as having reasonably good ambient water quality.

The ecological effects of mussel cultivation operations are well understood and the establishment of a mussel farming structure at the site proposed would be unlikely to result in any significant adverse effect. The effects of the proposed spat catching activity, however, are expected to be significantly less than that expected from a mussel cultivation operation and as such it is expected that any ecological effects resulting from the proposal would be less than minor.

It is suggested that a conventional environmental monitoring programme would be unlikely to provide any information that could be useful in resource management of Aotea Harbour.

A biosecurity management plan would need to be established for the proposed facility, and staff would need to be trained in order to conduct regular biosecurity risk assessments and evaluations, although biosecurity risks are expected to be extemely low due to the use of new buoys, anchors and lines.

The ecological effects as a result of the proposed activity in the area suggested are expected to be less than minor and a spat catching facility as proposed is considered to be ecologically sustainable in the long term with minimal adverse ecological effects.

1 INTRODUCTION

Te Tahuna o Aotea Moana Marine Farms ('the applicant') has made an application for resource consent for a mussel spat catching facility within Aotea Harbour. This report presents the results of an investigation into the ecological implications of this application and an analysis of the effects that are likely to result from the proposal should resource consents be granted.

1.1 Spat Catching

"Spat" is the term applied to larval and juvenile forms of, in this case, New Zealand greenshell mussel™ (*Perna canaliculus*). *P. canaliculus* is a native New Zealand species that occurs around the coastline of mainland New Zealand. *P. canaliculus* mostly occurs below the intertidal zone but can occasionally be found intertidally. *P. canaliculus* is a filter feeding, bivalve mollusc that feeds on planktonic organisms by filtering them from the seawater it pumps through its respiratory and feeding systems. *P. canaliculus* reproduces by broadcast spawning sperm and eggs into the water column where the eggs are fertilised and develop into microscopic, free-swimming, planktonic larvae that drift through the coastal currents until they find a suitable substratum to attach to, transform into a sessile phase and develop into mussels.

The New Zealand mussel aquaculture industry relies on a source of larvae, or spat, to provide the stock that is then on-grown, or cultivated, to a commercially harvestable size. To date the majority of spat (around 270 tonnes or 80% of the spat required for the mussel aquaculture industry) has come from beach-cast seaweed collected from Ninety Mile Beach in Northland. The entire industry is heavily dependent upon natural spatfall events and variation in timing and quantity of these natural spatfall events represents a significant commercial risk for the industry. The only alternative methodology for spat collection is the suspension of "hairy" ropes in the water column at strategic times and in strategic locations to allow mussel larvae to settle on to the ropes.

Mussels reproduce at different times of the year and to varying degrees however, the main spawning period is usually at the beginning of, or during,

winter after which the mussels "hibernate" or experience a period of reduced activity and productivity due to the colder water temperatures. Accurate prediction of when spawning activity is likely to occur is impossible, but is usually triggered by changes in weather and cooling coastal water temperatures. The quantities of spat in an area will depend to a large extent upon the mature adult populations of mussels in the locality. The applicants are confident through local knowledge and from the experience of the existing mussel spat catching facility that there are sufficient populations of adult mussels in the area to support a additional spat catching facility of the size proposed.

Spat catching ropes are suspended in the water column at times when it is predicted that a spawning event may occur. If, however, the ropes do not catch spat as anticipated, they would be removed from the water and re-set prior to the next predicted spawning event. By only setting ropes when mussel spawn are likely to be caught, the incidental fouling on the spat catching ropes is kept to a minimum. Excessive fouling of the spat catching ropes makes it impossible to slip the spat for reseeding without damage. While the buoys and backbones and their anchoring systems would be permanently established, the spat catching dropper lines would only be deployed as needed.

There is an established demand for mussel spat from Aotea Harbour, particularly for the mussel farmers of the Coromandel area. Spat from Aotea Harbour can be transported to Coromandel farms, stripped and re-seeded within relatively short timeframes and has a proven track record of low mortality. This lower mortality rate may be due to the minimal handling and short timeframes between harvest and re-seeding. Advantages of establishing an additional spat catching facility in Aotea Harbour include the risk reduction through a diversified source of spat for the industry as well as considerably shorter handling and transportation timeframes for local mussel farmers. In the past few seasons there has been particularly high mortality of spat sourced from Northland with an almost total failure of Northland spat in some instances. The establishment of an alternative spat supply helps to reduce the reliance on a single source of spat and consequently reduces the risks to the viability of the whole mussel aquaculture industry. It has been shown that spat caught from Aotea Harbour are not only more resilient than wild caught spat from beach cast seaweed but managed spat catching provides more commercial certainty for the local industry.

One of the less recognised risks to the mussel aquaculture industry is the consequence of restricted genetic diversity. The propensity of *P. canaliculus* to genetic issues can be mitigated by high connectivity among mussel populations and by sourcing progeny from wild populations in multiple areas. Aotea as a source of spat supports this diversity in genetic stock.

There is a need to distinguish between catching mussel spat and growing mussels, as the environmental effects, the nature of the "product" and the ropes used in these two phases of mussel aquaculture, differ significantly. The Gazette No. 10699 Fisheries (Declaration of Species as Spat Notice (No.2)) 1993 defines greenshell mussel spat as being of less than 40mm shell width. This accounts for both the microscopic larval forms of the mussel spat and the metamorphosed forms of the juvenile mussels up to a size whereby they can effectively be handled with a reasonable chance of survival.

Once the spat have developed to a size of 35-40mm shell width, they can be slipped from the spat catching ropes and seeded onto growing ropes. At a size of less than 35mm shell width the mussel spat are not hardy enough to survive the slipping and handling processes required for re-seeding. The mussel spat can take from 6 to 9 months to develop to the 35mm size depending upon the time of year and conditions including phytoplankton productivity, water quality and ambient water temperatures.

While the buoys and backbone structures used for spat catching are similar to those used for growing mussels to a commercially harvestable size, the dropper ropes used for spat catching are different. The spat catching dropper ropes are particularly "hairy" to provide a greater surface area for mussel larvae to settle on to. The mussel spat must be moved from the spat catching lines and re-seeded at the proper densities onto different ropes used for on-growing mussels. This proposal does not include on-growing mussels and the spat-catching dropper lines would be removed from the water once the juvenile mussels have grown to a suitable size.

Slipping the juveniles and reseeding them elsewhere at the required densities once they have reached 35mm shell width allows for more optimum

growing conditions. If the mussels were allowed to develop on the "hairy" spat catching ropes the growth rates of the mussels would suffer due to overcrowding and the mussels, once they did reach a harvestable size, would be too difficult to remove from the ropes. There is a distinct separation then in terms of spat catching and on-growing or cultivation activities defined by the need to manage mussel densities and to transfer the developing spat onto more suitable ropes for cultivation.

This proposal is for spat catching only, not for cultivation of mussels beyond the juvenile stages.

1.2 Proposal

The applicants propose the establishment of a single, five hectare block of mussel spat catching facility in the waters of Aotea Harbour. The proposed area for the spat catching facility includes all buoys, anchors and structures. It is proposed that screw anchors of a suitable size and construction would be established in the seabed with anchoring lines extending to the surface to buoys and backbone lines that would support spat catching dropper lines as required.

The proposed spat catching structures would be sited within Aotea Harbour, approximately 1km east of Aotea township and would be additional to the existing mussel spat catching facility already operating in Aotea Harbour.

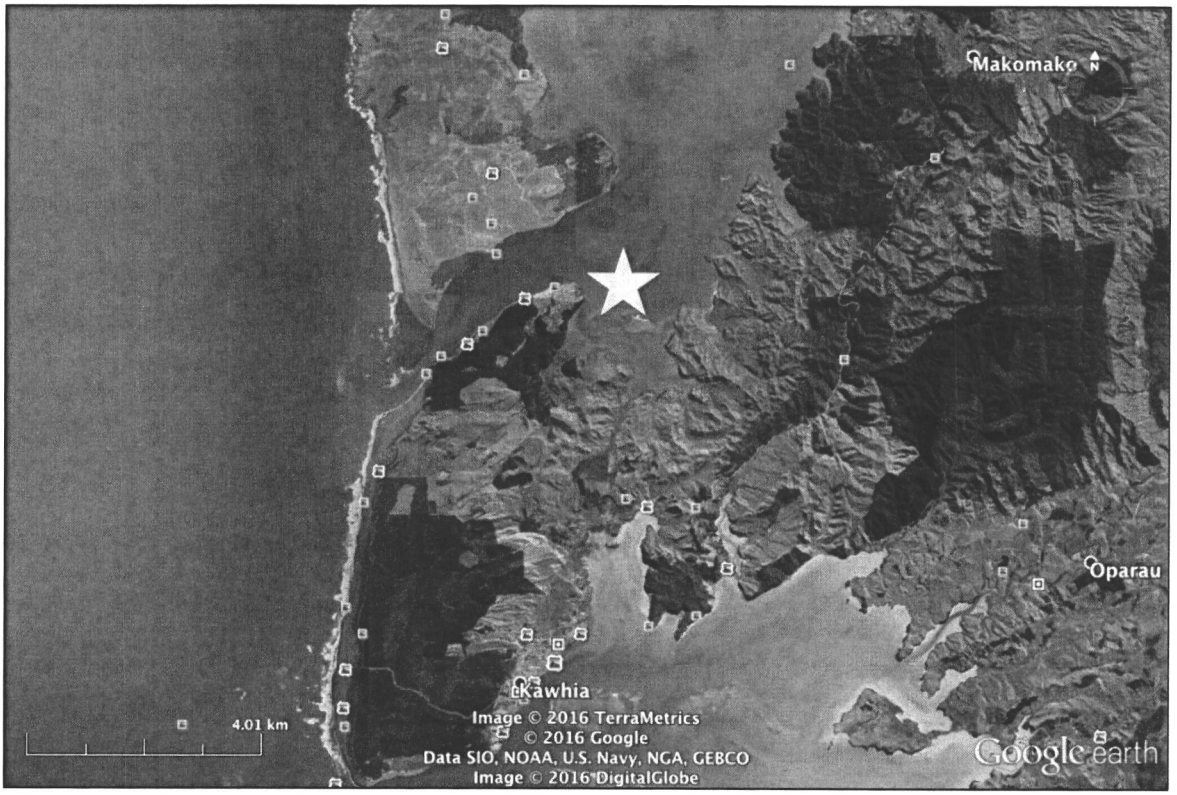

Figure 1: **General location of proposed spat catching facility (yellow star) in relation to Aotea and Kawhia Harbours.**

2 EXISTING ENVIRONMENT

Aotea Harbour is located on the west coast of the North Island within the Otorohanga and Waikato Districts of the Waikato Region, just north of Kawhia Harbour. Aotea Harbour is a semi-enclosed, tidal water body covering an area of approximately 3,000 hectares and is relatively sheltered from the high energy environment of the exposed west coast.

The entrance to Aotea Harbour has a mobile bar and the entrance channel shifts under complex coastal processes. The main channel within the inner harbour is relatively stable and remains fixed, however, a network of sub-channels within the harbour can shift over relatively short time periods. The water depth within the Harbour is relatively shallow and does not generally exceed 10 metres at low tide.

Aotea Village is located on the southern headland near the Harbour entrance. On the northern side of the main channel to the Harbour entrance (opposite Aotea Village) are large sand hills gazetted as the Aotea Scientific Reserve. The harbour margins and steep surrounding catchments have large tracts of native bush and exotic pine forest as well as developed farmland.

Two existing mussel spat catching facilities (operated as a single commercial unit) are located in the main channel of the inner Harbour between Pourewa and Tahuri Point, to the east of the Aotea township. At this location the channel is generally between 3 and 8 metres depth at low tide and is subject to relatively high tidal currents of up to three knots.

The proposed location for the mussel spat catching facility is shown in Figure 2. The five hectare block would be approximately 300m eastward of the nearest of the two existing spat catching facilities in a channel with approximately 4-6 metres depth over a seabed of sand and broken shell gravel. In this area of relatively shallow depth and moderate to high tidal currents, it is expected that there will be good circulation of water through Harbour tidal exchange and wind-driven currents. Flushing in this area is anticipated to be very good.

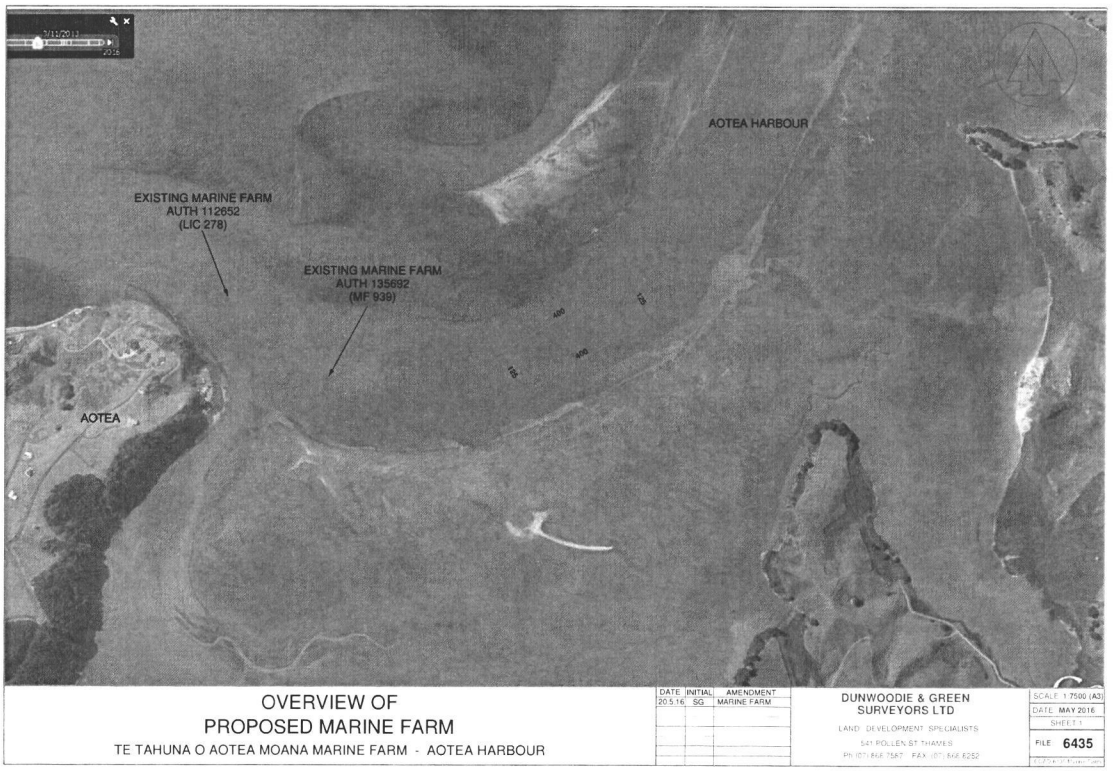

Figure 2: Location of Proposed Spat Catching Facility

2.1 Seabed Survey

The seabed in the vicinity of the proposed spat catching facility appeared, from attempts to collect sediment samples, to be hard packed black sand armoured by broken shell gravel. The depth in the area of the proposal ranged from 4 to 6 metres at the time of survey (2pm, 28 November 2016). Local knowledge suggests that no significant seabed features were located within the proposed marine farm sites (R. Dockery, pers comm, T. Awhitu, pers comm), and none were found as a result of the survey undertaken. However, the persistent turbidity of the Harbour waters and general very poor in-water visibility prevented any visual or photographic surveys of the seabed.

2.2 Sediment Quality

Samples of the sediments in the area proposed for the spat catching facility were collected using a boat operated box dredge. Samples were collected from the locations

listed in Table 2.1 and are displayed on Figure 3. At each of the sampling locations a single sample was collected and each sample was chilled and despatched to Hill Laboratories for analysis. Each sample was analysed for grain size distribution, total nitrogen and total recoverable phosphorus concentrations.

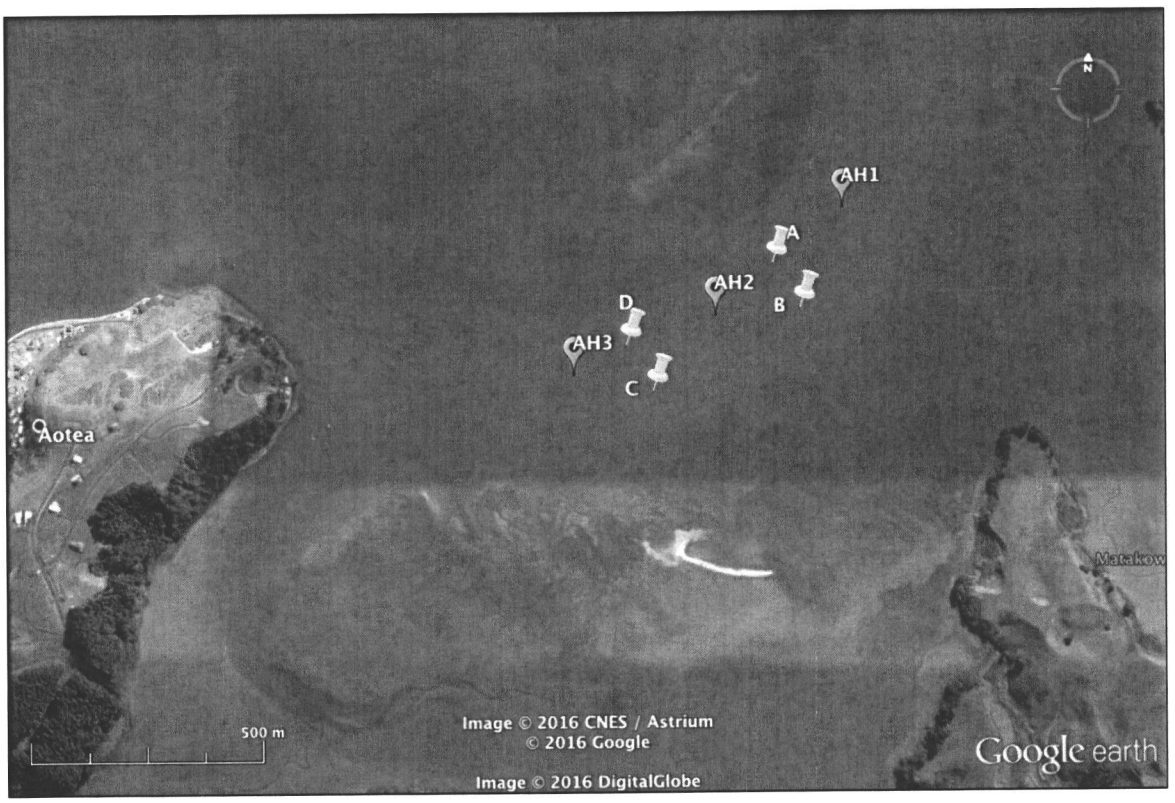

Figure 3: Locations of sediment sampling sites

Table 2.1: Locations of sediment sampling sites (lat/long)

Sampling Site	Latitude	Longitude
AH1	38° 00.280' S	175° 50.578' E
AH2	36° 00.424' S	175° 50.369' E
AH3	36° 00.502' S	175° 50.141' E

2.2.1 Sediment Grain Size

Each of the samples was analysed by Hill Laboratories for a seven grain size profile by wet seiving and gravimetry. The results are presented in Table 2.2 together with the classification based on the principle grain size fraction modified by the next most important grain sizes. This classification is given as letter codes. For example, a sample consisting mostly of sand with a significant proportion of gravel would be classified as

gS (gravelly sand). If the sample had a mud component it would be classified as **(m)gS** (slightly muddy gravelly sand).

Table 2.2: Results of sediment grain size analysis

Sediment Grain Size	Description	AH1	AH2	AH3
≥ 2mm	Gravel	20.9	0.8	<0.1
< 2mm, ≥ 1mm	Very Coarse Sand	0.6	0.4	<0.1
<1 mm, ≥ 0.50mm	Coarse Sand	0.4	2.1	<0.1
<0.50mm, ≥ 0.25mm	Medium Sand	11.9	63.6	35.0
<0.25mm, ≥ 0.125mm	Fine Sand	52.6	29.3	58.5
<0.125mm, ≥ 0.063mm	Very Fine Sand	9.4	1.3	3.5
< 0.063mm	Mud	4.1	2.5	2.9
Total		**100.0**	**100.0**	**100.0**
Classification		**gS**	**S**	**S**

The subtidal sediments in the area of the proposed spat catching facility are classified as gravelly sands or sands.

2.2.2 Sediment Chemistry

Each of the composite sediment samples was analysed by Hill Laboratories for a range of parameters including total organic carbon, total nitrogen, total phosphorus and a suite of priority metallic and metalloid pollutants. The results are presented in Table 2.3.

Table 2.3: Results of the chemical analysis of composite sediment samples

Parameter	units	AH1	AH2	AH3	ANZECC	
					ISQG-Low	ISQG-High
Total nitrogen	g/100g dry weight	<0.05	<0.05	<0.05	-	-
Total recoverable phosphorus	mg/kg dry weight	640	570	640	-	-

No sediment quality guidelines exist for nutrients in marine sediments, however, these parameters were measured to determine the baseline nutrient concentrations in the area proposed for the spat catching facility. There is an accepted stoichiometric ratio of nitrogen to phosphorus, which has been determined from examination of oceanic phytoplankton to be 16:1 total Nitrogen to Phosphorus. The accepted argument is that at nitrogen to phosphorus ratios less than 16:1 that nitrogen is a limiting factor to algal growth while at ratios higher than 16:1 that phosphorus is the limiting factor in algal growth. Downing (1997) discusses this stoichiometric ratio and shows that while oceanic systems may adhere to the 16N:1P relationship, estuarine systems frequently

vary quite considerably from this accepted ratio.

Given that the average total nitrogen concentration in the sediments examined was <0.05 g/100g dry weight (or <500 mg/kg dry weight) and the average total phosphorus concentration was 617 mg/kg dry weight, which resolves to a ratio of 0.81:1, the ratio of total nitrogen to phosphorus suggests that the sediments in this area of Aotea Harbour are highly nitrogen limited and that inputs of nitrogen to the system might stimulate algal proliferation.

Nitrogen inputs to coastal systems generally come from land-based sources such as partially treated wastewater discharges or diffuse run-off from farmland. The land in the catchment of Aotea Harbour is a mix of unvegetated sand dune, land with good vegetative cover (both native and exotic forest) with some developed farmland and a very small number of residential lots. The water quality in Aotea Harbour may be affected by future changes in land use practices in the surrounding catchment and as such the control of sediment and nutrient sources in the catchment of the Harbour should be carefully managed in order to avoid sediment and nutrient inputs into the coastal waters. Although it is possible that high density mussel culture facilities might contribute nitrogen into the water column in quantities large enough to affect the water quality, the proposed spat catching activity is very unlikely to ever generate these large scale nitrogen inputs. The proposal is unlikely to have any notable impact on the sediment nitrogen concentrations in the immediate or wider vicinity.

2.3 Benthic Biological Communities

One benthic sample was collected at the location of each of the three sampling sites indicated in Figure 3 using a boat operated box dredge with a gap of 250mm x 150mm and a depth of 350mm.. Each of the samples was then sieved fresh through a 1mm mesh sieve and the material retained on the sieve was preserved in a 70% isopropyl alcohol solution. Each sample was then sorted in a white plastic tray and any organisms were picked out and stored in a 70% isopropyl alcohol solution before being identified and counted. The results of the benthic biological community sampling are presented in Table 2.4.

The benthic biological communities in the area proposed for the spat catching facility were not very diverse with only a small number of taxa found in each sampling location. The total numbers of individuals within each sample was also very low.

Table 2.4: Summary of the number of separate taxa found in each sample

Taxa	AH1	AH2	AH3
Polychaeta			
Heteromastus filiformis	4	4	6
Perinereis nuntia(?)	9	2	4
Amphipoda			
Paracorophium excavatum(?)	12	7	9
Decapoda			
Pagurus spp.	3	0	1
Total No of Taxa	**4**	**3**	**4**
Total No of Individuals	**28**	**13**	**20**

Amphipods, polychaete worms dominated the sedimenst at all three sampling locations, both in terms of numbers of taxa and numbers of individuals, while hermit crabs were found at the AH1 and AH3 sampling sites. Some organisms are more tolerant of organically enriched conditions and as such their presence in high numbers is potentially indicative of organic enrichment. Cirratulid and Capetellid polychaete worms in particular are known to be indicative of organic enrichment in sediments, however, neither of these polychaete worms were found at these sampling sites. The absence of Cirratulid and Capetellid worms, as well as the very low levels of diversity and abundance of organisms, suggest that it is unlikely that the sediments in the locations sampled have been subject to high levels of organic enrichment.

3 EXPECTED EFFECTS

The expected effects of a mussel farm are summarised in this diagram from Keeley et al (2009). These effects associated with mussel cultivation are well docmented and understood, however, mussel spat catching is less common and its effects, therefore, are not as well documented. Because spat catching is a seasonal activity and the juvenile mussels present a lower biomass with lower rates of filtration, respiration and excretion than mussel cultivation sites and removal of mussels once they reach a size of 35-40mm, the environmental effects are expected to be considerably lower than those expected for mussel farming.

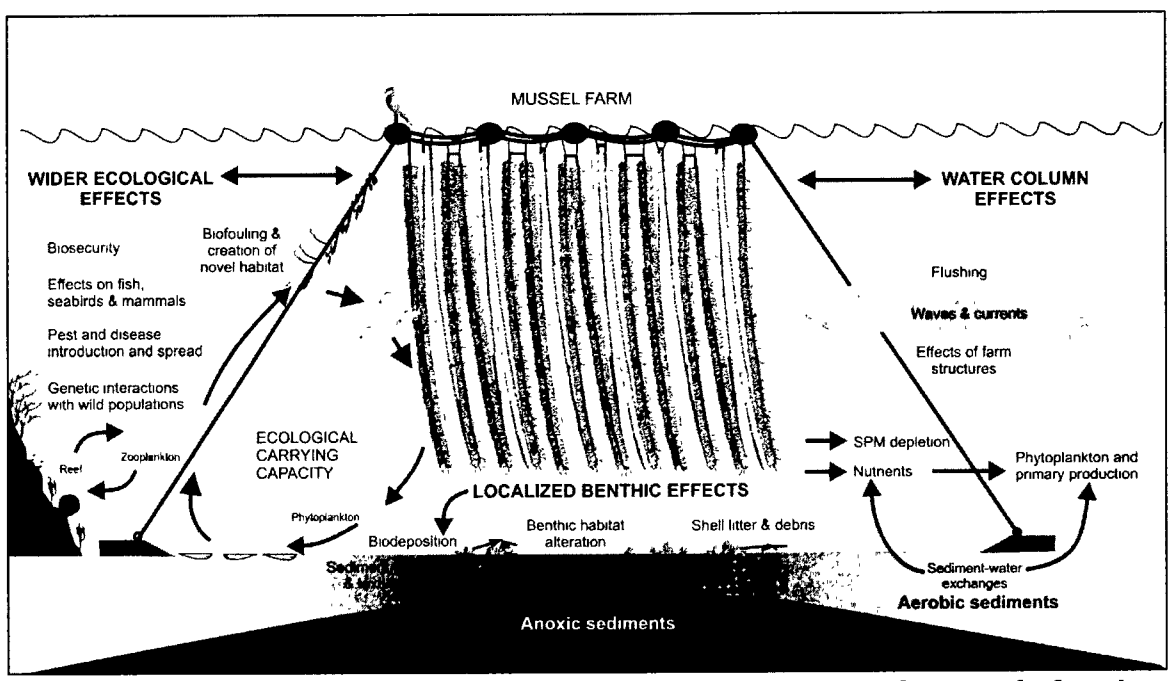

Figure 6: Diagram summarising the potential effects of mussel farming structures (after Keeley *et al*, 2009)

3.1 Seabed

Seabed effects from mussel farms result from the accumulation of fine-grained, organically rich particles (mussel faeces and pseudofaeces) known as biodeposition, and the deposition and accumulation of live mussels, mussel shell litter and other biota that fall off the ropes floats and the mussels themselves. Mussel farms are usually sited above soft-sediment habitats (as opposed to rocky habitats) and seabed effects relate

primarily to the physical, chemical and ecological changes in those habitats.

3.1.1 Localised Benthic Effects

The main environmental impact of mussel culture is increased sedimentation through biodeposition. Mussels filter particles, primarily phytoplankton, but also zooplankton, organic detritus and inorganic sediment from the water column. These particles are trapped in the labial palps of the shellfish, bound up with mucous, sorted and selectively ingested. The mussels expel waste products from digestion of this material as faecal pellets. Inedible or excess particles are loosely bound in mucous and expelled from the shell cavity as pseudofaeces. These biodeposits have a tendency to sink faster than their constituent particles and, as a result, mussel farms typically increase sedimentation rates underneath the culture sites (Hatcher *et al.* 1994; Callier *et al.* 2006; Giles *et al.* 2006). Other epibiota attached to the mussel culture structures produce detritus and this also contributes to the increased sedimentation (Kaiser *et al.* 1998). Sedimentation rates beneath mussel farms can vary with season (Giles *et al.* 2006), culture species (Jaramillo *et al.* 1992) and environmental conditions (*e.g.* tidal currents, water depth, riverine inputs), making monitoring of this process difficult.

With this proposal, the levels of biodeposition are expected to be very low as a result of the small size of the juvenile mussels and their subsequent rates of respiration, filtration and excretion being much lower than those expected for larger mussels. Juvenile mussels would only be supported on a seasonal basis and for relatively short periods of time with substantial periods without juvenile mussels being present at all.

Numerous studies have documented changes to the physical and chemical properties of sediments beneath mussel farms due to increased sedimentation and the accumulation of biodeposits (Dahlbäck & Gunnarsson 1981; Mattsson & Lindén 1983; Kaspar *et al.* 1985; De Jong 1994; Chamberlain *et al.* 2001; Giles *et al.* 2006; Callier *et al.* 2007; Hargrave *et al.* 2008, Wong & O'Shea, 2011). These include changes in sediment texture (Tenore *et al.* 1982; Kaspar *et al.* 1985; Stenton-Dozey *et al.* 2005) and local organic enrichment with an associated increase in oxygen consumption (Christensen *et al.* 2003; Giles *et al.* 2006), increased nitrogen release rates (Hatcher *et al.* 2004), sulphate reduction (Dahlbäck & Gunnarsson 1981) and lowered Redox

potential (Christensen *et al.* 2003; Grant *et al.* 2005). The degree of change in sediment characteristics beneath the proposed spat catching facility is not anticipated to be significant due to the intermittent nature of spat catching and the small size of the mussels supported at the facility.

Giles *et al.* (2006) reported increased sedimentation rates under mussel farms in the Firth of Thames (New Zealand) relative to a reference site, with associated increased concentrations of organic carbon and increased sediment oxygen consumption within the sediments. Christensen *et al.* (2003) found significantly higher ammonium fluxes and oxygen consumption (both evidence of high mineralisation rates) in sediments beneath a mussel farm in Beatrix Bay (Marlborough Sounds), resulting in increased sulphide levels in the sediments and a lower nitrogen removal rate. The spat catching activity proposed is unlikely to result in changes in sediment chemistry on the same scale as for a mussel cultivation site.

Monitoring of the properties of sediments at mussel farming sites often involves a suite of indicators and may include sediment colour, odour, Redox potential discontinuity layer, sulphide concentrations and sediment organic content (Wildish *et al.* 1999). Of these indicators, sediment organic content has proven to be reliable and is often included (along with other indicators) in marine farm monitoring programmes in New Zealand and overseas. Elevated sediment organic content is commonly encountered beneath mussel farm sites in New Zealand. Hartstein & Rowden (2004) found elevated levels of sediment organic content at two sheltered mussel farm sites in the Marlborough Sounds, however, they found levels beneath a mussel farm site located in a high energy environment to be similar to those observed in reference locations. This highlights how a dispersive environment can help reduce the level of seabed effects. The site proposed for spat catching is within an area of relatively high tidal and wind driven currents under most weather conditions. Given the currents at the site and the water exchange, it is considered that the area proposed for spat catching would be considered a dispersive environment.

Sediments directly beneath and within 50 m of mussel culture lines tend to have slightly higher levels of organic material than sediments outside the

influence of the farms. In many cases these elevated levels of organic enrichment increase the productivity of coastal sediments without major disruption to community composition. Accumulation of organic matter and other associated changes in physico-chemical properties can, however, create conditions within the sediment that can lead to changes in the abundance and diversity of biota in the sediment (Danovaro *et al.* 2004). For example, increased sedimentation beneath mussel farms can reduce microscopic plant production (Christensen *et al.* 2003; Giles *et al.* 2006), which can have a pronounced effect on oxygen conditions in the sediments and overlying water, as well as affect denitrification rates. Similarly, meiofaunal (very small organisms measuring a length of 0.45 to 1.0 mm) community composition can change significantly due to the presence of elevated organic content beneath mussel farm sites (Mirto *et al.* 2000).

The most widely used indicator of enrichment effects, however, is macrofauna (organisms measuring greater than 1 mm in length) living within the sediment, such as that examined and discussed in section 2.3 of this report. According to models of organic enrichment (Pearson & Rosenberg 1978), sediments subject to increased organic loading will exhibit increased animal abundance, decreased species richness (number of different taxa) and animal biomass, and a shift in dominance of trophic groups (Weston 1990). Seabed enrichment selects for species more adaptable to low oxygen levels and/or to the instability of finer-textured, high organic sediments (Tenore *et al.* 1982). Because the proposed spat catching activity is unlikely to result in changes to the characteristics of the sediments beneath the facility, significant changes in macrofaunal communities beneath the facility are not expected to occur.

Changes in physico-chemical characteristics beneath mussel farms can lead to a displacement of large-bodied macrofauna (*e.g.* heart urchins, brittle stars, large bivalves) and the proliferation of small-bodied disturbance-tolerant 'opportunistic' species such as capitellid polychaetes and other marine worms (Tenore *et al.* 1982; Mattsson & Lindén 1983; Kaspar *et al.* 1985; Christensen *et al.* 2003). The loss of large-bodied burrowing taxa can potentially have flow-on effects to sediment health due to a reduction in bioturbation and the associated irrigation of deeper sediments (Christensen *et al.* 2003).

Infaunal community composition monitoring to assess the level of seabed change at mussel farm sites in Wilson Bay, Firth of Thames, has found *"little significant change"* in seabed community composition at sites monitored (Stenton-Dozey *et al.* 2004). These findings are consistent with numerous site assessments undertaken by NIWA in the Marlborough Sounds (NIWA unpublished data), where *"changes in the relative abundances of certain species rather than dramatic disappearances of intolerant species and appearances of new species"* have been observed (Stenton-Dozey *et al.* 2005). Given that the effects on the sediments anticipated from the proposed spat catching are considerably less than those expected from mussel cultivation sites such as those monitored by Stenton-Dozey *et al* (2004), it is not expected that the proposal would result in any significant change in seabed community composition.

The most visually conspicuous effect on the seabed as a result of mussel farming is the modification of the benthic habitat through accumulation of live and dead mussel material on the seafloor, produced primarily during harvesting and farm maintenance (Davidson 1998; Davidson & Brown 1999). Shell deposition within a farm can be patchy, ranging from rows of clumps of live mussels and shell litter directly beneath long-lines to widespread coverage across the farm site (Forrest & Barter 1999). Mussel clumps and shell litter beneath a mussel farm have been been found to act as a substrate for the formation of reef-type communities (De Jong 1994; Davidson & Brown 1999). Kaspar *et al.* (1985) described reef-like communities under an existing farm that included large epibiota such as tunicates, sponges, sea cucumbers, calcareous polychaetes, and mobile predatory species such as starfish, crabs and fish. In other situations, mussel clumps and shell litter can remain relatively barren of reef-type communities (Watson 1996).

The proposed spat catching facility is not anticipated to generate significant quantities of shell drop due to the seasonal use of the site, the small size of spat and the limited handling of dropper lines together with the complete removal of spat once the mussels reach 35-40mm in size.

Available information for long-line mussel farms in both New Zealand and overseas (Dahlbäck & Gunnarsson 1981; Mattsson & Lindén 1983; Kaspar

et al. 1985; De Jong 1994; Chamberlain *et al.* 2001; Grange 2002; Christensen *et al.* 2003) indicates that the areal extent and magnitude of seabed effects depend to a large extent on site-specific environmental characteristics (*e.g.* current speeds and directions, existing benthic habitat, wave climate, riverine influences, phytoplankton abundance), and to a lesser extent, farm management practices (*e.g.* stocking densities, line orientation, harvesting techniques).

The capacity of the environment to disperse and assimilate mussel farm biodeposition is largely determined by water depth and current speeds (*i.e.* flushing capacity), although the assimilative capacity of the environment may also vary seasonally in relation to factors such as water temperature. Increased flushing not only reduces localised sedimentation and accumulation of organic matter, but it also increases oxygen delivery to the sediments, allowing for more efficient breakdown (*i.e.* mineralisation) of organic material (Findlay & Watling 1997). For example, deep sites (>30 m) located in areas of strong water currents will have depositional footprints that are less intense and more widely dispersed than shallow, poorly flushed sites.

The water depths at the site proposed for this spat catching facility are relatively shallow (4-6 metres) but with strong currents and as such, flushing at this site is expected to be good. In addition, the degree of biodeposition is expected to be low due to the small size of the mussels and reduced rates of filtration, respiration and excretion.

International studies show that the majority of environmental issues associated with biodeposition occur in systems where water exchange is restricted (Castel *et al.* 1989). Farm sites located in well-flushed tidal environments typically do not result in the accumulation of pseudofaeces but result in a favourable increase in macrofaunal biomass (Rodhouse & Roden 1987), however, where currents are very weak or water depth is shallow biodeposition would be expected to contribute to hypoxic (reduced oxygen) conditions in the sediments. Such effects have been observed or inferred from models in sheltered embayments or inlet systems (Dame & Prins 1997; Chamberlain *et al.* 2001; Grant *et al.* 2005; Waite *et al.* 2005; Cranford *et al.* 2007) but are considered to be extremely unlikely as a result of this proposal, for the reasons given above.

3.1.2 Spatial Extent of Deposition

Effects of biodeposits from mussel farms tend to be most evident directly beneath the long-line droppers; however a gradient of seabed effects has been measured at some farm sites (Hartstein & Rowden 2004, Wong & O'Shea, 2011), consistent with patterns of enrichment from other point source discharges (see Pearson & Rosenberg 1978). By contrast, live mussels, shell material and associated fouling biota have been observed to settle beneath the long-lines and are typically confined within 10 m of marine farming structures (Kaspar *et al.* 1985; Callier *et al.* 2007).

Estimates of the theoretical spatial extent of biodeposition for >50 proposed farm sites and extensions in the Marlborough Sounds using a simple depositional model which estimates the distance and direction pseudofaeces and faeces could travel before reaching the seabed have been made by Cawthron Institute. This model uses representative flow patterns and current speeds and an estimated particle-sinking velocity for faeces and pseudofaeces (Giles & Pilditch 2004; Hartstein & Rowden 2004). In areas of low flushing or shallow water depth, the spatial extent of biodeposition typically extended <50 m from the farm boundaries, while depositional footprints of >250 m were modelled for sites in more energetic environments or greater water depth.

These estimates are consistent with numerous assessments undertaken by NIWA in the Marlborough Sounds, where depositional effects footprints of 20-50 m were predicted for farms in small, sheltered embayments compared with footprints extended >200 m at sites with strong tidal forcing (Stenton-Dozey *et al.* 2008). Hartstein & Stevens (2005) detected mussel biodeposits up to 30-50 m from mussel farm boundaries at sites located within a sheltered embayment.

The seabed environment beyond the effects footprint may be exposed to farm-derived materials, but has a capacity to assimilate them without exhibiting measurable ecological changes. It is conceivable, that in the future, more sensitive monitoring techniques (*e.g.* DNA and genetic marking, stable isotopes, and digital sediment profile imagery techniques) may reliably detect these processes and effects further afield. From an ecological perspective, however, the spatial extent of

footprint associated with a typical mussel farm is considered well defined and predictable.

The ecological footprint of a spat catching facility, such as the one proposed, is expected to be considerably less than described for a mussel culturing and on-growing farm due to the small size of the proposed farm, the smaller size of the mussels involved and the seasonal use of the area for spat catching and development which results in lower rates of biodeposition and shell drop.

Deposition of fouling biota may also contribute to seabed enrichment beneath mussel farms. This situation may occur where fouling organisms reach high densities on farm structures and fall to the seabed either naturally or because of deliberate defouling by farm operators. The fouling biomass may intermittently be a substantial component of the organic material deposited to the seafloor, as appears to be the case for the spread of the invasive sea squirt *Didemnum vexillum* at mussel farms in the Marlborough Sounds. In such situations, the deposited fouling biomass may exacerbate enrichment effects (at least in the short-term) associated with other processes (*e.g.* biodeposition). Given the small size of the proposed farm, the seasonal nature of the spat catching activity, the limited handling of lines and the strong tidal currents in the area, the levels of deposition of fouling biota beneath the proposed spat catching facility are expected to be very low.

Direct effects on the seabed from mussel farms could arise via processes other than deposition alone. For example, shading from farm structures could reduce the amount of light to the seafloor, which might reduce the productivity of ecologically important primary producers such as benthic microalgae, or beds of macroalgae or seagrass (Huxham *et al.* 2006). Shading is unlikely to be a major consideration in this case as important primary producers do not appear to be abundant directly beneath the area proposed for the spat catching structures and the dropper lines, which would be the major factor in seabed shading, would only be deployed for limited periods of time.

3.1.3 Seagrass Beds

Aotea Harbour contains extensive seagrass beds, some of which occur on the intertidal flats close to the proposed spat catching facility. Seagrass beds

can be important components of estuarine biodiversity with infaunal invertebrate communities within seagrass beds often found to have the richest biological diversity of surrounding intertidal areas. These infaunal invertebrate communities can be important food resources for birds and fish life. Seagrass beds are known to wax and wane naturally in terms of areal extent and density over time, however, they can be adversely affected by sedimentation, shading and contamination.

The proposed spat catching facility is approximately 150 metres from the nearest seagrass beds located on the intertidal sand flats to the south. Given the high tidal current velocities and the low level of effects expected as a result of the proposed spat catching activity, it is unlikely that the seagrass beds within Aotea Harbour would be adversely affected by the proposal.

3.1.4 Hard Shores

Hard shores are not a feature of Aotea Harbour. The nearest hard shores to be found would be any artificial seawalls or groyne structures at Aotea township approximately 1km away from the site of the proposed mussel spat catching facility. The direct effects of nutrient discharge, shell drop and mussel faeces and psuedofaeces deposition are not expected to extend far enough to have any discernible effects on any solid structures within Aotea Harbour.

3.1.5 Summary of the Seabed Effects of Spat Catching

Spat catching involves culturing high densities of filter feeding bivalves that produce waste materials and therefore have the potential to cause analogous depositional and enrichment effects as with mussel grow-out. The scale of enrichment effects is reduced and mitigated by the fact that spat catching is generally a seasonal activity with lines removed for at least six months of the year.

The energetic requirements of very small mussels (*i.e.* spat: 5-10 mm) are likely to be proportionate to their body mass. Since the relationship between length and tissue mass is exponential, the feeding requirements of spat are likely to be correspondingly low. James *et al.* (2001) found that a non-linear relationship existed in the relationship between mussel size and their feeding and excretion rates.

Extrapolating backwards to a mussel of about 10 mm shell length would suggest that clearance (litres filtered/mussel/hr) and excretion rates would be very low indeed and the potential for deposition- and enrichment-related effects beneath spat catching sites that hold comparatively low biomasses of shellfish would be expected to be considerably less than that of commercial culturing operations. Monitoring results show that after four years of operation, the physical and biological properties of the sediments beneath seasonal spat catching sites had not changed appreciably (Keeley & Forrest 2008).

Given the water depth, likely currents, seasonal nature of the activity, relatively low mussel biomass and the reduced rates of respiration, filtration and excretion of juvenile mussels, the seabed effects likely to result from the proposed spat catching facility are considered likely to be less than minor.

3.2 Water Quality

Effects of mussel cultivation on the water column are less well defined than for the seabed because they are inherently harder to quantify. The water column is a highly dynamic environment that varies markedly in space and time due to complex hydrodynamics and the chemical and biological processes that occur within. This complexity is further compounded by the way that the mussel's physiological processes interact with the surrounding water.

Mussels and other associated fauna release dissolved sources of nitrogen (*e.g.* ammonium) directly into the water column as metabolic waste products. Water column nitrogen concentrations can also be increased due to enhanced benthic remineralisation rates beneath the farm (*i.e.* the microbial breakdown of mussel biodeposits on the sediment surface and flux of ammonium into the water column). This accelerated recycling of organic nitrogen in the seston provides a feedback mechanism that can stimulate further phytoplankton production thus counteracting seston depletion (Prins *et al.* 1998; Ogilvie *et al.* 2003). However, considering that the generation time (time for cells to double) for most phytoplankton is less than 1 day, any stimulatory response would likely occur outside the immediate growing area allowing sufficient mixing time to reduce nutrient concentrations to near ambient levels.

Localised nutrient enrichment could more effectively stimulate production of algae attached to the mussels and culture lines (Black 2001). Tenore *et al.* (1982) speculated that such localised stimulation of algal production could potentially enhance coastal fish production.

Inorganic nitrogen is generally considered to be proportionally more limiting in temperate coastal waters than other nutrients that support phytoplankton production (Gibbs & Vant 1997; MacKenzie & Gillespie 1986). The amount of nitrogen removed from a mussel growing region via harvest is small in relation to the amount released to the environment as recycled nitrogen. The amount exported through mussel harvest could be significant compared to the rate of replenishment from external marine and freshwater sources. For example, estimates for Pelorus Sound, an intensive growing region in the Marlborough Sounds, suggested that the annual nitrogen export via mussel harvest was <10% of the annual input from oceanic and freshwater inflows (calculated from Forrest *et al.* 2007).

Passage of water through a mussel farm could alter the dissolved oxygen composition of the water down current from the farm due to the consumption of oxygen through respiration by the mussels and associated fouling organisms on the culture lines. This can be exacerbated by enhanced benthic oxygen consumption due to deposition and decomposition of particulate organic materials beneath farms. There have been no reports of the development of anoxic zones within the water column in New Zealand growing regions. This would be extremely unlikely unless farms were established in poorly flushed embayments, or at sites affected by enrichment effects due to other activities (*e.g.* fish farming).

It is therefore considered extremely unlikely that the proposed spat catching facility would result in anoxic water quality conditions in this area of Aotea Harbour.

3.2.1 Phytoplankton

Long-line culture of filter-feeding greenshell™ mussels effectively creates a fixed biological filtration system suspended through the upper few metres of the water

column. Although the volume of seawater filtered by an individual mussel can vary considerably according to mussel body size and the quality and quantity of seston, filtration rates of up to 8.6 litres per hour have been reported by James *et al.* (2001). A substantial proportion of the seawater flowing through a fully stocked mussel farm can be "processed" by the mussels before moving beyond the farm boundaries.

During the mussel feeding process, particles are most efficiently extracted within an approximate size range of 5-200 µm (Safi & Gibbs 2003), however particles as large as 600 µm can be retained (Zeldis *et al.* 2004). This initial extraction can include phytoplankton, zooplankton (including copepods, fish and invertebrate eggs and larvae), protozoa, bacteria, detrital organic matter and inorganic sediment. Any fraction of ingested matter that is not assimilated may be discharged as faeces or pseudofaeces. During the feeding process, mussels also consume oxygen and release dissolved nutrients into the water and as a result the composition of water passing through a mussel farm can be altered in terms of the amount and composition of particulate matter as well as dissolved nutrients.

The extent to which a mussel farm removes seston from the water column is dependent on the ratio of the flushing time (which is affected by influence of structures on currents) to the rate at which the mussels filter and remove seston from the water (Gibbs 2007). The effect of introducing additional shellfish culture to an area will increase the removal rate through both the introduction of structures that increase the flushing time (due to current attenuation) and increase the time available for the mussels to process the water as it passes through. Mussels will effectively extract less particulate matter from water that is more rapidly flushed through the farm than in situations where flushing is more restricted. In turn, the food available to the mussels is also less likely to become limiting when water is efficiently flushed through the farm. If significant food depletion occurs, cultured mussels could theoretically out-compete other suspension-feeders (*e.g.* zooplankton and benthic shellfish) for particulate food, or exceed the ecological carrying capacity of a farmed area.

Predictions of the extent and intensity of food depletion effects for various proposed large-scale mussel farm developments generally agree that

mussel farming can lead to measurable water column effects at a local farm scale, but that significant alteration of ecosystem characteristics would be unlikely. An assumption enabling this generalised conclusion is that farms are typically located where adequate flushing occurs. Zeldis *et al.* (2008) conclude that climatic forcing conditions (*i.e.* the Southern Oscillation Index and associated oceanographic states and weather patterns) largely control inter-annual variability in phytoplankton biomass and mussel yield in Pelorus Sound; an intensively farmed region of the Marlborough Sounds.

There is a possibility that passage of water through a mussel farm could alter the plankton community structure down current from the farm, however, the degree to which this occurs in New Zealand growing waters (or the ecosystem implications thereof) is yet to be properly evaluated. A number of studies suggest that food items may be specifically selected by some bivalve species, based on particle size and/or nutritional value (Bourgrier *et al.* 1997; Shumway *et al.* 1985). Selection of phytoplankton according to size class has also been reported for *P. canaliculus* by Safi & Gibbs (2003) who noted that mussels are unable to efficiently capture phytoplankton cells <2 µm in size. The small-celled, picoplankton, which can comprise a significant proportion of the phytoplankton community, may not be removed by the mussels, and water passing through a farm might be expected to contain a higher proportion of picoplankton compared to the larger size classes that are preferentially removed. Preferential filtering then may result in changes to the size structure of the plankton communities in a farmed area, particularly in areas of low flow.

The area proposed for this spat catching facility is subject to moderate to high tidal currents with large volumes of water moving through the area with each tidal exchange.

Harmful algal blooms represent a particular risk in mussel growing waters, however, while such blooms may be influenced by seawater nutrient concentrations, there is no evidence to indicate that localised farm-generated enrichment or alteration of phytoplankton communities result in an increased incidence of harmful algal blooms. It is important to recognise that toxic algae blooms can be a natural phenomenon and occur near-annually in regions of New Zealand that do not have established shellfish farms, *e.g.* Bay of Plenty and Hawke Bay (Keeley *et al.* 2005).

3.2.2 Summary of Water Quality Effects of Spat Catching

Although spat are smaller than adult mussels, there is still a potential for the same suite of water column issues that are described for mussel out-growing. But as with the depositional effects, the effects are reduced and mitigated in juvenile bivalves by the lower rates of filtration and subsequently excretion (James *et al.* 2001). Chlorophyll *a* spatial surveys conducted as part of the Tasman and Golden Bay EAMP failed to identify any depletion shadows that would be consistent with localised food depletion in the vicinity of spat catching facilities. While more research may be required to confirm these observations, chlorophyll *a* depletion and associated carrying capacity issues around spat farms are expected to be negligible, particularly in situations with moderate to high tidal currents.

3.3 Seabirds

Several New Zealand and overseas studies discuss the potential ecological effects of shellfish aquaculture on seabird populations, but only a few direct studies have been conducted (Roycroft et al. 2004; Zydelis et al. 2006; Kirk et al. 2007). Based on these studies, mussel aquaculture has the potential to affect some seabirds by altering their food resources, causing physical disturbances (e.g. noise) and/or being a possible entanglement risk. The structures associated with aquaculture have, however, been observed to provide benefits including additional perching and feeding opportunities for birds such as shags.

Shags are known to be attracted to mussel farms in other areas of New Zealand because of the fish communities that establish in and around mussel farms and because of the plentiful roosting opportunities presented by mussel farm buoys. Shags are a coastal bird that actively hunts fish underwater in complex environments. Mussel farming situations are ideal locations for shag feeding. On balance, shags are likely to benefit from the presence and operation of a mussel farm in this location. Other coastal seabirds tend to feed in open areas of water and are unlikely to utilise any mussel spat catching structures for feeding, but may utilise the buoys and other surface structures for roosting or resting on occasion.

3.4 Fish Life

Marine farms and other artificial structures in marine environments provide a three dimensional reef habitat for colonisation by fouling organisms and associated biota (Costa-Pierce & Bridger 2002). Studies from New Zealand (*e.g.* MAF Biosecurity New Zealand port baseline surveys) and overseas (Hughes *et al.* 2005; Braithwaite *et al.* 2007) indicate that the dominant biota on such artificial structures includes macroalgae (seaweeds) and attached (sessile) filter-feeding invertebrates such as sea squirts, bryozoans and mussels. These assemblages typically have a range of other non-sessile animals associated with them, such as polychaete worms and various small crustaceans. Based on overseas research, the communities that develop on artificial structures can be quite different to those in nearby rocky areas (Glasby 1999; Connell 2000).

Mussel farming involves introducing a complex three-dimensional structure to an otherwise featureless seabed (*i.e.* sand/mud), which can be colonised by a diverse and productive fouling community. Both the fouling communities and the mussels themselves can be attractive as food sources for many species of fish. These alterations to the existing habitat can improve the suitability of the environment for fish (Caselle *et al.* 2002; Dempster *et al.* 2006) resulting in enhanced numbers of recreationally valued fish species. This is the same principle upon which FAD's (fish attraction devices) are used to aggregate fish for commercial and recreational fishing purposes (Buckley *et al.* 1989; Relini *et al.* 2000; Dempster & Kingsford 2003). As a result, it is commonly believed that marine farms have the potential to enhance the abundance of some fish species (Dealteris *et al.* 2004). Anecdotal evidence surrounding the preference of many anglers to fish in or near mussel farm structures suggests that fish attraction is a real effect of mussel farming. This is likely to also be the case for a spat catching facility such as that proposed.

3.5 Marine Mammals

Interactions between marine mammals and aquaculture usually result from an overlap between the spatial location of the facilities and the breeding, feeding and/or migrating habitat of the marine mammal species. To date, issues such as habitat exclusion, underwater noise and entanglement appear to be minor for New

Zealand mussel farming with no recorded instances of any marine mammals having become entangled in mussel farms in New Zealand. The suspended ropes supporting clumps of mussels, together with the buoyage and mooring systems would present a large and obvious sonar signature for marine mammals utilizing sonar navigation underwater. This may help to explain the lack of entanglement issues with marine mammals around mussel farms.

There has been one documented case of a Brydes whale entangled in a single rope used to buoy an isolated spat catching structure in the Hauraki Gulf. The proposed marine farm does not include isolated structures of this type as stand-alone elements of the facility, rather the proposed spat catching facility is a relatively densely structured collection of buoys, backbones and mooring systems with suspended dropper ropes at times of expected spatfall and for the 6 to 9 months required for the spat to develop to a 35mm shell width.

The marine mammals possibly found within Aotea Harbour include bottlenose dolphin, common dolphin and Orca. While there is considerable concern about the threatened Maui (Hectors) dolphin on the west coast of New Zealand, and Aotea Harbour is technically within the known range of Maui dolphin, they are essentially a coastal species and the Department of Conservation have not recorded Maui dolphin within Aotea Harbour. Local knowledge suggests that Maui dolphin do not visit the Harbour (R. Dockery, pers comm, T. Awhitu, pers comm).

Humpback whales can occasionally be seen off New Zealand's west coast on their migratory journeys from Antarctica to the tropical waters of the South Pacific. However, migrating humpback whales do not commonly travel close to the coast off Aotea Harbour and would not enter the Harbour at all. Migrating humpback whales would never encounter a mussel spat catching facility sited in the proposed location.

Similarly although Southern right whales are sometimes found in coastal waters, they are not commonly found close to the coast and would not enter Aotea Harbour. Once again Southern right whales would never encounter a mussel spat catching facility sited in the proposed location.

Both bottlenose and common dolphin hunt fish species and may, on occasion, enter Aotea Harbour. It is therefore possible that both species may encounter a mussel spat catching facility sited in the proposed location, however, local knowledge suggests that bottlenose and common dolphins are very rare visitors with Aotea Harbour (R. Dockery, pers comm, T. Awhitu, pers comm). Despite the long-term existence and operation of mussel farms in many coastal locations in New Zealand there have been no recorded significant adverse effects on dolphins caused by mussel farming. There has been concern raised in the Marlborough Sounds regarding the exclusion of Dusky dolphin from some areas as a result of the relatively intense mussel farming activity within parts of the Marlborough Sounds, however, this proposal does not represent a level of development approaching the intensity of many of the embayments within the Marlborough area.

Although Orca are known to move around the coastal waters from season to season and do not have a defined home patch, they are known to occasionally visit west coast harbours and it is quite feasible that Orca may enter Aotea Harbour and encounter a mussel spat catching facility sited in the proposed location. Orca are known to feed on rays, squid and fin fish, as well as dolphins, sharks and seals. The fish aggregation effects of mussel farm structures may serve to attract Orca, as well as dolphin, to the area due to the enhanced feeding opportunities. However, despite the long-term existence and operation of mussel farms in many coastal locations in New Zealand, there have been no adverse effects on Orca recorded as a result of mussel farming. Local knowledge suggests that Orca are very rare visitors within Aotea Harbour (R. Dockery, pers comm, T. Awhitu, pers comm). The Department of Conservation marine mammal stranding records include reference to an Orca which stranded at the bar of Aotea Harbour in 1996.

New Zealand fur seals are known to occasionally venture into Aotea Harbour waters, however, generally speaking the individual seals that do venture into the Harbour are juveniles exploring the coast. These individuals tend to be inquisitive and are likely to be attracted to a mussel spat catching facility rather than excluded by the structures and activity associated with aquaculture. As with other marine

mammals, and despite the long established marine farms around the country, there have been no adverse effects on fur seals recorded as a result of mussel farming.

Because of the apparently low use of Aotea Harbour by marine mammals, the proposal is unlikely to have adverse impacts on marine mammals.

3.6 Biosecurity

Biosecurity issues, algal blooms and disease resulting from cultivation of mussels are potential effects resulting from marine farms. This proposal seeks to minimise the risks of introducing alien species into the Aotea Harbour environment through the use of new equipment. The proposal is to use new screw anchors and mooring lines, new backbones and new spat catching ropes. The buoys to be used for this spat catching facility would also be new buoys.

The introduction of alien species is only likely to occur as a result of foreign structures or materials being brought into the area from elsewhere which could inadvertently carry these foreign organisms. It is proposed that all of the buoys and lines used for this spat catching facility will be new and no equipment used in marine farming in other areas of New Zealand would be brought into the area to be used on the proposed spat catching facility.

The greatest risk of spreading invasive species such as *Undaria*, *Corella* or Mediterranean fan worm are recreational vessels visiting Aotea Harbour area that have come from locations known to be infested with these pests, such as Whangarei, Waitemata Harbour and the Hauraki Gulf. The presence of a mussel spat catching facility or farm structures is no more likely to introduce alien species than "wild" mussels on rocks would introduce alien species. Mussel farming has not been associated with widescale algal blooms or disease and the proposed situation with moderate to strong tidal currents and good water exchange is not likely to create conditions that would promote or instigate these issues.

Staff servicing and working on the spat catching facility would be trained in identifying any new or unusual species appearing on the farm lines. Any

such biosecurity risk, or potential issue, would be reported to the Regional Council and to the Ministry for Primary Industry (Biosecurity).

Greenshell™ mussels are not highly prone to disease. Hine (1989) found no disease-associated mortalities in greenshell™ mussels or the presence of potentially serious pathogens within the mussels. A review on mytilids with particular emphasis on *P. canaliculus* (Webb 2007) indicated that there have been no particularly destructive diseases of mussel species identified in New Zealand, with the exception of a digestive viral disease. Jones *et al.* (1996) reported mortalities in cultured greenshell™ mussels in the outer Marlborough Sounds as a result of digestive viral disease (digestive epithelial virosis). The majority of these mortalities were associated with virus-like particles and digestive tubule damage. The condition also affects scallops and clams in New Zealand and other bivalve molluscs elsewhere. Viruses producing similar digestive tissue effects on bivalve molluscs have been reported in Australia, Scotland, Denmark, and elsewhere (Bower 2001). This digestive viral disease has not been reported in Aotea or Kawhia Harbours. Due to the relatively short time in the water potentially exposed to viruses, the spat are less likely to be affected than cultivated mussels and any trans-shipment of stock is unlikely to impact on new locations.

Another pathogen that poses potential environmental risk is the parasite APX, which is reported from New Zealand only (Diggles *et al.* 2002; Hine 2002b) and has been found in mussels from the Marlborough Sounds and also occurs commonly in dredge oysters *O. chilensis* (also known as flat oyster) from all around the coast (Diggles *et al.* 2002; Hine 2002b). In oysters, APX can cause a significant condition referred to as coccidiosis (Hine & Jones 1994), however, its effect on mussels is less noteworthy. Cultured greenshell™ mussels appear to present no major threat to wild molluscs, as wild greenshell™ stocks can harbour all known pathogens with the exception of APX. Since APX is also found in dredge oysters, however, there would remain a reservoir of infection even in the absence of greenshell™ mussel culture.

The threat to wild mussels and other bivalve species from farmed mussels carrying indigenous diseases and parasites is therefore low. Known

pathogens in New Zealand occur in a range of other wild bivalve species, often at a greater prevalence and intensity than in cultured mussels. Farmed mussels could pose a threat if they were vehicles for introduction of an exotic disease but this is a possibility only if *P. canaliculus* is susceptible and if appropriate intermediate hosts (if required) are available. The catching of spat in the manner proposed is unlikely to represent any threat to wild or cultivated populations of mussels in New Zealand.

4 OVERALL ECOLOGICAL IMPACT

The major impacts resulting from greenshell mussel aquaculture arise as a result of biodeposition and increased sedimentation altering the chemical and physical characteristics of the sediments below the mussel farm itself. The accumulation of fine grained materials, rich in organic compounds and nutrients, deposited underneath the farm can alter the characteristics of the sediment to such an extent that the biological communities that are normally found living in those sediments can be altered. Opportunistic species that can cope with reduced oxygenation levels, fine sediments and organic enrichment dominate the biota to the exclusion of more sensitive species.

Estimates of biodeposition from large-scale mussel cultivation operations suggest that a detectable biodeposition footprint would extend around 50 metres away from the dropper lines, however, in some cases biodeposition might be expected out as far as 200-250 metres from the dropper lines.

This proposal is for a spat catching facility, which is essentially a seasonal activity, and any biodeposition effects are likely to be significantly less than those seen under large-scale cultivation operations due to the small size of the proposed farm, the seasonality and the significantly smaller size of mussels and subsequent lower extraction and excretion rates. The strong tidal currents in the area are unlikely to allow any deposition beneath the spat catching facility and any materials produced by the developing spat are likely to be widely dispersed by the currents.

Shell drop underneath the farm structures consisting of both dead shells and live mussels alter the sediment texture and provide a hard substratum for the establishment and development of a reef-like community of organisms underneath the farm. Together with shading effects from the farm structures, the effects on the benthic communities can be substantial. This proposal for spat catching is unlikely to produce significant shell drop issues due to the limited handling of dropper lines, the small size of the mussel product and the short timeframes the juvenile mussels will be present on the lines. Shading is also not likely to be a major issue as important primary producers do

not appear to be abundant in the area proposed for spat catching and the dropper lines will only be deployed seasonally.

Discharges of nutrients to the water column, preferrential extraction of particles from the water column within a size range and oxygen usage through respiration can, in high density farming situations have measurable effects on the quality of the coastal water passing through a mussel farming area. All of these effects are expected with large-scale mussel cultivation units. These farms carry a large biomass of mussels with regular maintenance of the dropper lines and mussel densities.

The proposed spat catching facility is not expected to have effects on the same scale as a farm designed to cultivate and on-grow mussels to a commercially harvestable size. The spat catching lines will only be used seasonally, rather than the permanent lines used in a cultivation site. In addition, the spat being caught and developed to a size of 35mm will not represent a mussel biomass that approaches those found in cultivations sites. Mussel spat have considerably lower filtration and excretion rates and the incidence of biodeposition is therefore significantly lower than larger mussels in a cultivation situation. Spat are not stripped from ropes on a regular basis, rather it is a single action undertaken when they reach a size at which they can be safely handled and re-seeded into a cultivation situation. As a result, it is not anticipated that biodeposition, sedimentation, sediment quality effects, benthic biological effects, shell drop or water quality effects will be significant as a result of this proposal.

Given the shallow water depths and strong tidal currents with good flushing and circulation, together with the low rates of biodeposition expected and the seasonal nature of the spat catching activity, it is expected that any effects resulting from the proposal would be less than minor and extremely difficult to measure.

In terms of effects on birds, fish and marine mammals, it is not anticipated that structures such as those proposed are likely to have any significant adverse effects. It is likely that there will be a degree of attraction of fish fauna to the spat catching structures and that this may cause a mild attraction of birds and/or marine mammals to the area, however, given the extensive experience with mussel farming

structures around the New Zealand coastline this is not expected to result in any entanglement issues or other adverse effects.

Biosecurity is not anticipated to present any issues. The presence of a spat catching facility is not expected to introduce foreign organisms into Aotea Harbour, however, any risks associated with biosecurity can be managed through the development and implementation of a biosecurity plan.

Therefore any adverse effects from the proposed farm would be neglibible and less than minor.

5 MONITORING

The effects from the proposed spat catching facility are not expected to be significant at all. Davidson (1999) recommends that environmental monitoring programmes be written in to the consent conditions for mussel farms, however, the effects resulting the proposed spat catching facility would be far less than those expected of a mussel cultivation unit.

With mussel cultivation units the monitoring of physico-chemical properties and the biological communities within the seabed sediments underneath the farms has proven to be useful. In this situation, the strong tidal currents and the hard packed nature of the sandy sediments within the channel proposed for spat catching suggest that monitoring is unlikely to show any measurable effects resulting from the proposal. The biological communities in the area appear to be very low in both diversity and abundance and the strong currents mean that there will not be any accumulation of biodeposits underneath the proposed spat catching facility. A conventional environmental monitoring programme is unlikely to provide any information that could be useful in resource management of Aotea Harbour.

Because of the use of new buoys, lines and anchors, the biosecurity risks associated with this proposal are very low, however, the formulation and activation of a biosecurity management plan, together with regular and on-going monitoring of any in-water structures for the presence of foreign or invasive species is recommended. Staff working with the spat catching structures need to be trained to recognise foreign species and biosecurity threats and have reporting systems in place to alert the Ministry for Primary Industries and the Regional Council.

6 CONCLUSIONS

The proposal seeks to establish an additional small mussel spat catching facility in Aotea Harbour. Spat catching is a seasonal activity and spat catching ropes would be deployed at times of predicted spat fall. Spat would develop at the site until they reached about 35-40 mm shell size. A successful spat catching facility in this location would provide a diversified source of spat for the Coromandel mussel cultivation industry and reduce the reliance upon spat sourced from Ninety Mile Beach in Northland.

The site of the proposed spat catching facility is well away from complex reef structures and rocky shore biological communities and is sited in water depths of 4 to 6 metres over a seabed of sand and broken shell gravel. No significant structures or shellfish beds were found within the area proposed for the spat catching facility and benthic biological communities in the area were relatively sparse and were dominated by polychaete worms and amphipods. Sediment quality in the area was clean with low nutrient concentrations, suggesting minimal influence of anthropogenic contamination as well as reasonably good ambient water quality in the area, despite ambient turbidity levels.

The ecological effects of mussel cultivation operations are well understood and the establishment of a mussel farming structure at the site proposed would be unlikely to result in any significant adverse effect. The effects of the proposed spat catching activity, however, is expected to be significantly less than any effects expected from a mussel cultivation operation and as such it is expected that any ecological effects resulting from the proposal would be less than minor and quite possibly impossible to measure.

Although it is normal to require environmental monitoring as part of the conditions of a resource consent, any environmental monitoring programme that could be instigated is unlikely to be able to measure any of the minimal effects that may result from the proposed spat catching facility. Benthic biological communities in the area are low in terms of diversity and abundance, the sediments are hard packed sands and tidal currents are strong. A conventional environmental monitoring programme is unlikely to

provide any information that could be useful in resource management of Aotea Harbour.

Despite the very low biosecurity risks posed by the proposal, a biosecurity management plan should be established for the proposed facility and staff would need to be trained in order to conduct regular biosecurity risk assessments and evaluations and to report such threats to the proper authorities.

The ecological effects as a result of the proposed activity in the area suggested are expected to be less than minor and a spat catching facility as proposed is considered to be ecologically sustainable in the long term with minimal adverse ecological effects.

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8 LABORATORY CERTIFICATES

Hill Laboratories
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ANALYSIS REPORT

Client:	Pacific Coastal Ecology	**Lab No:**	1687861	SPv1
Contact:	Steve White	**Date Received:**	29-Nov-2016	
	C/- Pacific Coastal Ecology	**Date Reported:**	13-Dec-2016	
	PO Box 90102	**Quote No:**		
	Victoria Street West	**Order No:**		
	Auckland 1142	**Client Reference:**	AH1-AH3	
		Submitted By:	Steve White	

Sample Type: Sediment

		Sample Name:	AH1 28-Nov-2016	AH2 28-Nov-2016	AH3 28-Nov-2016		
		Lab Number:	1687861.1	1687861 2	1687861.3		
Individual Tests							
Fraction >/= 500 µm*	g/100g dry wt		21 9	3.4	0 1	-	-
Fraction >/= 250 µm*	g/100g dry wt		33 8	67 0	35.1	-	-
Total Recoverable Phosphorus	mg/kg dry wt		640	570	640	-	-
Total Nitrogen*	g/100g dry wt		< 0 05	< 0.05	< 0 05	-	-
7 Grain Sizes Profile							
Dry Matter	g/100g as rcvd		83	81	82	-	-
Fraction >/= 2 mm*	g/100g dry wt		20.9	0 8	< 0.1	-	-
Fraction < 2 mm, >/= 1 mm*	g/100g dry wt		0.6	0.4	< 0.1	-	-
Fraction < 1 mm, >/= 500 µm*	g/100g dry wt		0.4	2 1	< 0.1	-	-
Fraction < 500 µm, >/= 250 µm*	g/100g dry wt		11.9	63.6	35 0	-	-
Fraction < 250 µm, >/= 125 µm*	g/100g dry wt		52 6	29.3	58.5	-	-
Fraction < 125 µm, >/= 63 µm*	g/100g dry wt		9 4	1.3	3.5	-	-
Fraction < 63 µm*	g/100g dry wt		4.1	2.5	2.9	-	-

SUMMARY OF METHODS

The following table(s) gives a brief description of the methods used to conduct the analyses for this job The detection limits given below are those attainable in a relatively clean matrix Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis

Sample Type: Sediment

Test	Method Description	Default Detection Limit	Sample No
Individual Tests			
Environmental Solids Sample Preparation	Air dried at 35°C and sieved, <2mm fraction. Used for sample preparation May contain a residual moisture content of 2-5%	-	1-3
Total Recoverable digestion	Nitric / hydrochloric acid digestion. US EPA 200.2.	-	1-3
Total Recoverable Phosphorus	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200 2.	40 mg/kg dry wt	1-3
Total Nitrogen*	Catalytic Combustion (900°C, O2), separation, Thermal Conductivity Detector [Elementar Analyser]	0.05 g/100g dry wt	1-3
7 Grain Sizes Profile*		-	1-3
7 Grain Sizes Profile			
Dry Matter	Drying for 16 hours at 103°C, gravimetry (Free water removed before analysis).	0.10 g/100g as rcvd	1-3
Fraction < 2 mm, >/= 1 mm*	Wet sieving using dispersant, 2.00 mm and 1.00 mm sieves, gravimetry (calculation by difference).	0 1 g/100g dry wt	1-3
Fraction < 1 mm, >/= 500 µm*	Wet sieving using dispersant, 1.00 mm and 500 µm sieves, gravimetry (calculation by difference).	0.1 g/100g dry wt	1-3
Fraction < 500 µm, >/= 250 µm*	Wet sieving using dispersant, 500 µm and 250 µm sieves, gravimetry (calculation by difference).	0.1 g/100g dry wt	1-3
Fraction < 250 µm, >/= 125 µm*	Wet sieving using dispersant, 250 µm and 125 µm sieves, gravimetry (calculation by difference).	0 1 g/100g dry wt	1-3

Sample Type: Sediment			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Fraction < 125 µm, >/= 63 µm*	Wet sieving using dispersant, 125 µm and 63 µm sieves, gravimetry (calculation by difference).	0.1 g/100g dry wt	1-3
Fraction < 63 µm*	Wet sieving with dispersant, 63 µm sieve, gravimetry (calculation by difference)	0.1 g/100g dry wt	1-3

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Samples are held at the laboratory after reporting for a length of time depending on the preservation used and the stability of the analytes being tested. Once the storage period is completed the samples are discarded unless otherwise advised by the client.

Graham Corban MSc Tech (Hons)
Client Services Manager - Environmental

Consultation form

Photocopy this form for each person or group to be consulted

Office use only
File:
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Project:

Section 1: Application details

Applicant name:

Te Tahuna o Aotea Marine Farm Ltd

Application numbers (if known)	Proposed activity
N/a	Mussel spat catching

Section 2: Consulted party details

Name	Contact person: Ross Dockery Group (if appropriate): Aotea Marine Farms
Postal address	PO Box 55 Kawhia 3843
Residential address If different from postal address	5155 SH 31 Kawhia
Email address	kawhiamotors@xtra.co.nz or DOCK@farmside.co.nz
Phone number/s	Home: 07 8710806 Business: 07 8710805 Mobile: 021 443005 Fax: 07 8710805

Section 3: Consulted party views on proposal

If you would like Waikato Regional Council to know your views on the applicant's proposal, and/or if you consider you may be ad affected, please indicate your views below (attach additional pages if necessary).

Consider the following: How do you consider you will be affected? How would you like the applicant's proposal to be modified account of your views? What other comments do you have on the proposal that you would like Waikato Regional Council to cons making a decision on these resource consent application

I support the proposal to develop this mussel spat catching farm. While it would be in opposition to our existing farm, I think there is enough demand for the spat to be supplied to Coromandel farms. I support the proposal because it is local Tanga te Kawa who are behind the application, as these are the people who should benefit from this resource. We have been developing methods & spat catching

in Aotea for nearly 20 yrs & now have a system developed that works very well in a demanding environment. We will be mentoring & assisting the applicants to develop this project. The proposal has the potential to develop employment & prosperity in a small community for the good of the local people.

I realise that Aotea harbour is a very special place & the last thing I would want is to see it spoiled by to much development but I think this 5 hectre farm would not have to much effect on the environment. I would oppose any more large scale farms in Aotea as I think that would probably be to much on a small harbour.

I do have concerns as far as anything discarded or lost over the side of the boats go, being the only existing farmer in the harbour at the moment. Any rubbish washed up is fairly & squarly ours but if other farmers were to be in the same harbour then there is the opportunity to blame the other farmer. We are very concious of anything going overboard & go to great length to recover anything lost & I would demand the same standard of operation from any one else.

I strongly believe that this is a resource that should be developed localy for the good of our community of Tauhara/Aotea we have the ability & know how to do this.

There is pressure from Mussel farming companys from outside our Rohe & I would oppose these as they would be a little [illegible] other than ours.

18 August 2016

Terewai Apiti
344 Aotea Rd
Kawhia

Tena Koe Terewai

Thank- you for attending our last Trustees meeting on 30 July 2016, and consulting with our group on behalf of Te Tahuna o Aotea Moana Marine Farm Ltd in your application for a spat mussel farm in Aotea Harbour.

You explained very thoroughly and we were impressed with your clarity and expectations of your business.

The Trustees from Okapu F2 support your business pursuit and we wish you all the best, it is good for our harbour and good for business to be local.

Yours sincerely

Suzanne Mariassouce
On behalf of Okapu F2 trustees
Secretary

te tahi o hurae

Gmail

COMPOSE

Inbox (76)

Starred

Important

Sent Mail

Drafts (6)

Circles

T Terewai +

Make a call

Fwd: Email of Support fmrom Mootakotako marae

Inbox x

Tahi Rangiawha <tahirangiawha@gmail.com>
to me

——— Forwarded message ———
From: **Tahi Rangiawha** <tahirangiawha@gmail.com>
Date: Thu, Nov 3, 2016 at 11:38 AM
Subject: Email of Support fmrom Mootakotako marae
To: mama@gmail.com

Kia ora Terewai,

In regards to the presentation given at Mootakotako Marae at a marae proposal, Mootakotako Marae has **no issues** with your proposal.

Mootakotako Marae looks forward to this venture which will contribut economic growth and development of Aotea and aligns with Waikato-Tumu, Tai Pari, Tai Ao.

Ngaa mihi,

Tahi-o-Hurae Te Ao Marama Rangiawha
Mootakotako Marae Chairperson
027 453 5431

Click here to Reply or Forward

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Section 1: Application details

Applicant name:

Te Tahuna o Aotea Marine Farm Ltd

Application numbers (if known)	Proposed activity
N/a	Mussel spat catching

Section 2: Consulted party details

Name	Contact person: Suzanne Marassouce Group (if appropriate): Okapu F2 Trust
Postal address	PO Box 175 Kawhia Delivery Centre Kawhia
Residential address If different from postal address	410 Hawbroa St Kawhia.
Email address	smarassouce@gmail.com
Phone number/s	Home: Mobile: 02102220298 Business: Fax:

Section 3: Consulted party views on proposal

If you would like Waikato Regional Council to know your views on the applicant's proposal, and/or if you consider you may b affected, please indicate your views below (attach additional pages if necessary).

Consider the following: How do you consider you will be affected? How would you like the applicant's proposal to be modi account of your views? What other comments do you have on the proposal that you would like Waikato Regional Council to making a decision on these resource consent application

Consultation form

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Section 1: Application details

Applicant name:

Te Tahuna o Aotea Marine Farm Ltd

Application numbers (if known)	Proposed activity
N/a	Mussel spat catching

Section 2: Consulted party details

Name	Contact person: Raymond Turner	
	Group (if appropriate):	
Postal address	P.O. Box 124 Kawhia	
Residential address If different from postal address	579 Aotea Road Kawhia	
Email address		
Phone number/s	Home: 07 8719275	Business:
	Mobile:	Fax:

Section 3: Consulted party views on proposal

If you would like Waikato Regional Council to know your views on the applicant's proposal, and/or if you consider you may be adversely affected, please indicate your views below (attach additional pages if necessary).

Consider the following: How do you consider you will be affected? How would you like the applicant's proposal to be modified to take account of your views? What other comments do you have on the proposal that you would like Waikato Regional Council to consider in making a decision on these resource consent application

Section 4: Applicant's response (to be completed by applicant)

Please indicate how your proposal can be modified or may not be able to be modified to take account of the views of the party you have consulted with (attach additional pages if necessary)

Section 5: Consulted party's response (to be completed by person/group consulted)

Please tick one option only.

◯ I/We give my/our approval for the proposal

◯ I/We do not give my/our approval for the proposal

☑ I/~~We~~ are not affected by the proposal

Signature: R Tinkler

Date: 15/08/2016

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Section 1: Application details

Applicant name:

Te Tahuna o Aotea Marine Farm Ltd

Application numbers (if known)	Proposed activity
N/a	Mussel spat catching

Section 2: Consulted party details

Name	Contact person: Annette Gane
	Group (if appropriate):
Postal address	660 Lawton Drive Aotea Beach RD1 Kawhia
Residential address If different from postal address	
Email address	agana@outlook.co.nz
Phone number/s	Home: 07 871 0864 Business: 021 840190 Mobile: 021 840190 Fax:

Section 3: Consulted party views on proposal

If you would like Waikato Regional Council to know your views on the applicant's proposal, and/or if you consider you may be ad affected, please indicate your views below (attach additional pages if necessary).

Consider the following: How do you consider you will be affected? How would you like the applicant's proposal to be modified account of your views? What other comments do you have on the proposal that you would like Waikato Regional Council to cons making a decision on these resource consent application

A totally support this proposal.

- My property is one of two that are closet to the proposed farm and I see no adverse impacts.

- It is certainly an advantage for the community for this to go ahead.

Section 4: Applicant's response (to be completed by applicant)

Please indicate how your proposal can be modified or may not be able to be modified to take account of the views of the party you hav consulted with (attach additional pages if necessary)

Section 5: Consulted party's response (to be completed by person/group consulted)

Please tick one option only.

- [x] I/We give my/our approval for the proposal
- [ ] I/We do not give my/our approval for the proposal
- [ ] I/We are not affected by the proposal

Signature: _____

Date: 2nd September 2016

Consultation form

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Section 1: Application details

Applicant name:

Te Tahuna o Aotea Marine Farm Ltd

Application numbers (if known)	Proposed activity
N/a	Mussel spat catching

Section 2: Consulted party details

Name	Contact person: DIANNA AWHITU
	Group (if appropriate): [redacted] OKAPU MARAE, NGATI TE WEHI
Postal address	1 CLIFFORD STREET, MORRINSVILLE
Residential address If different from postal address	
Email address	dawn.tu@yahoo.com
Phone number/s	Home: 07 8894127 Business:
	Mobile: 0224052669 Fax:

Section 3: Consulted party views on proposal

If you would like Waikato Regional Council to know your views on the applicant's proposal, and/or if you consider you may be ad affected, please indicate your views below (attach additional pages if necessary).

Consider the following: How do you consider you will be affected? How would you like the applicant's proposal to be modified account of your views? What other comments do you have on the proposal that you would like Waikato Regional Council to con making a decision on these resource consent application

Section 4: Applicant's response (to be completed by applicant)

Please indicate how your proposal can be modified or may not be able to be modified to take account of the views of the party you hav
consulted with (attach additional pages if necessary)

Section 5: Consulted party's response (to be completed by person/group consulted)

Please tick one option only.

☑ I/We give my/our approval for the proposal

☐ I/We do not give my/our approval for the proposal

☐ I/We are not affected by the proposal

Signature: [signature]

Date: 23 JULY 2016.

Consultation form

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Section 1: Application details

Applicant name: Loretta Mahara.

Te Tahuna o Aotea Marine Farm Ltd

Application numbers (if known)	Proposed activity
N/a	Mussel spat catching

Section 2: Consulted party details

Name Loretta Mahara	Contact person: [redacted]
	Group (if appropriate): Te Tahuna o Aotea Marine Farm Ltd.
Postal address	
Residential address If different from postal address	37b claude st fairfield. Hamilton
Email address	Lorettam323@gmail.com
Phone number/s	Home (07) 974-3487 Business:
	Mobile: 0223693767. Fax:

Section 3: Consulted party views on proposal

If you would like Waikato Regional Council to know your views on the applicant's proposal, and/or if you consider you may be ad affected, please indicate your views below (attach additional pages if necessary).

Consider the following: How do you consider you will be affected? How would you like the applicant's proposal to be modified account of your views? What other comments do you have on the proposal that you would like Waikato Regional Council to con making a decision on these resource consent application

Section 4: Applicant's response (to be completed by applicant)

Please indicate how your proposal can be modified or may not be able to be modified to take account of the views of the party you hav
consulted with (attach additional pages if necessary)

Section 5: Consulted party's response (to be completed by person/group consulted)

Please tick one option only.

☑ I/We give my/our approval for the proposal

☐ I/We do not give my/our approval for the proposal

☐ I/We are not affected by the proposal

Signature: K Mahara

Date: 23-7-16

Consultation form

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Project:

Section 1: Application details

Applicant name:

Te Tahuna o Aotea Marine Farm Ltd

Application numbers (if known)	Proposed activity
N/a	Mussel spat catching

Section 2: Consulted party details

Name	Contact person: KARMEN AWHITU
	Group (if appropriate): OKAPU MARAE
Postal address	
Residential address If different from postal address	1 CLIFFORD STREET MORRINSVILLE 3300
Email address	awhitu-makarawhanau@hotmail.com
Phone number/s	Home: 07 889 4127 Business: Mobile: 021 0826 4447 Fax:

Section 3: Consulted party views on proposal

If you would like Waikato Regional Council to know your views on the applicant's proposal, and/or if you consider you may be a affected, please indicate your views below (attach additional pages if necessary).

Consider the following: How do you consider you will be affected? How would you like the applicant's proposal to be modified account of your views? What other comments do you have on the proposal that you would like Waikato Regional Council to cor making a decision on these resource consent application

Section 4: Applicant's response (to be completed by applicant)

Please indicate how your proposal can be modified or may not be able to be modified to take account of the views of the party you have consulted with (attach additional pages if necessary)

Section 5: Consulted party's response (to be completed by person/group consulted)

Please tick one option only.

☑ I/We give my/~~our~~ approval for the proposal

☐ I/We do not give my/our approval for the proposal

☐ I/We are not affected by the proposal

Signature: K. Qwutu.

Date: 23.7.16

Consultation form

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Project:

Section 1: Application details

Applicant name:

Te Tahuna o Aotea Marine Farm Ltd

Application numbers (if known)	Proposed activity
N/a	Mussel spat catching

Section 2: Consulted party details

Name MARISA MAHARA	Contact person: MARISA MAHARA Group (if appropriate): TE TAHUNA O AOTEA MARINE FARM.	
Postal address 334 PEACHGROVE ROAD FAIRFIELD HAMILTON		
Residential address If different from postal address SAME AS ABOVE		
Email address		
Phone number/s 0210029685915	Home:	Business:
	Mobile:	Fax:

Section 3: Consulted party views on proposal

If you would like Waikato Regional Council to know your views on the applicant's proposal, and/or if you consider you may be ad affected, please indicate your views below (attach additional pages if necessary).

Consider the following: How do you consider you will be affected? How would you like the applicant's proposal to be modified account of your views? What other comments do you have on the proposal that you would like Waikato Regional Council to con making a decision on these resource consent application

I SUPPORT THIS PROPOSAL TOWARDS TE TAHUNA O AOTEA MARINE FARM.

Section 4: Applicant's response (to be completed by applicant)

Please indicate how your proposal can be modified or may not be able to be modified to take account of the views of the party you have consulted with (attach additional pages if necessary)

Section 5: Consulted party's response (to be completed by person/group consulted)

Please tick one option only.

- [x] I/We give my/our approval for the proposal
- [ ] I/We do not give my/our approval for the proposal
- [ ] I/We are not affected by the proposal

Signature: N. R. Mehra.

Date: 23.7.16.

Consultation form

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Customer ID:
Project:

Section 1: Application details

Applicant name:

Te Tahuna o Aotea Marine Farm Ltd

Application numbers (if known)	Proposed activity
N/a	Mussel spat catching

Section 2: Consulted party details

Name	Contact person: Peter McLean
	Group (if appropriate):
Postal address	172 Ash Tce Aotea Kawhia 3889
Residential address If different from postal address	
Email address	
Phone number/s	Home: 07 871 0560 Business: Mobile: Fax:

Section 3: Consulted party views on proposal

If you would like Waikato Regional Council to know your views on the applicant's proposal, and/or if you consider you may be ad affected, please indicate your views below (attach additional pages if necessary).

Consider the following: How do you consider you will be affected? How would you like the applicant's proposal to be modified account of your views? What other comments do you have on the proposal that you would like Waikato Regional Council to cons making a decision on these resource consent application

Section 4: Applicant's response (to be completed by applicant)

Please indicate how your proposal can be modified or may not be able to be modified to take account of the views of the party you have consulted with (attach additional pages if necessary)

Section 5: Consulted party's response (to be completed by person/group consulted)

Please tick one option only.

- (✓) I/~~We~~ give my/~~our~~ approval for the proposal
- ( ) I/We do not give my/our approval for the proposal
- ( ) I/We are not affected by the proposal

Signature: P D McLean

Date: 25-7-16

Consultation form

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Project:

Section 1: Application details

Applicant name:

Te Tahuna o Aotea Marine Farm Ltd

Application numbers (if known)	Proposed activity
N/a	Mussel spat catching

Section 2: Consulted party details

Name	Contact person: PEGGY R. Nelson. Group (if appropriate): TE TAHUNA AOTEA MOANA. MARINE FARM LTD. NGATI TE WEHI
Postal address	37b CLAUDE ST FAIRFIELD HAMILTON.
Residential address If different from postal address	
Email address	peggyrtanelson@gmail.com.
Phone number/s	Home: Business: Mobile: 0211515732. Fax:

Section 3: Consulted party views on proposal

If you would like Waikato Regional Council to know your views on the applicant's proposal, and/or if you consider you may be ad affected, please indicate your views below (attach additional pages if necessary).

Consider the following: How do you consider you will be affected? How would you like the applicant's proposal to be modified account of your views? What other comments do you have on the proposal that you would like Waikato Regional Council to cons making a decision on these resource consent application

[illegible]

Section 4: Applicant's response (to be completed by applicant)

Please indicate how your proposal can be modified or may not be able to be modified to take account of the views of the party you have consulted with (attach additional pages if necessary)

Section 5: Consulted party's response (to be completed by person/group consulted)

Please tick one option only.

☑ I/~~We~~ give my/~~our~~ approval for the proposal

☐ I/We do not give my/our approval for the proposal

☐ I/We are not affected by the proposal

Signature: R.R. Jackson

Date: 23.07.16.

Consultation form

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Project:

Section 1: Application details

Applicant name:

Te Tahuna o Aotea Marine Farm Ltd

Application numbers (if known)	Proposed activity
N/a	Mussel spat catching

Section 2: Consulted party details

Name	Contact person: Carol Awhitu
	Group (if appropriate):
Postal address	32 Shakespeare Ave Hamilton
Residential address If different from postal address	
Email address	Carolawhitu@gmail.com
Phone number/s	Home: Business: Mobile: 022 019 2372 Fax:

Section 3: Consulted party views on proposal

If you would like Waikato Regional Council to know your views on the applicant's proposal, and/or if you consider you may be adversely affected, please indicate your views below (attach additional pages if necessary).

Consider the following: How do you consider you will be affected? How would you like the applicant's proposal to be modified to take account of your views? What other comments do you have on the proposal that you would like Waikato Regional Council to consider in making a decision on these resource consent application

Section 4: Applicant's response (to be completed by applicant)

Please indicate how your proposal can be modified or may not be able to be modified to take account of the views of the party you have consulted with (attach additional pages if necessary)

Section 5: Consulted party's response (to be completed by person/group consulted)

Please tick one option only.

☑ I/We give my/our approval for the proposal

☐ I/We do not give my/our approval for the proposal

☐ I/We are not affected by the proposal

Signature: _____

Date: 29/7/16

Consultation form

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Project:

Section 1: Application details

Applicant name:

Te Tahuna o Aotea Marine Farm Ltd

Application numbers (if known)	Proposed activity
N/a	Mussel spat catching

Section 2: Consulted party details

Name	Contact person: Delphia Awhitu
	Group (if appropriate):
Postal address	32 Shakespear Avenue - Enderly Hamilton
Residential address If different from postal address	
Email address	awhitumama@gmail.com
Phone number/s	Home: Business:
	Mobile: 0204113908 Fax:

Section 3: Consulted party views on proposal

If you would like Waikato Regional Council to know your views on the applicant's proposal, and/or if you consider you may be adversely affected, please indicate your views below (attach additional pages if necessary).

Consider the following: How do you consider you will be affected? How would you like the applicant's proposal to be modified to take account of your views? What other comments do you have on the proposal that you would like Waikato Regional Council to consider in making a decision on these resource consent application

I think this is an awsome idea and I totally support this proposal.

Section 4: Applicant's response (to be completed by applicant)

Please indicate how your proposal can be modified or may not be able to be modified to take account of the views of the party you have consulted with (attach additional pages if necessary)

Section 5: Consulted party's response (to be completed by person/group consulted)

Please tick one option only.

- [x] I/We give my/our approval for the proposal
- [ ] I/We do not give my/our approval for the proposal
- [ ] I/We are not affected by the proposal

Signature: D. Grant

Date: 27.07.16

Consultation form

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Project:

Section 1: Application details

Applicant name:

Te Tahuna o Aotea Marine Farm Ltd

Application numbers (if known)	Proposed activity
N/a	Mussel spat catching

Section 2: Consulted party details

Name	Contact person: Hakaraia Hemara
	Group (if appropriate):
Postal address	32 Shakespeare Ave Hamilton Fairfield
Residential address If different from postal address	
Email address	
Phone number/s	Home: 32 Sha Business:
	Mobile: 02041139087 Fax:

Section 3: Consulted party views on proposal

If you would like Waikato Regional Council to know your views on the applicant's proposal, and/or if you consider you may be adversely affected, please indicate your views below (attach additional pages if necessary).

Consider the following: How do you consider you will be affected? How would you like the applicant's proposal to be modified to take account of your views? What other comments do you have on the proposal that you would like Waikato Regional Council to consider in making a decision on these resource consent application

Section 4: Applicant's response (to be completed by applicant)

Please indicate how your proposal can be modified or may not be able to be modified to take account of the views of the party you have consulted with (attach additional pages if necessary)

Section 5: Consulted party's response (to be completed by person/group consulted)

Please tick one option only.

- [x] I/~~We~~ give my/~~our~~ approval for the proposal
- [ ] I/We do not give my/our approval for the proposal
- [ ] I/We are not affected by the proposal

Signature: _____

Date: 28.07.16

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Section 1: Application details

Applicant name:

Te Tahuna o Aotea Marine Farm Ltd

Application numbers (if known)	Proposed activity
N/a	Mussel spat catching

Section 2: Consulted party details

Name	Contact person: RAYMOND NEIL CRAKE
	Group (if appropriate):
Postal address	150 ASH TCE AOTEA. KAWHIA
Residential address If different from postal address	
Email address	
Phone number/s	Home: 8710005 Business:
	Mobile: Fax:

Section 3: Consulted party views on proposal

If you would like Waikato Regional Council to know your views on the applicant's proposal, and/or if you consider you may be ad affected, please indicate your views below (attach additional pages if necessary).

Consider the following: How do you consider you will be affected? How would you like the applicant's proposal to be modified account of your views? What other comments do you have on the proposal that you would like Waikato Regional Council to con making a decision on these resource consent application

VERY GOOD IDEA

IT WILL NOT AFFECT US IN ANY WAY.

Section 4: Applicant's response (to be completed by applicant)

Please indicate how your proposal can be modified or may not be able to be modified to take account of the views of the party you have consulted with (attach additional pages if necessary)

Section 5: Consulted party's response (to be completed by person/group consulted)

Please tick one option only.

(✓) I/~~We~~ give my/~~our~~ approval for the proposal

( ) I/We do not give my/our approval for the proposal

( ) I/We are not affected by the proposal

Signature: R Cle.

Date: 25 · 7 · 16

Consultation form

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Project:

Section 1: Application details

Applicant name:

Te Tahuna o Aotea Marine Farm Ltd

Application numbers (if known)	Proposed activity
N/a	Mussel spat catching

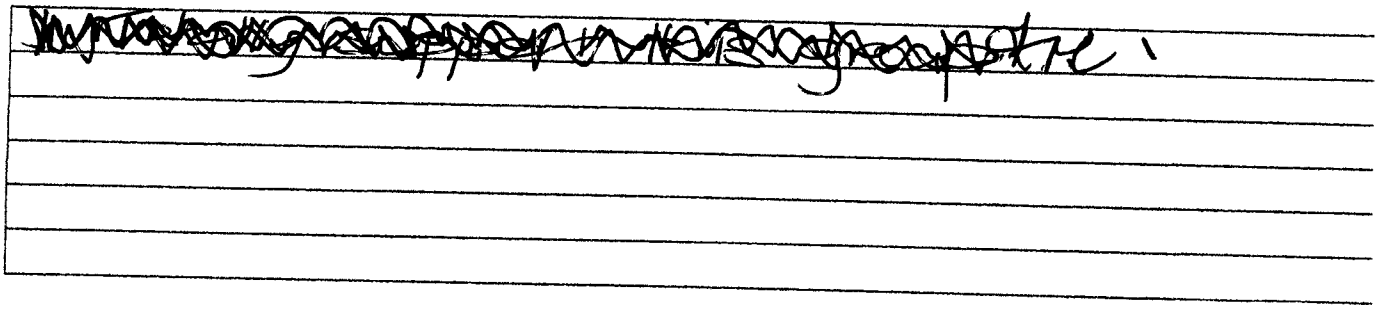
Section 2: Consulted party details

Name	Contact person: Kardha MOKE Group (if appropriate): TE Tahuna o AOTEA MOANA MARINE FARM LTD (Ngati TEWHI
Postal address	149 HETHERINGTON ROAD TE KAURI - HUNTLY.
Residential address If different from postal address	
Email address	Kardha MOKE 4 @ GMAIL . COM .
Phone number/s	Home: Business: Mobile: 0210847 4429 Fax:

Section 3: Consulted party views on proposal

If you would like Waikato Regional Council to know your views on the applicant's proposal, and/or if you consider you may be ad affected, please indicate your views below (attach additional pages if necessary).

Consider the following: How do you consider you will be affected? How would you like the applicant's proposal to be modified account of your views? What other comments do you have on the proposal that you would like Waikato Regional Council to cons making a decision on these resource consent application



Section 4: Applicant's response (to be completed by applicant)

Please indicate how your proposal can be modified or may not be able to be modified to take account of the views of the party you have consulted with (attach additional pages if necessary)

Section 5: Consulted party's response (to be completed by person/group consulted)

Please tick one option only.

☑ ~~I/We~~ give my/~~our~~ approval for the proposal

☐ I/We do not give my/our approval for the proposal

☐ I/We are not affected by the proposal

Signature: A. Mote

Date: 23-07-016

Consultation form

Photocopy this form for each person or group to be consulted

Office use only
File:
Customer ID:
Project:

Section 1: Application details

Applicant name:

Te Tahuna o Aotea Marine Farm Ltd

Application numbers (if known)	Proposed activity
N/a	Mussel spat catching

Section 2: Consulted party details

Name Robin Nelson	Contact person:	
	Group (if appropriate): OKAPU Marae	
Postal address	37b Claude Street Claudelands Hamilton 3214	
Residential address If different from postal address		
Email address	Robinm323@gmail.com	
Phone number/s	Home: (07) 9743487	Business:
	Mobile: (021) 0309935	Fax:

Section 3: Consulted party views on proposal

If you would like Waikato Regional Council to know your views on the applicant's proposal, and/or if you consider you may be adversely affected, please indicate your views below (attach additional pages if necessary).

Consider the following: How do you consider you will be affected? How would you like the applicant's proposal to be modified to take account of your views? What other comments do you have on the proposal that you would like Waikato Regional Council to consider in making a decision on these resource consent application

Section 4: Applicant's response (to be completed by applicant)

Please indicate how your proposal can be modified or may not be able to be modified to take account of the views of the party you have consulted with (attach additional pages if necessary)

Section 5: Consulted party's response (to be completed by person/group consulted)

Please tick one option only.

- [x] I/We give my/our approval for the proposal
- [ ] I/We do not give my/our approval for the proposal
- [ ] I/We are not affected by the proposal

Signature: Andrew

Date: 23/07/16

Consultation form

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Office use only
File:
Customer ID:
Project:

Section 1: Application details

Applicant name:

Te Tahuna o Aotea Marine Farm Ltd

Application numbers (if known)	Proposed activity
N/a	Mussel spat catching

Section 2: Consulted party details

Name	Contact person: IAN SHADDOCK
	Group (if appropriate): OKAPU MARAE
Postal address	C/- MARAE ST KAWHIA
Residential address If different from postal address	C/- MARAE ST KAWHIA
Email address	
Phone number/s	Home: Business: Mobile: 0212412985 Fax:

Section 3: Consulted party views on proposal

If you would like Waikato Regional Council to know your views on the applicant's proposal, and/or if you consider you may be a affected, please indicate your views below (attach additional pages if necessary).

Consider the following: How do you consider you will be affected? How would you like the applicant's proposal to be modified account of your views? What other comments do you have on the proposal that you would like Waikato Regional Council to cor making a decision on these resource consent application

Section 4: Applicant's response (to be completed by applicant)

Please indicate how your proposal can be modified or may not be able to be modified to take account of the views of the party you have consulted with (attach additional pages if necessary)

Section 5: Consulted party's response (to be completed by person/group consulted)

Please tick one option only.

☑ I/We give my approval for the proposal

☐ I/We do not give my/our approval for the proposal

☐ I/We are not affected by the proposal

Signature: IAN SHAMROCK

Date: 23 - 11 / 2016

Consultation form

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Office use only
File:
Customer ID:
Project:

Section 1: Application details

Applicant name:

Te Tahuna o Aotea Marine Farm Ltd

Application numbers (if known)	Proposed activity
N/a	Mussel spat catching

Section 2: Consulted party details

Name BEN MIHIMAD MAHARA	Contact person:	
	Group (if appropriate):	
Postal address OKAPU MARAE		
Residential address If different from postal address 15 BEATRICE PLACE		
Email address		
Phone number/s 07 849 4835	Home: ✓	Business:
	Mobile:	Fax:

Section 3: Consulted party views on proposal

If you would like Waikato Regional Council to know your views on the applicant's proposal, and/or if you consider you may be ac affected, please indicate your views below (attach additional pages if necessary).

Consider the following: How do you consider you will be affected? How would you like the applicant's proposal to be modified account of your views? What other comments do you have on the proposal that you would like Waikato Regional Council to con making a decision on these resource consent application

NO I AGREE with the TAHUNA O AOTEA MARINE FARM

Section 4: Applicant's response (to be completed by applicant)

Please indicate how your proposal can be modified or may not be able to be modified to take account of the views of the party you have consulted with (attach additional pages if necessary)

Section 5: Consulted party's response (to be completed by person/group consulted)

Please tick one option only.

☑ I/We give my/our approval for the proposal

☐ I/We do not give my/our approval for the proposal

☐ I/We are not affected by the proposal

Signature: B McLaren

Date: 23-7-16

Consultation form

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File:
Customer ID:
Project:

Section 1: Application details

Applicant name:

Te Tahuna o Aotea Marine Farm Ltd

Application numbers (if known)	Proposed activity
N/a	Mussel spat catching

Section 2: Consulted party details

Name [illegible]	Contact person:
	Group (if appropriate): Ngati Te Wehi
Postal address	
Residential address If different from postal address	21 Perrod Street Ngaruawahia
Email address	
Phone number/s	Home: 07 846 3[illegible] Business:
	Mobile: 0[illegible] Fax:

Section 3: Consulted party views on proposal

If you would like Waikato Regional Council to know your views on the applicant's proposal, and/or if you consider you may be ad affected, please indicate your views below (attach additional pages if necessary).

Consider the following: How do you consider you will be affected? How would you like the applicant's proposal to be modified account of your views? What other comments do you have on the proposal that you would like Waikato Regional Council to con making a decision on these resource consent application

Section 4: Applicant's response (to be completed by applicant)

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Section 5: Consulted party's response (to be completed by person/group consulted)

Please tick one option only.

(✓) I/~~We~~ give my/~~our~~ approval for the proposal

( ) I/We do not give my/our approval for the proposal

( ) I/We are not affected by the proposal

Signature: [signature]

Date: 23/9/2012

Consultation form

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Customer ID:
Project:

Section 1: Application details

Applicant name:

Te Tahuna o Aotea Marine Farm Ltd

Application numbers (if known)	Proposed activity
N/a	Mussel spat catching

Section 2: Consulted party details

Name Tilena Mahara	Contact person: Tilena Mahara. Group (if appropriate): Ngati te Wehi
Postal address	55 Byron Street, Leamington Cambridge 3432
Residential address If different from postal address	
Email address	mahara.bennett@hotmail.com
Phone number/s	Home: Business: Mobile: 0210620490 Fax:

Section 3: Consulted party views on proposal

If you would like Waikato Regional Council to know your views on the applicant's proposal, and/or if you consider you may be a affected, please indicate your views below (attach additional pages if necessary).

Consider the following: How do you consider you will be affected? How would you like the applicant's proposal to be modified account of your views? What other comments do you have on the proposal that you would like Waikato Regional Council to cor making a decision on these resource consent application

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Please indicate how your proposal can be modified or may not be able to be modified to take account of the views of the party you have consulted with (attach additional pages if necessary)

Section 5: Consulted party's response (to be completed by person/group consulted)

Please tick one option only.

- [x] I/We give my/our approval for the proposal
- [ ] I/We do not give my/our approval for the proposal
- [ ] I/We are not affected by the proposal

Signature: J Upadhyaya.

Date: 23/07/16

Consultation form

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File:
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Project:

Section 1: Application details

Applicant name:

Te Tahuna o Aotea Marine Farm Ltd

Application numbers (if known)	Proposed activity
N/a	Mussel spat catching

Section 2: Consulted party details

Name	Contact person: John Maharg
	Group (if appropriate):
Postal address	334 Peachgrove RD Fairfield 3214 Hamilton
Residential address If different from postal address	
Email address	
Phone number/s	Home: 07 852-5544 Business: Mobile: 0224970752 Fax:

Section 3: Consulted party views on proposal

If you would like Waikato Regional Council to know your views on the applicant's proposal, and/or if you consider you may be a affected, please indicate your views below (attach additional pages if necessary).

Consider the following: How do you consider you will be affected? How would you like the applicant's proposal to be modified account of your views? What other comments do you have on the proposal that you would like Waikato Regional Council to cor making a decision on these resource consent application

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Please indicate how your proposal can be modified or may not be able to be modified to take account of the views of the party you hav consulted with (attach additional pages if necessary)

Section 5: Consulted party's response (to be completed by person/group consulted)

Please tick one option only.

(X) I/We give my/~~our~~ approval for the proposal

( ) I/We do not give my/our approval for the proposal

( ) I/We are not affected by the proposal

Signature: J t Kahara . Kaumatua .

Date: 23/7/16

Consultation form

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Customer ID:
Project:

Section 1: Application details

Applicant name:

Te Tahuna o Aotea Marine Farm Ltd

Application numbers (if known)	Proposed activity
N/a	Mussel spat catching

Section 2: Consulted party details

Name	Contact person: Pioi Temara Group (if appropriate): Okapu Marae
Postal address	RD1 AOTEA ROAD KAWHIA
Residential address If different from postal address	
Email address	Pioitemara@gmail.com
Phone number/s	Home: — Mobile: 0210229 4365 Business: Fax:

Section 3: Consulted party views on proposal

If you would like Waikato Regional Council to know your views on the applicant's proposal, and/or if you consider you may be ad affected, please indicate your views below (attach additional pages if necessary).

Consider the following: How do you consider you will be affected? How would you like the applicant's proposal to be modified account of your views? What other comments do you have on the proposal that you would like Waikato Regional Council to con making a decision on these resource consent application

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Section 5: Consulted party's response (to be completed by person/group consulted)

Please tick one option only.

☑ I/~~We~~ give my/~~our~~ approval for the proposal

☐ I/We do not give my/our approval for the proposal

☐ I/We are not affected by the proposal

Signature: P. Leman.

Date: 28.07.2016

Consultation form

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Project:

Section 1: Application details

Applicant name: Doug Mahara

Te Tahuna o Aotea Marine Farm Ltd

Application numbers (if known)	Proposed activity
N/a	Mussel spat catching

Section 2: Consulted party details

Name Doug Mahara	Contact person:
	Group (if appropriate): Okapu Marae, Ngati Te Wehi
Postal address	354 Aotea Rd, Aotea Okapu Kawhia 3889
Residential address If different from postal address	
Email address ngatiteweheshuman@gmail.com	
Phone number/s	Home: Business: Mobile: 021022943 65 Fax:

Section 3: Consulted party views on proposal

If you would like Waikato Regional Council to know your views on the applicant's proposal, and/or if you consider you may be ad affected, please indicate your views below (attach additional pages if necessary).

Consider the following: How do you consider you will be affected? How would you like the applicant's proposal to be modified account of your views? What other comments do you have on the proposal that you would like Waikato Regional Council to cons making a decision on these resource consent application

Waik

Section 4: Applicant's response (to be completed by applicant)

Please indicate how your proposal can be modified or may not be able to be modified to take account of the views of the party you have consulted with (attach additional pages if necessary)

Section 5: Consulted party's response (to be completed by person/group consulted)

Please tick one option only.

- [x] I/~~We~~ give my/~~our~~ approval for the proposal
- [ ] I/We do not give my/our approval for the proposal
- [ ] I/We are not affected by the proposal

Signature: _____

Date: 23/7/16

Consultation form

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File:
Customer ID:
Project:

Section 1: Application details

Applicant name:

Te Tahuna o Aotea Marine Farm Ltd

Application numbers (if known)	Proposed activity
N/a	Mussel spat catching

Section 2: Consulted party details

Name	Contact person: Tatautau June Mahara Group (if appropriate): Ngati Tehehi
Postal address	10 Moncrieff Ave Glendene, Manukau Auckland
Residential address If different from postal address	
Email address	Tatautau June [redacted] @gmail.
Phone number/s	Home: Business: Mobile: Fax:

Section 3: Consulted party views on proposal

If you would like Waikato Regional Council to know your views on the applicant's proposal, and/or if you consider you may be ad affected, please indicate your views below (attach additional pages if necessary).

Consider the following: How do you consider you will be affected? How would you like the applicant's proposal to be modified account of your views? What other comments do you have on the proposal that you would like Waikato Regional Council to cons making a decision on these resource consent application

Consultation form

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Customer ID:
Project:

Section 1: Application details

Applicant name: CLAUDE T. APITI

Te Tahuna o Aotea Marine Farm Ltd

Application numbers (if known)	Proposed activity
N/a	Mussel spat catching

Section 2: Consulted party details

Name CLAUDE T. APITI	Contact person: Group (if appropriate): OKAPU MARAE.
Postal address 21 DERBY ST. HAMILTON	
Residential address If different from postal address	
Email address	TakiApiti@hotmail.com
Phone number/s	Home: 07 8463145 Business: Mobile: 027 4190882 Fax:

Section 3: Consulted party views on proposal

If you would like Waikato Regional Council to know your views on the applicant's proposal, and/or if you consider you may be ad affected, please indicate your views below (attach additional pages if necessary).

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Section 4: Applicant's response (to be completed by applicant)

Please indicate how your proposal can be modified or may not be able to be modified to take account of the views of the party you have consulted with (attach additional pages if necessary)

Section 5: Consulted party's response (to be completed by person/group consulted)

Please tick one option only.

☑ I/We give my/our approval for the proposal

☐ I/We do not give my/our approval for the proposal

☐ I/We are not affected by the proposal

Signature: KAUMATUA.

Date: 23. 7. 2016.

Consultation form

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Office use only
File:
Customer ID:
Project:

Section 1: Application details

Applicant name:

Te Tahuna o Aotea Marine Farm Ltd

Application numbers (if known)	Proposed activity
N/a	Mussel spat catching

Section 2: Consulted party details

Name	Contact person: PATRICK BENNETT Group (if appropriate): NGATI TE WEHI
Postal address	
Residential address If different from postal address	55 BYRON STREET LEAMINGTON CAMBRIDGE.
Email address	AKATRICKS@hotmail.com
Phone number/s	Home: Mobile: 0210820 4900 Business: Fax:

Section 3: Consulted party views on proposal

If you would like Waikato Regional Council to know your views on the applicant's proposal, and/or if you consider you may be ad affected, please indicate your views below (attach additional pages if necessary).

Consider the following: How do you consider you will be affected? How would you like the applicant's proposal to be modified account of your views? What other comments do you have on the proposal that you would like Waikato Regional Council to con making a decision on these resource consent application

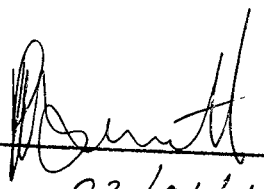
Section 4: Applicant's response (to be completed by applicant)

Please indicate how your proposal can be modified or may not be able to be modified to take account of the views of the party you hav consulted with (attach additional pages if necessary)

Section 5: Consulted party's response (to be completed by person/group consulted)

Please tick one option only.

- [x] I/We give my/our approval for the proposal
- [ ] I/We do not give my/our approval for the proposal
- [ ] I/We are not affected by the proposal

Signature: 

Date: 23/06/16

Consultation form

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Office use only
File:
Customer ID:
Project:

Section 1: Application details

Applicant name: Billy Taylor

Te Tahuna o Aotea Marine Farm Ltd

Application numbers (if known)	Proposed activity
N/a	Mussel spat catching

Section 2: Consulted party details

Name Billy Taylor	Contact person: Okapu
	Group (if appropriate):
Postal address	30 Hukanui Chartwell Hamilton
Residential address If different from postal address	
Email address	
Phone number/s	Home: Business: Mobile: 0204106703 Fax:

Section 3: Consulted party views on proposal

If you would like Waikato Regional Council to know your views on the applicant's proposal, and/or if you consider you may be a affected, please indicate your views below (attach additional pages if necessary).

Consider the following: How do you consider you will be affected? How would you like the applicant's proposal to be modified account of your views? What other comments do you have on the proposal that you would like Waikato Regional Council to cor making a decision on these resource consent application

Section 4: Applicant's response (to be completed by applicant)

Please indicate how your proposal can be modified or may not be able to be modified to take account of the views of the party you hav consulted with (attach additional pages if necessary)

Section 5: Consulted party's response (to be completed by person/group consulted)

Please tick one option only.

- [x] I/~~We~~ give my/~~our~~ approval for the proposal
- [ ] I/We do not give my/our approval for the proposal
- [ ] I/We are not affected by the proposal

Signature: B Taylor

Date: 21/7/2016

Consultation form

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File:
Customer ID:
Project:

Section 1: Application details

Applicant name: STAN MAHARA

Te Tahuna o Aotea Marine Farm Ltd

Application numbers (if known)	Proposed activity
N/a	Mussel spat catching

Section 2: Consulted party details

Name Stan Mahara	Contact person:
	Group (if appropriate): OKAPU / NGATI TE WEHI
Postal address 102 Nixon st	
Residential address If different from postal address	
Email address www.kingston_1@hotmail.com	
Phone number/s	Home: Business: Mobile: Fax:

Section 3: Consulted party views on proposal

If you would like Waikato Regional Council to know your views on the applicant's proposal, and/or if you consider you may be ad affected, please indicate your views below (attach additional pages if necessary).

Consider the following: How do you consider you will be affected? How would you like the applicant's proposal to be modified account of your views? What other comments do you have on the proposal that you would like Waikato Regional Council to con making a decision on these resource consent application

Section 4: Applicant's response (to be completed by applicant)

Please indicate how your proposal can be modified or may not be able to be modified to take account of the views of the party you hav consulted with (attach additional pages if necessary)

Section 5: Consulted party's response (to be completed by person/group consulted)

Please tick one option only.

- [x] I/We give my/our approval for the proposal
- [ ] I/We do not give my/our approval for the proposal
- [ ] I/We are not affected by the proposal

Signature: [signature]

Date: 23.07.16

Consultation form

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File:
Customer ID:
Project:

Section 1: Application details

Applicant name:

Te Tahuna o Aotea Marine Farm Ltd

Application numbers (if known)	Proposed activity
N/a	Mussel spat catching

Section 2: Consulted party details

Name	Contact person: NANCY TE NANI AWHITU
	Group (if appropriate): OKAPU MARAE, NGATI TE WEHI
Postal address	344 RD1 AOTEA ROAD, KAWHIA
Residential address If different from postal address	
Email address	
Phone number/s	Home: Business:
	Mobile: 021 146 0548 Fax:

Section 3: Consulted party views on proposal

If you would like Waikato Regional Council to know your views on the applicant's proposal, and/or if you consider you may be ad affected, please indicate your views below (attach additional pages if necessary).

Consider the following: How do you consider you will be affected? How would you like the applicant's proposal to be modified account of your views? What other comments do you have on the proposal that you would like Waikato Regional Council to cons making a decision on these resource consent application

Wait

Section 4: Applicant's response (to be completed by applicant)

Please indicate how your proposal can be modified or may not be able to be modified to take account of the views of the party you have consulted with (attach additional pages if necessary)

Section 5: Consulted party's response (to be completed by person/group consulted)

Please tick one option only.

- [x] I/We give my/our approval for the proposal
- [ ] I/We do not give my/our approval for the proposal
- [ ] I/We are not affected by the proposal

Signature: Kanoy Te Kani Awhite (Kaumatua)

Date: 23. 07. 2016.

Consultation form

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File:
Customer ID:
Project:

Section 1: Application details

Applicant name:

Te Tahuna o Aotea Marine Farm Ltd

Application numbers (if known)	Proposed activity
N/a	Mussel spat catching

Section 2: Consulted party details

Name Liz Mahara.	Contact person: Group (if appropriate): Nga Ti Te Weh
Postal address Okapu. Marae.	
Residential address If different from postal address	334 Peachgrove Rd Fairfield Hamilton
Email address	Liz.Mahara@gmail.com
Phone number/s	Home: 07 852 5544 Business: Mobile: 0220 352 764 Fax:

Section 3: Consulted party views on proposal

If you would like Waikato Regional Council to know your views on the applicant's proposal, and/or if you consider you may be a affected, please indicate your views below (attach additional pages if necessary).

Consider the following: How do you consider you will be affected? How would you like the applicant's proposal to be modified account of your views? What other comments do you have on the proposal that you would like Waikato Regional Council to cor making a decision on these resource consent application

I agree with the Tahuna mussel Marine farm

Section 4: Applicant's response (to be completed by applicant)

Please indicate how your proposal can be modified or may not be able to be modified to take account of the views of the party you have consulted with (attach additional pages if necessary)

Section 5: Consulted party's response (to be completed by person/group consulted)

Please tick one option only.

- (✓) I/We give my/our approval for the proposal
- ( ) I/We do not give my/our approval for the proposal
- ( ) I/We are not affected by the proposal

Signature: C. Mahara

Date: 23/7/2016

Consultation form

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File:
Customer ID:
Project:

Section 1: Application details

Applicant name: [illegible]

Te Tahuna o Aotea Marine Farm Ltd

Application numbers (if known)	Proposed activity
N/a	Mussel spat catching

Section 2: Consulted party details

Name Tera Ahitu	Contact person: 021419927 Group (if appropriate):
Postal address 104 Dixon Rd Hamilton	
Residential address If different from postal address	
Email address	Tera.goldtooth@gmail.com
Phone number/s	Home: Mobile: 021419927 Business: Fax:

Section 3: Consulted party views on proposal

If you would like Waikato Regional Council to know your views on the applicant's proposal, and/or if you consider you may be ac affected, please indicate your views below (attach additional pages if necessary).

Consider the following: How do you consider you will be affected? How would you like the applicant's proposal to be modified account of your views? What other comments do you have on the proposal that you would like Waikato Regional Council to con making a decision on these resource consent application

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Please indicate how your proposal can be modified or may not be able to be modified to take account of the views of the party you hav consulted with (attach additional pages if necessary)

Section 5: Consulted party's response (to be completed by person/group consulted)

Please tick one option only.

- [x] I/We give my/~~our~~ approval for the proposal
- [ ] I/We do not give my/our approval for the proposal
- [ ] I/We are not affected by the proposal

Signature: _____

Date: 23/7/16.

Consultation form

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File:
Customer ID:
Project:

Section 1: Application details

Applicant name: [illegible signature]

Te Tahuna o Aotea Marine Farm Ltd

Application numbers (if known)	Proposed activity
N/a	Mussel spat catching

Section 2: Consulted party details

Name Bradon Awhitu	Contact person: Group (if appropriate): Okapu Ngati Te Wehi
Postal address	32 Shakespears Ave Enderley Hamilton
Residential address If different from postal address	
Email address	kaizenkahurangi@hotmail.co.nz
Phone number/s	Home: Business: Mobile: 022 4292 602 Fax:

Section 3: Consulted party views on proposal

If you would like Waikato Regional Council to know your views on the applicant's proposal, and/or if you consider you may be ad affected, please indicate your views below (attach additional pages if necessary).

Consider the following: How do you consider you will be affected? How would you like the applicant's proposal to be modified account of your views? What other comments do you have on the proposal that you would like Waikato Regional Council to con: making a decision on these resource consent application

Section 4: Applicant's response (to be completed by applicant)

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Please tick one option only.

- [x] I/We give my/our approval for the proposal
- [ ] I/We do not give my/our approval for the proposal
- [ ] I/We are not affected by the proposal

Signature: B. Anhitu

Date: 23.07.2016

Consultation form

Photocopy this form for each person or group to be consulted

Office use only
File:
Customer ID:
Project:

Section 1: Application details

Applicant name: [redacted]

Te Tahuna o Aotea Marine Farm Ltd

Application numbers (if known)	Proposed activity
N/a	Mussel spat catching

Section 2: Consulted party details

Name	Contact person: Te. Rauri Kaira.
	Group (if appropriate):
Postal address	394 Okapu Rd Kawhia. Te. Awamutu.
Residential address If different from postal address	X X X
Email address	Ray.N.Kawhia@GMail.com
Phone number/s	Home: Business: Mobile. 0221654822. Fax:

Section 3: Consulted party views on proposal

If you would like Waikato Regional Council to know your views on the applicant's proposal, and/or if you consider you may be a affected, please indicate your views below (attach additional pages if necessary).

Consider the following: How do you consider you will be affected? How would you like the applicant's proposal to be modified account of your views? What other comments do you have on the proposal that you would like Waikato Regional Council to cor making a decision on these resource consent application

Section 4: Applicant's response (to be completed by applicant)

Please indicate how your proposal can be modified or may not be able to be modified to take account of the views of the party you have consulted with (attach additional pages if necessary)

Section 5: Consulted party's response (to be completed by person/group consulted)

Please tick one option only.

(✓) I/We give my/our approval for the proposal

( ) I/We do not give my/our approval for the proposal

( ) I/We are not affected by the proposal

Signature: T. Mahon

Date: 23.7.2016.

Consultation form

Photocopy this form for each person or group to be consulted

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File:
Customer ID:
Project:

Section 1: Application details

Applicant name:

Te Tahuna o Aotea Marine Farm Ltd

Application numbers (if known)	Proposed activity
N/a	Mussel spat catching

Section 2: Consulted party details

Name	Contact person: Mrs Wini Scott Group (if appropriate): Tepapatapu Marae
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Residential address If different from postal address	12 Albert Place Ngaruawahia
Email address	
Phone number/s	Home: 07824 8959 Business: Mobile: 0274 533575 Fax:

Section 3: Consulted party views on proposal

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Please tick one option only.

☑ I/We give my/our approval for the proposal

☐ I/We do not give my/our approval for the proposal

☐ I/We are not affected by the proposal

Signature: W J Scott

Date: 22nd July 2016

Consultation form

Photocopy this form for each person or group to be consulted

Office use only
File:
Customer ID:
Project:

Section 1: Application details

Applicant name:

Te Tahuna o Aotea Marine Farm Ltd

Application numbers (if known)	Proposed activity
N/a	Mussel spat catching

Section 2: Consulted party details

Name	Contact person: Dave & Sue Forsythe.
	Group (if appropriate):
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Email address	forsythe.ew@xnation.net.nz
Phone number/s	Home: 07871552 Business: Mobile: 0272305454 Fax:

Section 3: Consulted party views on proposal

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- [ ] I/We do not give my/our approval for the proposal
- [ ] I/We are not affected by the proposal

Signature: Smythe. G Smythe.

Date: 24/10/16

Consultation form

Photocopy this form for each person or group to be consulted

Office use only
File:
Customer ID:
Project:

Section 1: Application details

Applicant name:

Te Tahuna o Aotea Marine Farm Ltd

Application numbers (if known)	Proposed activity
N/a	Mussel spat catching

Section 2: Consulted party details

Name G L Witters	Contact person: G L Witters. Group (if appropriate): N/a
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Residential address if different from postal address	136 Lawton Drive Aotea.
Email address	lynettewit@xtra.co.nz
Phone number/s	Home: 09 8335167 Business: N/a Mobile: 021 618436 Fax: n/a

Section 3: Consulted party views on proposal

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N/a NIL

Section 4: Applicant's response (to be completed by applicant)

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N/A

Section 5: Consulted party's response (to be completed by person/group consul

Please tick one option only.

(✓) I/We give my/our approval for the proposal

( ) I/We do not give my/our approval for the proposal

( ) I/We are not affected by the proposal

Signature: _____

Date: 23 · 10 · 16

Appendix 6: Visual Overview of area plus Script

Separate CD video provided – with accompanying script

Appendix 6 : Script to Accompany Video

Te Tahuna o Aotea Moana Marine Farm Ltd

Script:

Katahi ka titiro, ki toku ukaipo, nga whenua e hora nei, i roto o Aotea whenua, Aotea moana, Ngati te Wehi e .....

Behold the sacred mountain Karioi as it lies in its majesty within Aotea Whenua.

A Pou stands as a remnant of our relationship to this beautiful harbor known as Aotea.

As the drone flies, behold the Aotea Marine Farm belonging to Ross and Janine Dockery as it lies in its entire splendor

A site to behold

- The white rock face at Orotangi to the east
- Karioi Mountain to the North east
- Te Kakawa to the west
- And TeTahuna and Matakowhai to the south-east

The boundaries which hold specific to the proposed site for the Te Tahuna o Aotea Moana Marine Farm Ltd

Aue .... Taukiri ..... e .....

Kia mau te wehi e .....

Te Tahuna O Aotea Moana Marine Farm Ltd, Aotea

Assessment of Effects on Landscape and Natural Character and Visual Amenity

This Assessment of Effects on Landscape and Natural Character and Visual Amenity Report has been prepared as part of the consent application for the establishment of a Mussel Spat Farm, in Aotea Harbour. All work has been undertaken and/or reviewed by a Registered NZILA Landscape Architect.

Report prepared by:

Cathy Trentham
BLA

and

Dave Mansergh
Dip. P&R (Dist), BLA (Hons), MLA
Registered NZILA Landscape Architect
Director

Registered Member
of the
New Zealand Institute of Landscape Architects.

Report Version: R1

Date: February 2018

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INTRODUCTION

Mansergh Graham Landscape Architects Ltd (MGLA) has been engaged by the applicant to assess the effects of a proposed new mussel spat farm on the natural landscape and seascape character and visual amenity of Aotea harbour, Aotea, Waikato.

Three main aspects are evaluated within this report. They are:

a. The existing natural and landscape character of the site and its place in the local and regional context.
b. The potential effects of the proposed development on natural character and visual amenity from within the surrounding visual catchment.
c. An overview of the effects of the proposed development on landscape and natural (coastal) character values.

The subject site is located within the southern tidal channel of the harbour, approximately 1.5km east of the centre of Aotea Settlement.

METHODOLOGY

A standard assessment approach has been used to identify the existing landscape and natural character of the site and its surroundings and to assess the potential effect of the proposed mussel spat farm on landscape and visual amenity.

In broad terms, the assessment consists of the:

a. Identification of the key elements or attributes of the proposed development;
b. Identification of the landscape values, natural character, key attributes and social preferences within the context of biophysical, associative and visual landscape interpretation; and
c. Identification of relevant assessment criteria within the context of the relevant statutory framework.

A combination of mapping analysis and field assessment has been undertaken to identify the potential effect of the development on the existing natural character of the harbour and surrounding landscape; and visual amenity from surrounding areas. By considering the above, the likely effects of the proposed development are able to be identified and rated.

A methodological flow chart is contained in appendix (one).

PROPOSED DEVELOPMENT

The applicant is proposing a mussel spat catching farm of 5ha, in Aotea Harbour, Aotea, Waikato. (Location shown on attached plan in Appendix (two).

The application site is located within the coastal marine area within the harbour's main southern channel approximately 1.5km east of Aotea village.

The Area:

- Is located in water that are 4-6 metres in depth
- Is located over substrate of sand and broken shell gravel
- Has a tidal flow that is parallel with the shoreline
- At the closest point, is approximately 88m from the shore line.

Spat Catching Description:

Longlines:

- All longlines are surface lines and are oriented parallel to tidal flows (ie. Running north-west to south-east).
- Longlines used will be double backbone longlines.
- The lengths of the longlines to be used would be approximately 150m – 160m.
- The density of lines would be: an average of 2.2 longlines per hectare and a maximum of 3 per hectare.
- The separation between mussel lines is approximately 20m.
- The backbone and mooring line rope used is quality equipment Duradan (synthetic rope)

Floats:

- The floats used to support the longlines will be either 110/200 litres in volume.
- The floats used will be a mix of navy blue or black and orange.
- Orange floats will be located at the end of each line and in the middle of the lines located at the end of each block.

Structure Anchors:

- The anchors used to secure the structures to the seabed are screw anchors, buried below the seabed, plate size and shaft length to be determined or concrete block anchors.
- The warp line length is approximately 45-50m at either end.

Spat Catching Rope:

- Spat catching rope will be hung from the back bones to a depth of approximately 3-5m.

Lighting/Navigation:

- The spat catching block would be lit as one unit. It is proposed that there would be 2 special marks and lights on the two corners furthest from land.
- There would be orange corner buoys and orange buoys used in the middle of the outer edge lines.

Infrastructure:
The applicant would use the existing launching area at Aotea for unloading/loading product and equipment.

Subject to the outcome of this resource consent application, the applicant would also locate an area on iwi owned land (currently a land based farmed area) for the storage of spare floats, rope and other related equipment, and look to obtain any District Council consents as required.

Key components of the application that have the potential to affect the natural character of the landscape/seascape and visual amenity include:

a. Proximity of the proposed farm to the existing farm;
b. Use of lighting;
a. Colour and size of buoys;
b. Size of the marine farm; and
c. Length of the farming season.

Associated activities such boat launching, has not been listed as potential effects as an agreement has been made with the existing farm owner for such activities to be run from the same location in conjunction with his farm.

EXISTING NATURAL, LANDSCAPE AND VISUAL CHARACTER

Landscape character, in part, is a function of the landscape's visual expression and involves the analysis of a landscape's biophysical patterns, elements and processes; its' perceptual qualities; and its' spiritual, cultural and associative meanings.

Natural character is a function of the extent to which a landscape or seascape has been modified from an ecologically and/or geologically pristine state and involves the analysis of an area's biophysical attributes and formative processes and patterns; the extent to which these attributes, processes and patterns have been modified or affected by human intervention; and perceptions relating to the relationship between the two. This includes the elements that contribute to a landscapes' natural appearance and the cultural modifications which have occurred upon it.

The landscape and visual quality of the site is a function of a series of factors including intactness of visual and physical elements such as topography and vegetation cover, the degree of modification that has occurred, surrounding landscape elements and attributes. Further contributing factors include juxtaposition and coherence between landscape elements within the subject site and those of the surrounding area, as well as human attributes or values assigned to an area.

Landscape character is not the same as natural features and landscapes[1]. There are no formal agreed definitions for landscape character or natural character in the legislation or the NZCPS 2010.

[1] New Zealand Coastal Policy Statement 2010. Policy 13 (2).

The Wider Landscape Context

The wider landscape (including the harbour and its surrounds) plays an important role in how the application site is perceived in terms of landscape/seascape character and naturalness.

The relationship between the major geographical features contained within this landscape and the human modifications that have occurred upon them are important factors to consider when assessing how the proposed type of development will influence the natural character of the adjacent coastal environment and the wider landscape in which the site sits.

The West Coast of the North Island is known for its exposed rough coastal environment contrasted with sheltered harbours. Aotea Harbour is the smallest of the three harbours in the Waikato's West Coast catchments.

The harbour is set within a surrounding landscape context comprising a mixture of farmland, native bush and coastal dune lands. Along the eastern edge of the harbour outcrops of limestone and disappearing streams are indicators of the extensive cave and karst systems below the surface.[2] Small settlements along the southern and eastern harbour edges and inland are linked by narrow, loose gravel roads. Rural pastoral lands are broken up by patches of native and exotic vegetation. This landscape is accessed along the winding sealed and gravel roads that twist through the undulating terrain around the southern and eastern edge of the harbour.

The key landscape features that influence perceptions, at a macro level, of the overall character of the landscape surrounding the subject site include:

a. Aotea Harbour and the its associated sandbanks, inlets and bays;
b. Intertidal wetland
c. Coastal headlands;
d. Mount Pirongia and Karioi;
e. Exposed West Coast beaches and black sand dunes; and
f. Coastal vegetation patterns.

The landscape's character is further influenced by land use, coastal activities, land management and development patterns including:

a. The settlement of Aotea ;
b. The existing marine farms (mussel spat farm);
c. Rural (pastoral) land;
d. Sporadically spaced rural residential, rural utility buildings, Marae and associated buildings, and 'bach accommodation; and
e. Vegetation consisting of a mixture of native and exotic bush patches, singular specimen trees spaced throughout paddocks and residential back yards and productive forestry.

The Waikato Natural Character Study of the Waikato Coastal Environment (WNCS) undertaken by Boffa Miskell in 2016, confirms the above as contributing factors to the natural character of the area, rating most of the harbour (excluding areas around Aotea settlement and part of the existing marine farm) as an area of Outstanding Natural Character (ONC). This report specifically identifies the coastal dune features and intertidal waters along the coastal margins contributing to a *Very High* rating of characteristics. The report also acknowledges the human modifications including the settlement of Aotea contributing to the character. The report was completed at a very broad scale and although it acknowledges many of the overriding features of the area due to the scale that the report and subsequent mapping was undertaken at, some of the finer experiential details of the landscape character have not been captured.

[2] Shore futures – Preferred Futures Report 2009 www.ew.govt.nz/shorefutures

Aotea Harbour

Aotea harbour is the smallest of the three harbours on the west coast within the Waikato catchment. The harbour is highly intertidal with shallow mud and sand flats either side of the channels.

Aotea harbour is enclosed by a variety of landscape types. From the more natural sand dune systems and native coastal vegetation to the more modified of rural pastoral lands, productive forestry and residential settlements. The site is located within the main southern channel of Aotea Harbour. Directly east of the most modified coastal edge that encapsulates Aotea Village, seawalls, existing marine farm, pastoral farmlands and productive forestry.

The harbour is distinguished by the large dune system on the northern shores of the harbour mouth. These dunes are the largest of their kind on the west coast and offer a great example of natural dune processes through wind and water formation. The transition of dunes to saltmarsh areas and native coastal vegetation on the northern side of the harbour offer a sense of naturalness to the harbour mouth[3]. The southern side of the harbour is more developed and populated by the settlement of Aotea. The sealed road running along the southern banks of the harbour transitions to gravel as it meets the rural eastern boundary and heads inland.

The natural character of the harbour edge ranges between being highly natural and highly modified. The most natural parts of the harbour and its surroundings are found on the northern side where access by road is restricted. The northern side of the harbour contains two Outstanding Natural Features (ONFs), Oioroa sand dune area, described above and Te Pahi forest, a large stand of native bush at the northern end of the harbour. Since human settlement in the area, native vegetation around the harbour has been reduced to approximately 28%[4] making the remaining areas of native bush important to maintaining the natural character of the harbour.

The southern side of the harbour is dominated by a rural pastoral landscape with clusters of rural residential and farm utility buildings. South of the harbour entrance, stretching between Aotea and Kawhia Harbours, is a large patch of productive forestry.

The shallow nature of the harbour means that at low tide, large areas of sand banks are exposed, resulting in a dynamic landscape/seascape.

A relatively low level of modification to the natural landscape and seascape has occurred within the harbour. What has occurred is more evident on the southern side, adjacent to Aotea settlement, where a number of modifications have occurred along the coastal edge and within the coastal marine area. These include the construction of sea walls at Aotea, the construction of a causeway across the intertidal flats (Morrison Road), modification to the natural coastal edge vegetation patterns and the establishment of a marine farm (mussel spat).

The existing mussel spat farm (approximately one and a half times the size of the proposed farm) is located directly west (approximately 500m) of the site. This existing farm sits directly off the beach area where boats are launched and this is also where the boats will be launched from for the proposed marine farm.

It is understood from discussions that members of the community, including Okapu Marae elders recall the existence of a small mussel farm in the 1980's. Examination of the aerial photography from 1984 indicates this to be located near where the existing mussel spat farm is located.

Although fewer, some modifications have occurred within the eastern areas of the harbour. These include the installation of 'makeshift' channel markers (which can be seen sticking up through the channel near the Makomako inlet), erosion protection works adjacent to Te Papatapu Road. At low tide there is evidence of vehicles having been driven across the sand flats.

[3] Natural Character Study of the Waikato Coastal Environment – Boffa Miskell and WRC 2016.
[4] Shore futures – Preferred Futures Report 2009 www.ew.govt.nz/shorefutures.

The natural darkness of the night sky is mostly preserved within the harbour. Light is concentrated to the area around Aotea settlement and the four corners of the existing marine farm.

Natural character of the harbour can be highly attributed to the experiential appreciation of the landscape. In the case of Aotea harbour this can be highly attributed to the visual experience of looking out at the Oioroa sand dunes with Mount Karioi in the background.

Aotea Harbour is highly valued for its kaimoana[5]. A taiapure[6] was established in 2000. This covers the whole harbour as well as Kawhia Harbour and the coastal strip from Taranaki Point to Albatross Point and around Gannet Island.[7]

The following photographs depict the general characteristics of the site and its surroundings.

Figure 1: Existing mussel spat farm 500m west of proposed site.

[5] Seafood

[6] Areas that are given special status to recognise rangatiratanga (as Taiapure-Local fisheries); management arrangements can be established (under the Fisheries Act 1996) for Taiapure that recognise the customary special significance of the area to iwi or hapu as a food source or for spiritual or cultural reasons.

[7] Hillock; K. & Rohan; M. 2011. Intertidal Benthic Habitats of Kawhia and Aotea Harbours. DoC Research and Development series 327

Figure 2: View from Tahuri Point, the more modified southern side of harbour looking at the more natural northern side of sand dunes and native vegetation. Mount Karioi in the background.

Figure 3: Looking West towards Tahuri Point from proposed site.

Figure 4: South-Eastern side of harbour. Makeshift channel markers can be seen sticking up out of the sand flats.

Figure 5: View of Aotea settlement, from above. (Drone footage)

Figure 6: Panorama from Tahuri Point looking north – east, Potahi Point (Oioroa Sand Dunes) across to the proposed site. (image 1)

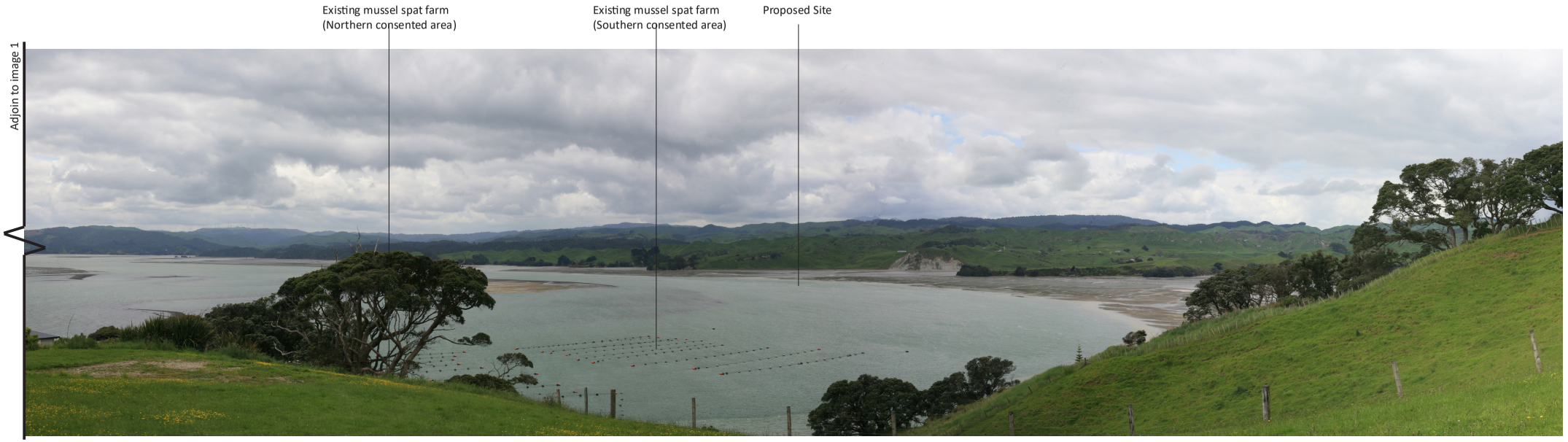


Figure 6: Panorama from Tahuri Point looking north – east, Potahi Point (Oioroa Sand Dunes) across to the proposed site. (image 2)

EFFECTS ON EXISTING LANDSCAPE AND NATURAL CHARACTER

In order to understand how the proposed mussel spat farm will affect the existing landscape, seascape and natural characteristics of the site, it is necessary to identify the attributes of the key elements that influence those characteristics.

In considering cumulative effects, the threshold where the dominance of the various factors, which contribute to ONC status, must be assessed against the level of activity that might erode perceptions of naturalness. In this instance the proposed mussel spat farm cumulatively increases the development within an area of the harbour that has already been modified (in a very small way) by the establishment of the existing mussel spat farm. It is shown through other studies such as the Natural Character Study of the Waikato Coastal Environment that the inclusion of a marine farm is not necessarily reason enough on its own to exclude an area from outstanding natural character identification. In the above mentioned study this is shown through the inclusion of Moturua Island (Rabbit Island) and its surrounding marine farms in an area of ONC off shore, south east of Amodeo Bay, Coromandel.[8]

It must be acknowledged that there will be a tipping point in the accumulative effects of marine farms and this will need to be assessed on a case by case basis, however with the existing mussel spat farm and this proposed mussel spat farm the effects would not be significant.

Analysis of the study area has identified the key attributes of the various features, which contribute to the landscape, seascape and natural character, and visual amenity of the site and its immediate surroundings.

These features work together in influencing perceptions of natural character; and as such should be considered in isolation with caution. In this regard; the "whole" can be considered as being "greater than the sum of its component parts". However, a reductionist approach to character assessment is useful in that it allows the relationship between the various component features to be explored, their sensitivity to change identified, and their relative importance within the "whole" considered.

The effect of the proposed mussel spat farm and associated development on the following features has been assessed against the key landscape elements identified during site investigations, analysis of aerial photography, analysis of character photographs and other relevant background information. Feature identification is limited to those features potentially affected by the proposal.

The character of the harbour varies from the north, south and east. The northern side is perceived as a more natural side with large sand dunes, large patches of native vegetation and no access from the road. The eastern edges are more modified than the north with rural landscapes and man-made access ways to the harbour. The southern side is the most highly modified with roads, buildings, an existing mussel spat farm, seawalls, pastoral farmlands and the settlement of Aotea.

Because the mussel spat farm is proposed to be located in the southern part of the harbour, it will not adversely affect the more natural parts of the harbour to any great extent. It will result in a small cumulative effect, in keeping with the existing modified characteristics of the southern, part of the harbour.

A summary of the effects of the proposed mussel spat farm on the natural character of the wider landscape/seascape is contained in the following table:

	Feature	Scale	Key Attributes	Potential Effect
1	Aotea Harbour	Very Large	• Shallow harbour with (generally uninterrupted views across the water (high tide) and/or sand banks and channels (low tide). • Exposed sand banks at low tide.	***Low*** effect. Introduction of buoys, markers and lights associated with the mussel spat farm into the harbour, changing its natural appearance by creating a focal attraction on the water

[8] Natural Character Study of the Waikato Coastal Environment – Boffa Miskell and WRC 2016 – Map 36.

			• Transient values (wildlife). • Dynamic intertidal zone (coastal edge). • ONC (Natural Character Study not yet incorporated into plan).	surface (predominantly a visual effect). These effects are lessened by the presence of the existing mussel spat farm, which is close enough to the application site to be perceived as an extension of the existing activity. Therefore the character which already exists in this area of the harbour, that contributes to the ONC and includes part of the existing mussel spat farm, is not adversely affected. The significant difference in size of the harbour compared to the mussel spat farm (even when combined with the existing mussel spat farm) also lessens any effects.
2	Potahi Point (Oioroa)	Large	• The largest sand dune headland of its type on the west coast. • Highly reflective of the coastal processes. • ONF (under Waikato District Council) •	***Very Low*** effect as the proposed site is separated from Potahi Point by significant distance The existing mussel spat farm is in-between Potahi Point and the proposed mussel spat farm, therefore there are no new effects on Potahi Point or the ONF created by the proposed mussel spat farm.
3	Mount Karioi	Very Large	• ONL • Elevated, extinct volcano. • Established native vegetation.	***Negligible*** effect due to significant distance between the site and the feature. Mount Karioi can be viewed from the site. Views out include the existing mussel spat farm. The proposed mussel spat farm in this area would not add any additional effects due to the scale, distance and other more dominant features such as the harbour.
4	Foreshore and beach	Medium	• Exposed sand banks and mud flats. • Transient values (wildlife). • Embankments of rocks and soil. • Seawalls along the foreshore harbour side of Aotea Village.	***Very Low*** effect due to the existing mussel spat farm that influences the character already. Distance from other beach areas to the proposed mussel spat farm is quite large and adverse effects are lost through the distance.
5	Coastal headland, escarpments and bluffs	Medium	• Steep and rugged rocky escarpments. • Mix established and successional vegetation • Pastoral lands.	***Very Low*** due to the existing mussel spat farm in the harbour. The headlands themselves are highly modified in most areas and used for residential dwellings or farm pastoral lands as well as roads.
6	Coastal vegetation patterns (including Te Pahi on the northern side of the harbour an ONF)	Large	• Rocky outcrops and bush clad escarpments. • Vegetated embankments and riparian areas. • Patches of productive forestry.	***Negligible*** due to the distance from vegetation, and there already being an existing mussel spat farm in the harbour.

When considered collectively, the proposal will have a *Very Low* – *Negligible* adverse effect on the key attributes and natural character of the surrounding landscape and seascape. The proposed development will not be out of character with the existing marine farm adjacent to the application site of the character of the seascape in the southern part of the harbour.

ASSESSMENT OF VISUAL EFFECTS

Perceptions of naturalness and natural character are affected by visibility. With regard to the potential for the site to absorb the proposed mussel spat farm, the following factors were evaluated during the visual assessment.

Visual Catchment

The visual catchment (locations from where the works may be visible) is restricted to Tahuri Point and small sections of Morrison and Aotea Roads. Although most road views are low lying and obstructed by the mud/sand flats. Views are also prevalent from within the harbour (boat only).

View locations were identified and analysed, these are representative of the range of types of views available from within the surrounding landscape.

Site inspection identified that the sand flats within the harbour largely screen the proposed farm from Morrison Road as it crosses the causeway. The directional change and shoreline vegetation also aid in the screening of the site. Where not fully screened, views are significantly reduced and softened by these factors.

Key findings from the analysis of the visibility of the proposed mussel spat farm site and site investigation are:

a. That the theoretical visual catchment is restricted to the headland west of the site, all other views surrounding the application site are constrained by the surrounding topography and directional shift in the harbour edges;
b. The view of the proposed development from the existing dwellings and subdivision Tahuri Point is viewed alongside the highly modified landscape that is the existing mussel spat farm and the settlement of Aotea.

Analysis of the view locations identified that there were three main types of views, varying in levels of visibility. Views from residential properties and the subdivision on Tahuri Point, from the road surrounding the harbour and from within the harbour itself.

The most visible of these views is from the elevated existing dwellings and the subdivision on top of Tahuri Point. Views from this location include the existing mussel spat farm in the foreground and within context of the harbour and its associated features. The visual effects from this location are considered to be *Very Low* due to the distance from the site and the context in which it is viewed.

Views from Morrison and Aotea Roads are limited by vegetation screening and topography. Where there are open views of the harbour the roads tend to be at a lower level and due to the exposed sandbanks at low tide the proposed mussel spat farm is mostly screened. During high tide the buoys will be able to be seen but due to the distance they will be hardly distinguishable as is evident with the existing marine farm.

Where the road is elevated the harbour is mostly screened by vegetation and only very small glimpses of the proposed site will be visible. The visual effect, from this location, on the landscape will therefore be *Very Low*.

Views from within the harbour will be either at a distance that will eliminate visual impact or from the southern channel when the proposed mussel spat farm will be viewed in close proximity to the existing mussel spat farm. Additional visual effects from the proposed mussel spat farm are therefore considered to be *Very Low*.

Refer Appendix two for Zone of Theoretical Visibility (ZTV) map. Identified also on the map are the locations that were investigated for the visual, as well as the natural character effects.

Viewing Audience

The potential viewing audience was identified to likely comprise of:

a. Motorists using Morrison and Aotea Roads (limited viewshafts over the sand banks);
b. Residential properties (some with dwellings yet to be constructed) along Maukutea and Sulby Drives;
c. Harbour users (predominantly within the navigable channel); and
d. Beach users.

Visual Absorption Capability

One of the main factors that will influence a development's visual effect is the visual absorption capability of the surrounding landscape. This is the ability of the landscape to integrate a development, or feature into its existing visual character without significant change.

Each view location has been rated in terms of its visual absorption capability (VAC). Factors considered in determining the sites VAC rating include:

a. The degree to which the development is visible;
b. Visual and physical links with other similar elements or activities in the landscape;
c. The level of modification to the surrounding landscape (short and long term);
d. Appropriateness of scale;
e. Distance;
f. Backdrop; and
g. Atmospheric conditions.

The site analysis was undertaken at mid-tide from both land and sea. This gave a variety of views to access the majority of viewers of the site.

In general the VAC of the site is ***Very Good***. This is partly because of a combination of distance, the lower viewer angle available from surrounding shoreline areas, and the semi submerged nature of the spat line buoys. This means that in nearly all but still conditions, the proposed farm will not be highly discernible.

The exception to this is from the elevated locations to the west on Tahuri Point. From this location the proposed marine farm will be seen within the context of the closer existing farm. The scale, distance and existing character of this southern side of the harbour mean that there are no new effects from the proposed farm from this location.

The visual character of the southern side of Aotea Harbour is contributed to by the land use and modifications. The existing mussel spat farm, directly east of the beach area, as well as the associated equipment on the beach, contribute highly to the character of this area. The additional proposed mussel spat farm is smaller in size and will be using the same launching area and equipment. The site is therefore able to be absorbed into the visual effects of the existing farm without the need for mitigation.

Visual Obstruction, Intrusion and Amenity Values

The proposed mussel spat farm has also been assessed in terms of its potential to result in either obstructive and/or intrusive effect on landscape amenity.

Visual intrusion occurs when a pre-existing view of the landscape is encroached upon adversely by a new element, which is of poorer visual quality, or gives rise to a degraded visual amenity value. Conversely, visual obstruction results from such a feature blocking and preventing visibility of any pre-existing view. These may affect existing landscape and visual amenity.

With regards to visual intrusion, the proposed mussel spat farm will not intrude significantly into any seascape views. This is because the buoys will be partially submerged and will rise and fall with the tide. The spat lines themselves will be submerged and not visible. During the three months of the year that the

spat lines will not be in the water, the buoys will float higher, and be more visible, however during this time some of the buoys will be removed and there will be fewer buoys in the water.

The presence of the existing mussel spat farm adjacent to the site means that the effects associated with the proposed farm will be cumulative effects. There will be no additional intrusive or obstructive effects on the existing landscape (across the harbour) as the proposed mussel spat farm is in a close proximity to the existing farm, which is part of the existing character of this area of the harbour.

AVOIDANCE OF EFFECTS

The following avoidance of effects strategy takes into consideration the findings of the assessment component of this report.

The visual effects of the marine farm and the effects on natural character will be ***Low***. However it is recommended that the following measures are undertaken to avoid effects associated with the visibility of the buoys.

The recommended avoidance of effects measures are as follows:

- The use of sea green buoys instead of black buoys where possible.

It was observed on site that the green buoys are the least noticeable at close proximity. At greater distances green and black buoys become indistinguishable from one another.

RELEVANT PLANNING MATTERS

Planning documents that have been taken into consideration include the Resource Management Act and subsequent amendments (RMA), New Zealand Coastal Policy Statement 2010 (NZCPS), Waikato Regional Policy Statement (WRPS), Waikato Regional Coastal Plan (WRCP), and the Operative Otorohanga District Plan (ODP).

Only the key issues contained within the relevant planning framework, relating to landscape character, natural character, visual and amenity matters have been considered.

Resource Management Act 1991

Key sections relevant to this application are S6 (a), and S7 (c).

With regard to Section 6 (a), the site is located within Aotea Harbour. The harbour is identified in the WNCS as an area of Outstanding Natural Character (ONC). While most of the harbour is included in the ONC rating part of the existing mussel spat farm is excluded while part is included. It is important to note that the ONC mapping appears to have been undertaken at a relatively coarse resolution and does not accurately identify only the harbour edge within the context of the site. While, in this instance, it is unclear whether half of the existing mussel spat farm was excluded intentionally from the ONC mapping, it is clear in parts of the Coromandal (such as the waters surrounding Rabbit Island) marine farms have been intentionally included inside of the ONC rating, indicating that the farms themselves are not a high enough adverse effect to affect the perception required to identify a site as ONC. As described in this report, the existing mussel spat farm has already modified the natural characteristics of this part of the harbour. It is considered that the addition of the second farm in this southern area of the harbour would not tip the natural character balance.

With regard to Section 7 (c), the assessment of effects on visual amenity contained within this report has identified how the proposed development will affect existing amenity values associated with the site and the surrounding landscape, and how the proposed mitigation techniques will reduce potential adverse visual effects. In this regard it is considered that the development is consistent with the requirements under this section of the RMA and adverse effects are avoided.

New Zealand Coastal Policy Statement 2010

The key objective (natural character and visual) of the NZCPS that relates to this application is:

a. Objectives 2 which requires the preservation of natural character of the coastal environment.

This is supported by the following policies:

a. Policy 1, which requires that the characteristics of the coastal environment specific to Aotea are recognised;
b. Policy 6 (1)(h), which requires that development avoids adverse visual effects on sensitive parts of the coastal environment (such as to the sensitive headlands);
c. Policy 13, which requires avoidance of all adverse effects within areas of outstanding natural character and significant effects on all other natural areas within the coastal environment;
d. Policy 15, which requires that natural features and natural landscapes within the coastal environment are protected, which includes the avoidance of any effect within an outstanding natural feature or outstanding natural landscape.

In terms of Policy 1 the characteristics of the coastal environment in Aotea already includes an existing mussel spat farm. It is also noted that another farm was previous established near the application site in the early 1980s, as remembered by Aotea locals. This farm has subsequently been removed, allowing the harbour to revert to its previous state, with no visible evidence of the previous development.

In regards to Policy 6 (1)(h) the most sensitive headland in the harbour is the dune lands, Oioroa, on the northern side of the harbour entrance. These are identified as an outstanding natural feature in the Waikato District Plan. The proposed site is a significant distance from this headland and on the other side of the existing mussel spat farm. The proposed mussel spat farms presence will not affect the ONF status of this part of the harbour landscape.

The two headlands closest to the proposed marine farm are highly modified headlands through the development of Aotea settlement and the rural farmlands.

With regard to Policy 13, as addressed in this report, marine farms in and of themselves are not an effect that is significantly adverse enough to eliminate the rating of an outstanding natural character area. It is concluded that the addition of the proposed marine farm in this area of Aotea Harbour will not result in a significant enough change to affect existing character, which is made up of a mix of natural and modified landscape and seascape features.

In terms of Policy 13 (1) (a), throughout the Natural Character Study there are several existing marine farms found within ONC areas, including part of the existing mussel spat farm in Aotea harbour. This indicates that a mussel spat farm within itself does not necessarily take away from an ONC rating.

Policy 13 (2) recognises that natural character and natural features and landscapes are not the same thing. Natural character may include matters such as (g) a range of natural character from pristine and modified. The proposed farm will be located within the harbour's southern channel. Again it is important to note as previously mentioned in this report there are areas of existing marine farms that have been included inside the identified ONC as being a modified element of the environment but that does not exclude it from being part of the natural character. 'Naturalness' and natural character are not exclusively intertwined. It is believed that the addition of the proposed farm will not affect the ONC rating in this area of the harbour as the existing character will not be significantly adversely affected.

In regards to Policy 15 it is important to acknowledge the outstanding natural features of Oioroa (the sand dune at the north head of Aotea Harbour) and Te Pahi (a large stand of native bush at the northern end of Aotea Harbour). This highlights the importance of location. The proposed farm is at a significant distance and within an area of harbour already containing some modification. The location that has been proposed will therefore have no effect on the ONFs in and around the harbour.

In terms of Policy 7 (b) (ii) the NZCPS requires that regional councils identify areas that are inappropriate for marine development. Although parts of the harbour have been identified as having ONC, as discussed previously that does not necessarily deem the area inappropriate for this type of development. The WRCP has not identified this area as inappropriate under any other rating system. Therefore it can be considered that this area cannot be denied under Policy 7 of the NZCPS.

The provisions of the NZCPS are further addressed in the Waikato Regional Coastal Plan 2014, under policies 3 and 6 (above).

Waikato Regional Coastal Plan

The Waikato Regional Coastal Plan has been prepared within the context of the RMA and NZCPS (1994)[9]. Objectives, policies and rules in this plan seek to fulfil the requirements of these documents. This plan has therefore been given a proportionately appropriate amount of weighting in this assessment.

The Waikato Regional Coastal Plan identifies Aotea Harbour and surrounding coastal edge as a coastal marine area to be protected under the policies and rules of the Waikato Regional Coastal Plan. The following are the specifics to these areas.

[9] It is noted that parts of the WRCP have been subsequently modified in response to changes in the NZCPS 2010. This includes the removal of reference to restricted coastal activities.

Policies

3. Natural Character, Habitat and Coastal Processes

Relevant policies under 3.1 relate to preserving the natural character of the coastal environment within the Waikato Regional catchment. As identified in the WNCS (which was prepared after the WRCP was made operative), while the harbour contains an area of OCNC, part of the existing marine farm is not included. The addition of another marine farm of the proposed size, in the already highly modified portion of the harbour, effects are insignificant within the context of the wider harbour environment in terms of size and scope.

6. Marine Farming

Relevant policies contained within section 6 identify that, although marine farming can have adverse effects on the natural character and landscape amenity, many of these effects can be remedied or mitigated by appropriate site selection and choice of marine farming operations and farm management practices.

The site that has been selected for this farm is important in that it is close enough to the existing mussel spat farm that there is link between the two and can therefore from some locations appear as more of an extension, than a new mussel spat farm. The most important factor of the location of the proposed site is that it is proposed for the southern side of the harbour (the most modified side) but also out of sight of the OFL Oioroa sand dunes at the mouth of the harbour. Slightly east of the village also means that although the landscape is highly modified rural landscapes it is also away from the most common sight lines. The proposed farm will include "…Spat Catching Buoys and Lines" and is regarded as a discretionary activity subject to Rule 16.5.1.

Assessment Criteria iii requires that the criteria and considerations of Appendix II is assessed. Under Appendix II the relevant criteria is Marine Farming item 4 "*The extent to which the structure will adversely affect water and sediment quality, the natural character of the area, landscape values, ecological values, cultural values, amenity values, recreational values, natural coastal processes, navigation safety, or limit public access to and along the CMA"*[10]

As discussed in this report the landscape character is inclusive of the activities that are currently being undertaken in the harbour. The assessment of ONC has been undertaken at a regional scale and more detailed analysis shows the landscape character on the southern side inclusive of the shoreline and channels has been highly modified through human use. This has affected natural character in this part of the harbour.

Although at first glance the harbour appears to be relatively natural, detailed examination reveals a number of modifications that have occurred within the coastal marine area and along the surrounding shoreline. It is considered that, within the context of the existing landscape and seascape, the addition of the proposed mussel spat farm will not have any adverse effects on the existing natural character values of the wider harbour environment (or the ONC), and it is considered that it will appear to integrate into the seascape, being seen as a visual extension of the existing marine farm. This is primarily due to its proposed location.

Operative Waikato Regional Policy Statement

The most recent planning document is the Operative Waikato Regional Policy Statement.

[10] Water and sediment quality, ecological values, cultural values, recreational values, navigation safety and public access are not assessed within this report beyond the extent to which they affect or contribute to an understanding of natural character and landscape/seascape visual amenity.

This document recognizes the importance of preserving the natural character of the coastal environment through Objective 3.7 (a) preserving natural character and protecting natural features and landscape values in the coastal environment. This objective is achieved through policy 12.2 (a) avoiding adverse effects on pristine or outstanding natural character. (b) acknowledging that where man made elements are dominant it may result in adverse effects on natural character.

Although this is the most recent document by the Waikato Regional Council these policies are covered under the Waikato Regional Coastal Plan as this document is more specific to this proposal.

Operative Otorohanga District Plan

Otorohanga District Plan is concerned with the land use in and around the coastal and marine area. As the proposed farm will be running operations with the existing farm for land based activities on the coastline, such as boat launching this has not been assessed as there will be no new effects.

Waikato Natural Character Study of the Waikato Coastal Environment 2016

Although not a statutory document, the Waikato Natural Character Study of the Waikato Coastal Environment 2016 (WNCS) has been taken into consideration as it represents the most recent analysis of the natural character values associated with the application site.

While the WNCS assessment only takes areas below mean high tide into account, it is necessary to take the characteristics of the wider landscape and seascape into account in order to determine the effects of the proposed mussel spat farm on the natural character of the harbour.

It is also important to note that the mapping of the ONC was undertaken at a regional level meaning that a more detailed analysis is required at a site level to confirm existing natural values and potential effects. Review of the ONC boundary around Aotea shows that it passes through the existing marine farm, resulting in half of the farm being included in the ONC and half being excluded.

The WNCS report has identified a number of marine farms (mussel farms and spat farms) within areas identified and delineated as outstanding natural character areas (ONC). These include part of the existing mussel spat farm at Aotea and the mussel farms around Rabbit Island in the Coromandel.

This indicates that, although a modification in the coastal marine environment, the presence of a marine farm in itself is not necessary sufficient reason to exclude an area from being rated as an ONC if it is otherwise sufficiently natural. This would indicate that the relative scale between an activity and the ONC within which it is contained has been assessed. It also recognises that an ONC does not need to be pristine or near pristine to achieve ONC status.

CONCLUSIONS

The southern side of Aotea harbour, which includes the area where the site is located, displays higher levels of modification to its landscape, seascape and natural characteristics than other less accessible (by road) parts of the harbour. Roads, sea walls, an existing mussel spat farm and the settlement of Aotea contribute to the landscape and natural (or lack of) characteristics of the surrounding environment. This is confirmed in the Natural Character Study of the Waikato Coastal Environment, which includes the harbour and some of the surrounding areas as ONC but appears to intentionally exclude portions of the southern harbour including part of the existing marine spat farm.

The development of the proposed mussel spat farm in this part of the harbour will not affect the overall ONC rating of the harbour (as identified in the WNCS Report). This is supported by the fact that the presence (or lack of) marine farms within an ONC does not appear to be a pre-determinant to ONC status. The design of the spat farm means that, should it be removed in the future, the harbour would return to its pre-existing state almost instantly.

In terms of the effect of the proposed mussel spat farm on landscape and seascape character, natural character and visual amenity values, it was found that, while potential existed for adverse effects to occur, within the context of the application site, the actual effects are likely to be insignificant. Analysis of the proposed spat farm development, within the context of the wider environment found that:

a. The design, size and location of the proposed marine farm (within the context of the wider harbour), means that the effects on the natural character of the harbour will be *Negligible - Very Low* and therefore for all intents and purposes are avoided.

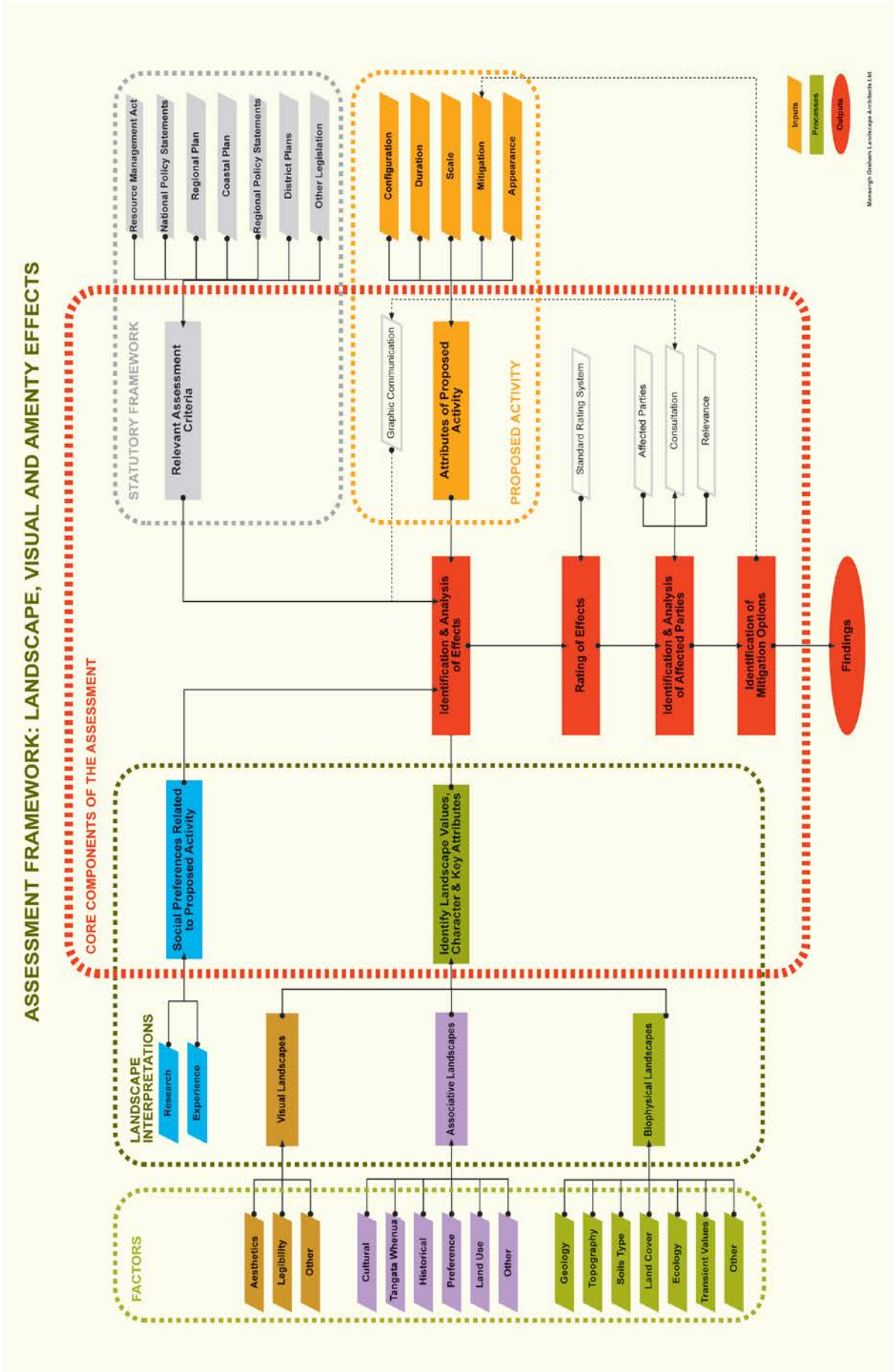
b. Views of the application site are restricted to a limited number of publically accessible locations. The site will be most visible from elevated topography to the west. Limited views are available from the roads along the southern edge of the harbour. The site is not visible from Aotea settlement. Visual effects associated with the proposal will be *Very Low* with the site having a *Very Good* visual absorption capability (VAC).

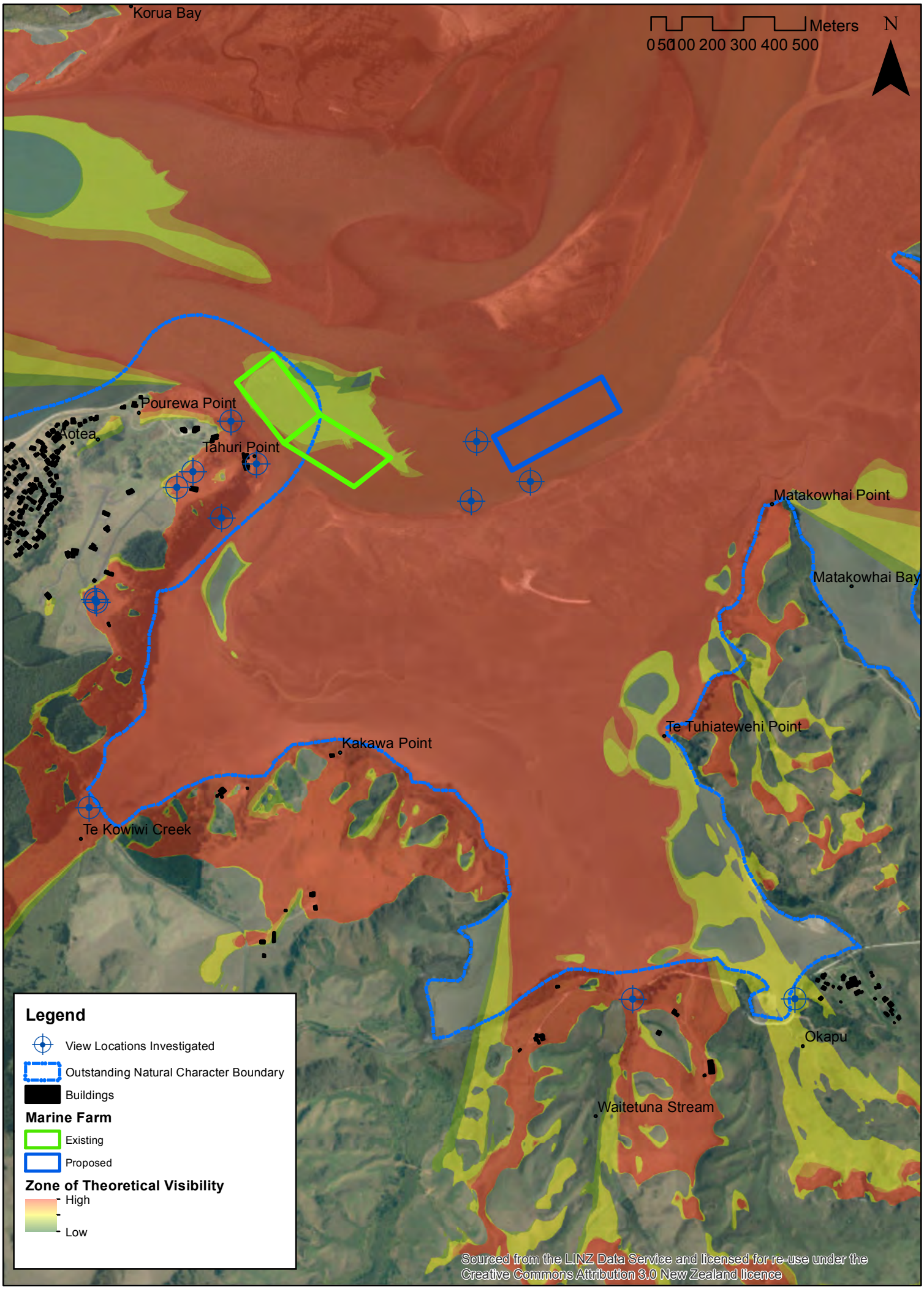
c. Effects on the adjacent outstanding natural feature (Oioroa Sand dunes) are avoided.

Overall, adverse effects of the proposed development on the natural character of the harbour and existing visual amenity was found to range between *Negligible* and *Low.*

It is therefore considered that the proposed development can successfully integrate into the harbour without affecting its existing natural character values or ONC rating.

APPENDIX ONE: METHODOLOGICAL FLOW CHART





Te Tahuna O Aotea Moana Marine Farm

Site Location & Zone of Theoretical Visibility

Scale 1:15,000 at A4 . February 2018 . Map No-1 Rev-0

APPENDIX THREE: VISUAL ABSORPTION CAPABILITY RATINGS

Visual Absorption Capability Definition Ratings	
VAC Rating	**Use**
Very Good	The proposed development/activity would be completely screened, almost completely screened or completely absorbed by existing landscape features. Any views of the development would be either unidentifiable or at a great distance, and/or; The development/activity would not affect the existing character of the surrounding landscape or view in which it is seen, and/or; The development/activity would introduce a visual element into the landscape or view which may be viewed very frequently or continuously in that or similar landscape types.
Good	The proposed development/activity would be mostly screened or visually absorbed by existing landscape features, but still be identifiable. The development/activity may act as a tertiary focal attraction within the landscape or view in which it is seen, and/or; The development/activity would not affect the existing character of the surrounding landscape or view in which it is seen, and/or; The development/activity may introduce a visual element into the landscape or view which may be viewed frequently in that or similar landscape types.
Neutral	The proposed development/activity would neither be screened nor become a visual intrusion or focal attraction within the landscape or view in which it is seen. The proposed development/activity may act as a minor focal attraction from some locations, and/or; The development/activity would alter the existing character of the surrounding landscape or view in which it is seen, and/or; The development/activity would introduce a visual element into the landscape or view which may be viewed occasionally in that or similar landscape types.
Poor	The proposed development/activity would be clearly visible but would not act as a primary focal attraction, and/or; It would be expected that the proposed development/activity would alter the existing character of the surrounding landscape or view in which it is seen, and/or; The development/activity may introduce a new visual element into the landscape or view. The development/activity may be viewed infrequently in that or similar landscape types.
Very Poor	The proposed development/activity will be highly visible and may act as a primary focal attraction or feature. It would also be expected that the proposed development/activity will significantly alter the existing character of the surrounding landscape or view in which it is seen, and/or; The development/activity will introduce a new visual element into the landscape or view, which will be significantly different in appearance, or scale from the landscape elements surrounding it, and/or; The development/activity would be found very rarely in that or similar landscape types.

APPENDIX FOUR: LANDSCAPE AND VISUAL AMENITY EFFECT - RATING SYSTEM	
Effects Rating	**Use and Definition**
Extreme	*Use* The development/activity would: e. Result in an extreme change on the characteristics or key attributes of the receiving environment and/or the vista within which it is seen; and/or f. Have an extreme effect on the perceived amenity derived from it. *Oxford English Dictionary Definition* Extreme: adjective 1 utmost. 2 reaching a high or the highest degree.
Very High	*Use* The development/activity would: g. Have a very high level of effect on the character or key attributes of the receiving environment and/or the vista within which it is seen; and/or h. Have a very high level effect on the perceived amenity derived from it. *Oxford English Dictionary Definition* Very: adverb 1 in a high degree. 2 with superlative or own without qualification: the very best quality. High: adjective 1 extending above the normal level. 2 great in amount, value, size, or intensity. 3 great in rank or status. 4 morally or culturally superior.
High	*Use* The development/activity would: i. Have a high level of effect on the character or key attributes of the receiving environment and/or the vista within which it is seen; and/or j. Have a high level of effect on the perceived amenity derived from it. *Oxford English Dictionary Definition* High: adjective 1 extending above the normal level. 2 great in amount, value, size, or intensity. 3 great in rank or status. 4 morally or culturally superior.
Moderate	*Use* The development/activity would: k. Have a moderate level of effect on the character or key attributes of the receiving environment and/or the vista within which it is seen; and/or l. Have a moderate level of effect on the perceived amenity derived from it. *Oxford English Dictionary Definition* Moderate: adjective 1 average in amount, intensity, or degree.
"More Than Minor" Threshold Under s104D of the RMA	
Low	*Use* The development/activity would: m. Have an low level of effect on the character or key attributes of the receiving environment and/or the vista within which it is seen; and/or n. Have a low level of effect on the perceived amenity derived from it. *Oxford English Dictionary Definition* Low: adjective 1 below average in amount, extent, or intensity. 2 lacking importance, prestige, or quality; inferior.
Very Low	*Use* The development/activity would: o. Have an very low level of effect on the character or key attributes of the receiving environment and/or the vista within which it is seen; and/or p. Have a very low level of effect on the perceived amenity derived from it. *Oxford English Dictionary Definition* Very: adverb 1 in a high degree. 2 with superlative or own without qualification: the very best quality. Low: adjective 1 below average in amount, extent, or intensity. 2 lacking importance, prestige, or quality; inferior.
Negligible	*Use* The development/activity would: q. Have a negligible effect on the character or key attributes of the receiving environment and/or the vista within which it is seen; and/or r. Have a negligible effect on the perceived amenity derived from it. *Oxford English Dictionary Definition* Negligible: adjective that need not be considered.
Detectable Effect Threshold	
No Effect	The development/activity would have no effect on the receiving environment.
Note: Ratings may be positive (e.g. high level of enhancement) or negative (e.g. high adverse effect).	

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