Wisheart Macnab & Partners
BARRISTERS & SOLICITORS
73 Alfred Street | PO Box 138 | Blenheim 7240 | New Zealand
P: 03 578 7269 | F: 03 578 0173 | E: enquiries@wmp.co.nz | W: www.wisheartmacnab.co.nz

1 February 2016

Marlborough District Council
PO Box 443
Blenheim 7240

BY HAND

Re: **Marlborough Aquaculture Limited – Application for Coastal Permit**

We act for the abovenamed.

We attach the following:

1. Application
2. Assessment of Effects on the Environment
3. Locality Map
4. Site Plan
5. Structures Diagram
6. Ecological Report
7. Application fee $945.00.

Please acknowledge receipt.

Yours faithfully
WISHEART MACNAB & PARTNERS

.....
DJ Clark
david@wmp.co.nz

Encl

n:\wmp\djc\let\marlbaquaculture-KaikouraBayappln-mdc.doc

Resource Consent Application

This application is made under Section 88 of the Resource Management Act 1991

MARLBOROUGH DISTRICT COUNCIL

Please read and complete this form thoroughly and provide all details relevant to your proposal. Feel free to discuss any aspect of your proposal, the words used in this form or the application process with Council staff, who are here to help.

This application will be checked before formal acceptance. If further information is required, you will be notified accordingly. When this information is supplied, the application will be formally received and processed further.

You may apply for more than one consent that is needed to cover several aspects of the activity on this form.

For Office Use ISO 9001:2008 Document Number: RAF0002-CI1579

Lodgement Fee Paid $ 945.00

Receipt No. 1757285

Consent No.

Case Officer:

Date Received:

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1. Applicant Details *(If a trust, list full names of all trustees.)*

Name: *(full legal name)* Marlborough Aquaculture Limited

Mailing Address: *(including post code)* PO Box 860, Blenheim 7240

Email Address:

Phone: (Daytime) Phone: (Mobile)

2. Agent Details *(If your agent is dealing with the application, all communication regarding the application will be sent to the agent.)*

Name: David Julian Clark

Mailing Address: *(including post code)* PO Box 138, Blenheim 7240

Email Address: david@wmp.co.nz

Phone: (Daytime) 5787269 Phone: (Mobile)

3. Type of Resource Consent Applied For

☑ Coastal Permit ☐ Discharge Permit ☐ Land Use ☐ Subdivision ☐ Water Permit

4. Brief Description of the Activity

To renew Consent U990824 (Marine Farm No. 8445) being a Coastal Permit to establish a 1.76 hectare marine farm to enable the cultivation of greenshell mussels (perna canaliculus) and blue mussels (mytilus edulis) using standard surface longline techniques and to disturb the seabed with anchors, to erect the structures, to occupy the space, to cultivate and harvest the above species including any ancillary and related discharges that occur.

5. Supplementary Information Provided? ☐ Yes ☐ No

Council has supplementary forms for some activities, such as moorings, water permits, domestic wastewater, discharge permits, to assist applicants with providing the required information.

6. Property Details

The location to which the application relates is (address): Kaikoura Bay, Port Underwood

Legal description (i.e. Lot 1 DP 1234): Not applicable

(Attach a sketch of the locality and activity points. Describe the location in a manner which will allow it to be readily identified, e.g. house number and street address, Grid Reference, the name of any relevant stream, river, or other water body to which application may relate, proximity to any well known landmark, DP number, Valuation Number, Property Number.)

Please attach a copy of the Certificate of Title that is less than 3 months old (except for coastal or water permits).

The names and addresses of the owner and occupier of the land (other than the applicant): Crown - seabed

Please attach the written approval of affected parties/adjoining property owners and occupiers.

Note: As a matter of good practice and courtesy you should consult your neighbours about your proposal. If you have not consulted your neighbours, please give brief reasons on a separate sheet why you have not.

7. Assessment of Effects on the Environment (AEE) *(Attach separate sheet detailing AEE.)*

I attach, in accordance with Schedule Four of the Resource Management Act 1991, an assessment of environmental effects in a level of detail that corresponds with the scale and significance of the effects that the proposed activity may have on the environment. Applications also have to include consideration of the provisions of the Resource Management Act 1991 and other relevant planning documents.

Note: Failure to submit an AEE will result in return of this application.

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8. Other Information

Are additional resource consents required in relation to this proposal? If so, please list and indicate if they have been obtained or applied for.

I attach any other information required to be included in the application by the relevant Resource Management Plan, Act or regulations. ☐ **Yes** ☐ **No**

9. Fees

1. The applicable lodgement (base) fee is to be paid at the time of lodging this application. If payment is made into Council's bank account 02-0600-0202861-02, please put Applicant Name and either U-number, property number or consent type as a reference. If you require a GST receipt for a bank payment, please tick ☑
2. The final cost of processing the application will be based on actual time and costs in accordance with Council's charging policy. If actual costs exceed the lodgement fee an invoice will be issued (if actual costs are less, a refund will be made). Invoices are due for payment on the 20th of the month following invoice date. Council may stop processing an application until an overdue invoice is paid in full. Council charges interest on overdue invoices at 15% per annum from the date of issue to the date of payment. In the event of non-payment, legal and other costs of recovery will also be charged.
3. Please make invoice out to: ☑ Applicant ☐ Agent
   (if neither is ticked the invoice will be made out to Applicant)

10. Declaration

I (*please print name*) David Julian Clark

confirm that the information provided in this application and the attachments to it are accurate.

Signature of applicant or authorised agent:

Date: 2/2/16

Privacy Information

The information you have provided on this form is required so that your application can be processed and so that statistics can be collected by Council. The information will be stored on a public register and held by Council. Details may be made available to the public about consents that have been applied for and issued by Council. If you would like access to or make corrections to your details, please contact Council.

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- 2 FEB 2016
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Reset Form

Schedule Four
Resource Management Act 1991
Information Required in Application for Resource Consent

1 Information must be specified in sufficient detail

Any information required by this schedule, including an assessment under clause 2(1)(f) or (g), must be specified in sufficient detail to satisfy the purpose for which it is required.

2 Information required in all applications

(1) An application for a resource consent for an activity (the **activity**) must include the following:

(a) a description of the activity:

(b) a description of the site at which the activity is to occur:

(c) the full name and address of each owner or occupier of the site:

(d) a description of any other activities that are part of the proposal to which the application relates:

(e) a description of any other resource consents required for the proposal to which the application relates:

(f) an assessment of the activity against the matters set out in Part 2:

(g) an assessment of the activity against any relevant provisions of a document referred to in section 104(1)(b).

(2) The assessment under subclause (1)(g) must include an assessment of the activity against—

(a) any relevant objectives, policies, or rules in a document; and

(b) any relevant requirements, conditions, or permissions in any rules in a document; and

(c) any other relevant requirements in a document (for example, in a national environmental standard or other regulations).

(3) An application must also include an assessment of the activity's effects on the environment that—

(a) includes the information required by clause 6; and

(b) addresses the matters specified in clause 7; and

(c) includes such detail as corresponds with the scale and significance of the effects that the activity may have on the environment.

3 Additional information required in some applications

An application must also include any of the following that apply:

(a) if any permitted activity is part of the proposal to which the application relates, a description of the permitted activity that demonstrates that it complies with the requirements, conditions, and permissions for the permitted activity (so that a resource consent is not required for that activity under section 87A(1)):

(b) if the application is affected by section 124 or 165ZH(1)(c) (which relate to existing resource consents), an assessment of the value of the investment of the existing consent holder (for the purposes of section 104(2A)):

(c) if the activity is to occur in an area within the scope of a planning document prepared by a customary marine title group under section 85 of the Marine and Coastal Area (Takutai Moana) Act 2011, an assessment of the activity against any resource management matters set out in that planning document (for the purposes of section 104(2B)).

4 Additional information required in application for subdivision consent

An application for a subdivision consent must also include information that adequately defines the following:

(a) the position of all new boundaries:

(b) the areas of all new allotments, unless the subdivision involves a cross lease, company lease, or unit plan:

(c) the locations and areas of new reserves to be created, including any esplanade reserves and esplanade strips:

(d) the locations and areas of any existing esplanade reserves, esplanade strips, and access strips:

(e) the locations and areas of any part of the bed of a river or lake to be vested in a territorial authority under section 237A:

(f) the locations and areas of any land within the coastal marine area (which is to become part of the common marine and coastal area under section 237A):

(g) the locations and areas of land to be set aside as new roads.

5 Additional information required in application for reclamation

An application for a resource consent for reclamation must also include information to show the area to be reclaimed, including the following:

(a) the location of the area:

(b) if practicable, the position of all new boundaries:

(c) any part of the area to be set aside as an esplanade reserve or esplanade strip.

Assessment of environmental effects

6 Information required in assessment of environmental effects

(1) An assessment of the activity's effects on the environment must include the following information:

(a) if it is likely that the activity will result in any significant adverse effect on the environment, a description of any possible alternative locations or methods for undertaking the activity:

(b) an assessment of the actual or potential effect on the environment of the activity:

(c) if the activity includes the use of hazardous substances and installations, an assessment of any risks to the environment that are likely to arise from such use:

(d) if the activity includes the discharge of any contaminant, a description of—

(i) the nature of the discharge and the sensitivity of the receiving environment to adverse effects; and

(ii) any possible alternative methods of discharge, including discharge into any other receiving environment:

(e) a description of the mitigation measures (including safeguards and contingency plans where relevant) to be undertaken to help prevent or reduce the actual or potential effect:

(f) identification of the persons affected by the activity, any consultation undertaken, and any response to the views of any person consulted:

(g) if the scale and significance of the activity's effects are such that monitoring is required, a description of how and by whom the effects will be monitored if the activity is approved:

(h) if the activity will, or is likely to, have adverse effects that are more than minor on the exercise of a protected customary right, a description of possible alternative locations or methods for the exercise of the activity (unless written approval for the activity is given by the protected customary rights group).

(2) A requirement to include information in the assessment of environmental effects is subject to the provisions of any policy statement or plan.

(3) To avoid doubt, subclause (1)(f) obliges an applicant to report as to the persons identified as being affected by the proposal, but does not—

(a) oblige the applicant to consult any person; or

(b) create any ground for expecting that the applicant will consult any person.

7 Matters that must be addressed by assessment of environmental effects

(1) An assessment of the activity's effects on the environment must address the following matters:

(a) any effect on those in the neighbourhood and, where relevant, the wider community, including any social, economic, or cultural effects:

(b) any physical effect on the locality, including any landscape and visual effects:

(c) any effect on ecosystems, including effects on plants or animals and any physical disturbance of habitats in the vicinity:

(d) any effect on natural and physical resources having aesthetic, recreational, scientific, historical, spiritual, or cultural value, or other special value, for present or future generations:

(e) any discharge of contaminants into the environment, including any unreasonable emission of noise, and options for the treatment and disposal of contaminants:

(f) any risk to the neighbourhood, the wider community, or the environment through natural hazards or the use of hazardous substances or hazardous installations.

(2) The requirement to address a matter in the assessment of environmental effects is subject to the provisions of any policy statement or plan.

Section 88
Resource Management Act 1991
Making an Application

88 Making an application

(1) A person may apply to the relevant consent authority for a resource consent.

(2) An application must—

(a) be made in the prescribed form and manner; and

(b) include the information relating to the activity, including an assessment of the activity's effects on the environment, as required by Schedule 4.

(2A) An application for a coastal permit to undertake an aquaculture activity must include a copy for the Ministry of Fisheries.

(3) A consent authority may, within 10 working days after an application was first lodged, determine that the application is incomplete if the application does not—

(a) include the information prescribed by regulations; or

(b) include the information required by Schedule 4.

(3A) The consent authority must immediately return an incomplete application to the applicant, with written reasons for the determination.

(4) If, after an application has been returned as incomplete, that application is lodged again with the consent authority, that application is to be treated as a new application.

(5) Sections 357 to 358 apply to a determination that an application is incomplete.

RESOURCE MANAGEMENT ACT 1991

Schedule 4

Information required in application for resource consent

1. Information required in all applications

(1) An application for resource consent for an activity ("the activity") must include the following:

(a) A description of the activity:

To renew Consent U990824 (Marine Farm No. 8445) being a Coastal Permit to establish a 1.76 hectare marine farm to enable the cultivation of greenshell mussels (perna canaliculus) and blue mussels (mytilus edulis) using standard surface longline techniques and to disturb the seabed with anchors, to erect the structures, to occupy the space, to cultivate and harvest the above species including any ancillary and related discharges that occur.

Resource Consent U990824 was granted by Council on 18 December 2000. The area of the Resource Consent was 1.9 hectares.

The decision to grant consent was subsequently appealed to the Environment Court (*Marlborough Seafoods Port Underwood Ltd v Marlborough District Council – RMA 121/01).* The Appeal however was withdrawn on 3 October 2002.

The Applicant did not pursue an Application for a Marine Farming Permit and the consent was lapsed by Council on 17 January 2007.

The current Application is for consent for the same area and on the same terms and conditions as that which was granted by Council on 18 December 2000 less a small area on the south side to give a clearance of 50 metres from Marine Farm 8446 which has had an "off-site" correction since 2000.

<u>Coastal Permits Required</u>

The Application is for Coastal Permits to authorise:

(a) The occupation of part of the Coastal Marine Area ("CMA").

(b) The erection and placement of structures.

(c) Any necessary disturbance of the seabed.

(d) The incidental deposition of shell material and other natural material as a consequence of the operation of the marine farm.

The location, permit area, all structures that are intended to be used are all set out in:

- Locality Map - **Attachment 1.**
- Plan of proposed coastal permit **Attachment 2.**
- Structure layout diagram – **Attachment 3.**

Accompanying the Application is a report *"Biological Report in relation to a New Marine Farm Application located in Kaikoura Bay, Port Underwood"* a report prepared by Davidson Environmental Limited dated January 2016.

The Applicant

The Applicant is Marlborough Aquaculture Limited a locally based marine farming company operating since the mid 1990's principally in the Marlborough Sounds.

Product from the farm will be processed at Blenheim at Talleys factory.

The method of proposed activity is by standard longline method.

The species proposed to be farmed are currently being farmed in Port Underwood and naturally to be found there. There will be no introduced species and no introduced feed.

History of Marine Farming at Subject Site

Marine farming in Port Underwood generally is a long established activity.

There are three existing marine farms in Kaikoura Bay:

(a) Marine Farm No. 8446 – granted 25 August 1980
(b) Marine Farm No. 8447 – granted 2 February 1981
(c) Marine Farm No. 8448 – granted 6 November 2006.

There are long established marine farms in Whataroa Bay to the east which also date back to the early 1980's and the Bay to the south again which date back to the early 1980's.

Activity Status

Utilising MDC Smart Maps for Port Underwood the north-eastern corner is approximately 198 metres from mean low water mark and the southern-most point is 186. Accordingly the activity status is *discretionary* under Rule 35.4.2.9 of the Marlborough Sounds Resource Management Plan (MSRMP) as the eastern side of Port Underwood is zoned Coastal Marine Zone Two.

Indeed when the Application was assessed and a report prepared under s42A Resource Management Act (RMA) when the original Application was dealt with it too was assessed as *discretionary*.

However the decision in 2000 (out of an abundance of caution) treated the Application as non-complying but recorded that nothing turned on it.

(b) A description of the site at which the activity is to occur:

As detailed above marine farming already occurs in Kaikoura Bay and has occurred

there for some 35 years.

The adjoining land is all planted in commercial forestry (pinus radiata). In some places in the Bay the forestry is almost to the water line. There are no buildings in the Bay and the forestry extends to the ridgeline above the Bay (and covers both the adjoining Bays).

The forest is mature and is currently being harvested. The harvesting has not yet gone into Kaikoura Bay but has occurred both to the east and south. Harvesting will occur in the foreseeable future.

Nothing has changed in Kaikoura Bay since the original application was granted consent.

The adjoining land is all in one large holding (742.5263 hectares).

There is no separate road nor legal access to Kaikoura Bay other than with the permission of the landowner. At present it can only be accessed from the sea.

The land rises steeply to the ridge above at approximately 200 metres.

Kaikoura Bay has no special protection in the MSRMP.

While the land to the east of the ridgeline is considered an area of outstanding landscape value (AOLV) there is no such land within Kaikoura Bay and the ridge above the Bay is not considered a prominent ridge in that particular part of Port Underwood.

The only ecological protection in the area is the tube worm colony on Whataroa Point which is addressed in the attached report.

(c) *The full name and address of each owner:*

The adjoining landowner at the time Resource Consent was granted in 2000 was Whataroa Forestry Development Limited. It is now owned by New Zealand Forest Land Limited.

The owner of the other marine farms in the Bay are:

(a) Marine Farm site 8446 – Marlborough Seafood (Port Underwood) Limited
(b) Marine Farm site 8447 – R &M Thomas and K & D Gullery
(c) Marine Farm site 8448 – Musco Seafoods Limited

(d) *A description of other activities that are part of the proposal to which the application relates:*

Not applicable.

(e) *A description of any other resource consents required:*

Not applicable.

(f) *An assessment of the activities against matters set out in Part 2:*

Section 5 – Purpose

The Application does achieve the overarching purpose of the RMA in that it enables the provision of social economic and cultural wellbeing while achieving sustainable management of resources, safe guarding the life supporting capacity of water and avoiding remedying or mitigating adverse effects of the activity on the environment.

Section 6 – Matters of National Importance

The proposal does not envisage any further or different development than was originally granted approval for other than the current proposal is smaller. Natural character of the coastal marine area will be preserved and protected from inappropriate use and development.

There are no identified outstanding natural features and landscapes at the subject site.

There is no significant indigenous vegetation or significant habitat of indigenous fauna at the subject site other than the tube worm colony at Whataroa Point which is dealt with in the attached report.

The marine farm does not exclude public access. People in vessels can enter into and tie up to the structures within the marine farm. As marine farming has become more understood and accepted by the boating public skippers are aware that they can utilise the area. There are no buildings in Kaikoura Bay and no occupation of it other than the continuation of the existing commercial forestry. The proposed farm will lie alongside a face at the mouth of the Bay and the longlines will lie in a true north south alignment. There is a substantial gap inshore of the proposed marine farm which is of sufficient width to enable vessels to access and pass inshore of the farm.

In *"New Zealand Cruising Guide – Central Area"* by Murray and Von Kohorn no anchorage is identified or referred to in Kaikoura Bay. Indeed Kaikoura Bay is not mentioned in the text of the publication. Nevertheless any vessel that does wish to enter into the Bay is not precluded from doing so by the proposed farm. There is no jetty or specific landing area nor is there a log loading site within the Bay.

The process in the original Application for consent did not identify any particular wahi tapu or other taonga that would be adversely affected by the marine farm.

There is no known historic or heritage place at or near the subject site which needs protection. Horahora Kakahu Island is on the south side of the next Bay to the south. The proposed marine farm would not be visible from the island.

As fishing can still occur within the site and around the site, protected customary rights are not seen to be affected.

Section 7 – Other Matters

Only those matters in section 7 that are relevant are addressed in this assessment. The proposal consists of the farming of a native species of shellfish which is found in the area. There is nothing added to the water column and the shellfish rely solely on nutrients in the water column. The activity is an efficient use and development of natural and physical resources. Marine Farming within Kaikoura Bay (and elsewhere in Port Underwood) has been undertaken for 3 decades. Amenity values will not be diminished by granting consent. None of the intrinsic values of the ecosystems that are

present at the subject site will be adversely affected and the quality of the environment will not be diminished. While nutrients in the water column are a finite resource, in the assessment of the attached report activity is both sustainable and will not reduce the nutrients in anything more than in a minor way.

Section 8 – the Treaty of Waitangi
The allocation of water space for aquaculture in the CMA and Crown obligations under the Treaty are dealt with by Fisheries legislation.

(2) Assessment of the activity against Objectives Policies Rules in any relevant planning document

Status of the Activity under MSRMP

As identified above the proposed activity is a *discretionary* activity under MSRMP by virtue of Rule 35.4.2.9. But as recorded in the decision in 2000 which ultimately found it was non-complying, nothing turned on the distinction.

Under Rule 35.4.2.9. there are express assessment criteria and those are addressed in the following paragraph.

There is considerable overlap between the provisions of the Rules in MSRMP and the Policies and Objectives of the Plan. On the basis that the proposed activity at the subject site is a *discretionary* activity the MSRMP addresses by the assessment criteria in the Rules whether the proposed activity is specifically acceptable at the subject site. To avoid unnecessary duplication the express assessment criteria in Rule 35.4.2.9.1 is set out below.

Assessment of the present nature of the site including the nature of the seafloor and species found in the area (35.4.2.9.1.1)

The biological report of Davidson Environmental confirms that the proposed marine farm will lie over a benthos which is dominated by silt and clay and is accordingly located over a "substratum suitable for shellfish farming".

The distance between low water and the inshore boundary of the Application is between 92 and 95 metres. That is almost double the usual distance to mean low water mark for marine farms in the Marlborough Sounds. Davidson Environmental considers there to be sufficient distance from the tube mounds on the Whataroa Point. Again it was considered sufficient distance in the original grant of consent in 2000.

The colony appears to be in good health and does not appear to have been affected by the marine farm to the north of the Point, Marine Farm No 8444 which dates from the 1990's. Out of an abundance of caution a condition to protect the colony can be volunteered.

Effect on marine ecology of feed proposed to be added (35.4.2.9.1.2)

Not applicable

Consideration of navigational matters (35.4.2.9.1.3)

a) The shoreline

The proposed marine farm is almost twice the usual inshore distance from mean low water mark.

b) *Adjacent marine farms*
The proposed marine farm is 50 metres away from the marine farm to the south and 68 metres from the farm to the east. The area has been reduced to 1.76 hectares because since the original grant the farm to the south has been changed off-site but that has been fixed by a s53 RMA application.

c) *Log loading sites and other points of access to the shore*
There are no jetties, log loading sites or other points of access to the shore in Kaikoura Bay.

d) *Headlands*
There is an existing marine farm off Whataroa Point. The proposed marine farm does not protrude any further out into Port Underwood than that marine farm nor any further out into Port Underwood from that area granted permission in 2000.

e) *Navigational routes*
Similarly the proposed marine farm will not adversely affect any navigational route in Port Underwood.

f) *Anchorages and mooring areas*
As set out above there are no recognised anchorages or mooring areas in Kaikoura Bay. Ray Thomas has a mooring in Kaikoura Bay (Mooring No 2453) which he uses for a marine farming vessel associated with his marine farm in the Bay. It will not be adversely affected by the proposed marine farm.

g) *Water ski lane*
There is no water ski lane in Kaikoura Bay.

h) *Sub-aqueous cables*
There are no sub-aqueous cables in Kaikoura Bay.

i) *An accessway free of surface structures where a marine farm exceeds 400 metres in length*
Not applicable

Consideration of aesthetic and cultural matters (35.4.2.9.1.4)

a) *Proximity to residences, land zoned for residential use and land subdivided for residential use.*

There is no residence, land zoned for residential use or land subdivided for residential use in Kaikoura Bay.

There has been a Resource Consent granted (U150185) to subdivide land on the peninsular into rural allotments. The subdivision has not been completed and awaits the harvest of the trees. Some proposed building sites have been identified but that will no doubt be land owner preference in due course if the subdivision is completed and so any final siting of any building is or near the Bay is unknown.

b) *Proximity and likely effect on scenic value*
All the adjoining land is commercial forestry which is being harvested. The land is in a modified state and even if not replanted will be in a modified state for a very long time. It is not recognised in the MSRMP as having any special values.

c) *Ecological value*
There is no special ecological value at the subject site other than the tube worm colony which is dealt with in Davidson Environmental report attached.

d) *Recreational value*
The Applicant does not believe there is any particular use of the subject site for recreational use. It is not recognised as having any such feature in the original grant of consent.

e) *Historic or traditional importance*
Likewise the Applicant is not aware of any historic or traditional importance of the proposed site nor is it recognised as such in the original grant of consent.

Particular site requirements of different forms of marine farming (35.4.2.9.1.5)

The proposal is to utilise normal traditional longline marine farming for mussels. That is the same activity as occurring on each of the existing farms within the Bay.

Other matters (35.4.2.9.1.6)

a) *Likely effect on areas used for commercial and recreational fishing*
The area under the proposed farm is not used for commercial or recreational fishing. There is ample area inshore of the marine farm for recreational fishing to occur.

b) *The visual effect of the farm and its operation*
There are marine farms within the Bay and in the immediate area. The proposed marine farm will be a small addition to the existing marine farming in the area. It was not recognised as having any particular adverse effect at the time of the original grant of consent and nothing has changed.

c) *The likely effects on water quality and ecology*
The area under the proposed marine farm is dominated by silt and clay. The likely effects of the marine farm are particularly considered by the report of Davidson Environmental.

d) *The alienation of public space*

Marine farms in Port Underwood in reality do not alienate the public anymore. They have now been in the Port so long that anybody who uses the Port will know that they can enter a mussel farm and fish within it without any concerns and indeed being able to tie up to a mussel farm is beneficial. The proposed marine farm is small and if there is any alienation of public space it will be extremely modest.

e) *The extent to which the marine farm requires ancillary onshore facilities*
This is not considered to be relevant. The marine farm will be operated by Madsen Marine which is a longstanding contractor operating in Port Underwood for many years.

Policies and Objectives - MSRMP

The relevant policies and objectives for the MSRMP relating to the proposed activity are to be found in Chapter 9 Coastal Marine and the relevant policies and objectives are discussed in the following paragraphs. Having said that however the proposed activity is for one which is expressly identified as a *discretionary* activity at the subject site and one would not anticipate therefore that there would be policies and objectives within the Plan which militate against a marine farm at the subject site if that marine farm meets the appropriate express assessment criteria set out in Rule 35.4.2.9.1.

a) *Policy and Objectives 9.2.1*
This objective is directed to the accommodation of appropriate activities in the coastal marine area while avoiding, remedying or mitigating the adverse effects of those activities. The underlying policies being set out are matters to be considered which are reflected in the express assessment criteria in the Rule that flows from the objectives and policies. The policies and objectives anticipate that if a particular proposed marine farm satisfies the express criteria then that marine farm would be appropriate use or development in the coastal environment. Further the policies lay the foundation where the marine farming is generally not appropriate including areas where it is actually excluded. This is not an excluded area.

Policy 9.2.1.1.14 expressly recognises that there should be appropriate places in the Marlborough Sounds where marine farming can take place. As is recognised by the previous consent granted, the proposed site is an appropriate place for marine farming.

b) *Objective 9.3.2.1 – Water quality*
Water quality is of paramount importance to mussel farms. Mussels are bi-valve filter feeders and absorb what is in the water column. A marine farm at the subject site is consistent with these policies and objectives.

c) *Objective 9.4.1.1 – Protection of the foreshore and seabed*
These policies and objectives are designed to protect the foreshore or seabed from alteration. Supporting policies are aimed at restricting adverse effects from disturbance or alteration of the foreshore and/or seabed. The policies address the matters which are reflected in the assessment criteria of Rule 35.4.2.9.1. The Applicant's view is that the proposed activity satisfies those

assessment criteria and therefore is not inconsistent with the policies and objectives which underpin the Rule.

d) *The remaining policies and objectives of the Coastal Marine Area related to aquaculture management areas and ship generated waves.*
Neither of these are relevant to the Application.

Marlborough Regional Policy Statement (MRPS)

There are a number of references to both aquaculture and marine farming in the MRPS. However this is a hierarchical document in that it is again perceived that the MSRMP is not inconsistent with the MRPS particularly in relation to aquaculture and marine farming. Working in reverse order therefore an Application that satisfies the assessment criteria in Rule 35.4.2.9.1 will be entirely consistent with MRPS.

Specifically Objective 5.3.2 of the MRPS is designed to maintain water quality which provides for sustainable management of the marine ecosystem.

Objective 7.2.7 is designed to ensure subdivision use and development of the coastal environment occurs in a sustainable way.

New Zealand Coastal Policy Statement 2010

This is a higher level document which generally seeks to enable activities in the coastal environment while ensuring that the effects of those activities are avoided or mitigated and seeks to preserve and restore natural character, to protect natural features and natural landscape, to protect historic heritage, public open space, to protect water quality, monitor sedimentation, to restrict the discharge of contaminants, to identify coastal hazards and restrict activity in relation to the coastal hazard risk. None of these matters are anticipated to be intended to be restricted by the current proposal.

Specifically there is now a policy (Policy 8) in relation to aquaculture which requires that the "significant, existing and potential contribution of aquaculture to the social economic and cultural wellbeing of the people and communities be recognised by making provision for aquaculture in regional coastal plans". Given that aquaculture at the subject site is a *discretionary* activity, this policy is met.

(a) *Any relevant requirements, conditions or permissions in any Rules in a document.*

See above.

(b) *Any other relevant requirements in a document (for example, in a national environmental standard or other regulations)*

See above.

2. Additional Information required in some applications

The Applicant does not believe that there is any additional information required in terms of specific applications under the RMA and MSRMP that have not been provided.

Assessment of Environmental Effects

3. Information Required in Assessment of Environmental Effects

(1) An assessment of the activity's effects on the environment must include the following information:

(a) If it is likely that the activity will result in any significant adverse effect on the environment, a description of any possible alternative locations or methods for undertaking the activity.

For the reasons already given the Applicant does not perceive that the proposed marine farm will have any significant adverse effects on the environment and therefore possible alternative locations or methods for undertaking the activity have not been examined. However there are very very few opportunities for new marine farming in the Marlborough Sounds

(b) An assessment of the actual or potential effect on the environment of the activity.

Various potential effects are examined in the subsequent paragraph, both adverse and positive.

Marine Mammals

It is not considered that the proposed marine farm will have any adverse effect on any marine mammals using either Port Underwood generally or Kaikoura Bay. It is not considered to be a special habitat. While dolphin habitat in Cloudy Bay is a matter recognised by MSRMP there is no such protection in Port Underwood itself. In any event there is no documented record of marine mammal entanglement in a marine farm in Port Underwood. Marine mammals are not physically excluded from the subject site.

Sea Birds

There is now a body of literature which indicates that seabirds are not excluded from mussel farms and indeed find the mussel buoy a useful place for a temporary roost. Bird droppings on mussel buoys are a constant reminder of their use for that purpose. Even the rare (and timid) King Shag finds mussel buoys a useful resting place while foraging. And a place free of predators. There is no evidence to indicate that the existence of the proposed marine farm raises any concern relating to an adverse effect on seabirds.

Navigation

The proposed marine farm is not on a recognised navigation route, nor near a recognised mooring area. It has a lighting plan which enables it to be seen at night by approaching vessels. The predominant use of Kaikoura Bay from the water is relating to mussel farming. The proposed mussel farm is inside a notional line from the point on the western side of Kaikoura Bay (and the marine farm on that side) to the existing marine farm on Whataroa Point. The proposed farm would not be any navigational risk nor will it unduly inconvenience the boating public.

Public Access

The public is not physically excluded from utilising the CMA where the marine farm is. Recreationalists can enter the farm without fear of adverse consequences. The

recreational public is now much more educated about these matters and do these days have concerns over access.

Fishing

Similarly the existing marine farm does not actually exclude fishing and a recreational fisher can tie up to the structures during the activity of fishing.

It is not considered by the Applicant that any commercial fishing operation is adversely affected by the existing marine farm.

Recreational Activity

There is no recognised recreational activity that occurs at the subject site such which will be adversely affected. There are many alternative places within Port Underwood where recreational activity is undertaken. Furthermore the whole of the western part of Port Underwood has an area which marine farm is excluded from.

Visual effects and Amenity Values

The public does not have any easy access from land to the subject site. The public is able to access the site by sea but visual effects at sea level are restricted to proximity to the farm. At sea level, anything over 1.25 km has no visual effect. There are other marine farms in the immediate area and the proposed activity at 1.76 hectares measured at the seafloor is a very modest extension to marine farming that is undertaken in the area. Again though the original grant of consent in 2000 recognised that in granting consent there would be limited visual effects and amenity value would not be unduly compromised.

Landscape

There is no outstanding natural feature or outstanding natural landscape in Kaikoura Bay. The proposed activity is not of a scale or at a location which adversely affects the landscape or character of Port Underwood itself.

There has been very little change (if any) at the subject site since the original grant of consent in 2000.

Benthic Effects

This matter is separately addressed by the report of Davidson Environmental. The report concludes that the proposed site is a suitable one for development of a marine farm.

Nutrient Depletion

This matter is also addressed by the report of Davidson Environmental.

Coastal Processes

Given the very small size of the proposed farm there will not be any measurable effect on coastal processes. The proposed farm is separated almost twice the distance from the shore and further offshore than either of the other three marine farms in the Bay.

Biosecurity

The Applicant is a member of the mussel industry ECOP. Compliance with the ECOP is designed to minimise biosecurity risks. It is in the farmers interests to ensure that a high standard is maintained.

Anchoring

The anchoring systems are suitable for the subject site. There is no known difficulty with anchoring a marine farm in Kaikoura Bay. Two of the existing marine farms have been in Kaikoura Bay for approximately 35 years.

Cultural Values

The area is of significance to iwi. There is no doubt that Port Underwood has high cultural and historic values, However the placement of the small farm in Kaikoura Bay is not considered to unduly or adversely affect any of those values.

Noise

Human activity at this site only occurs during installation, maintenance and harvest. Most of the time there is no human presence at the site. There is no noise in the absence of human presence. During the human presence there can be mechanical noise. However that noise is confined to the area of the vessel undertaking the installation, maintenance or harvest. Human presence on the land that adjoins the subject site is infrequent.

Cumulative Effects

There are three marine farms in Kaikoura Bay. There is a coastal ribbon of marine farm development on the eastern side of Port Underwood. The proposed marine farm is very small and will be consistent with that ribbon of development. It will not have any cumulate adverse effects of any significance in terms of the existing pattern of development.

Positive Effects

When considering a proposed marine farm there tends to be an over-emphasis of potential adverse effects without recognising the positive effects and the contribution of mussel farming in the Marlborough Sounds for both the local economy and national one. The harvested product off the farm is supplied to Talleys Group Limited and it will be processed at Talleys' facility near Blenheim. Marine farming provides employment opportunities for those maintaining the farms and harvesting the product of the farm together with those that process the product from the farms. The effects of the proposed activity are less than minor and there is a significant positive effect from allowing marine farming at the subject site.

(c) *If the activity includes the use of hazardous substances and installations in assessment of any risks to the environment that are likely to arise from such use:*

Not applicable.

(d) *If the activity includes the discharge of any contaminant a description of the nature of the discharge, the sensitivity of the receiving environment and any possible alternative methods of discharge.*

Not applicable.

(e) *A description of the mitigation measures (including safeguards and contingency plans where relevant) to be undertaken to help prevent or reduce the actual or potential effect.*

Not applicable.

(f) *An identification of those persons interested in or affected by the proposal, the consultation undertaken, and any response to the views of those consulted.*

Contemporaneously with the lodging of this application the adjoining land owners and Iwi are being consulted.

(g) *If the the scale or significance of the activity's effect are such that monitoring is required, a description of how, once the proposal is approved, effects will be monitored and by whom.*

Not applicable.

(h) *If the activity will or is likely to have adverse effects that are more than minor on the exercise of a protected customary right, a description of possible alternative locations or methods for the exercise of the activity.*

Not applicable.

(2) *Requirement to include information in the assessment of environmental effects is subject to the provisions of any policy statement or plan.*

See above.

4. Matters that must be Addressed by an Assessment of Environmental Effects

(1) An assessment of the activity's effects on the environment must address the following matters:

(a) *Any effect on those in the neighbourhood and, where relevant, the wider community, including any social, economic, or cultural effects:*

As has been set out in this assessment the adverse effects of the proposed activity are small and certainly no more than minor. There is a positive effect in economic terms.

(b) *Any physical effect on the locality, including any landscape and visual effects:*

This aspect has been examined above.

(c) *Any effect on ecosystems, including effects on plants or animals and any physical disturbance of habitats in the vicinity:*

This aspect has been examined above.

(d) *Any effect on natural and physical resources having aesthetic, recreational, scientific, historical, spiritual, or cultural value, or other special value, for present or future generations:*

There is no particular aesthetic, recreational, scientific, historical, spiritual or cultural value or special value of the subject site and therefore it is not considered that the proposed marine farm will have any effect on those values.

(e) Any discharge of contaminants into the environment, including any unreasonable emission of noise, and options for the treatment and disposal of contaminants:

Not applicable.

(f) Any risk to the neighbourhood, the wider community, or the environment through natural hazards or the use of hazardous substances or hazardous installations:

Not applicable.

(2) The requirement to address a matter in the assessment of environment effects is subject to the provisions of any policy statement or plan.

This has been addressed above.

Conditions

The normal suite of conditions relating to marine farms normally imposed by Council is acceptable to the Applicant.

Base Topographical Data sourced from Land Information New Zealand Data. Crown Copyright Reserved.

Topomap 50 Sheet: BQ29

Locality Map

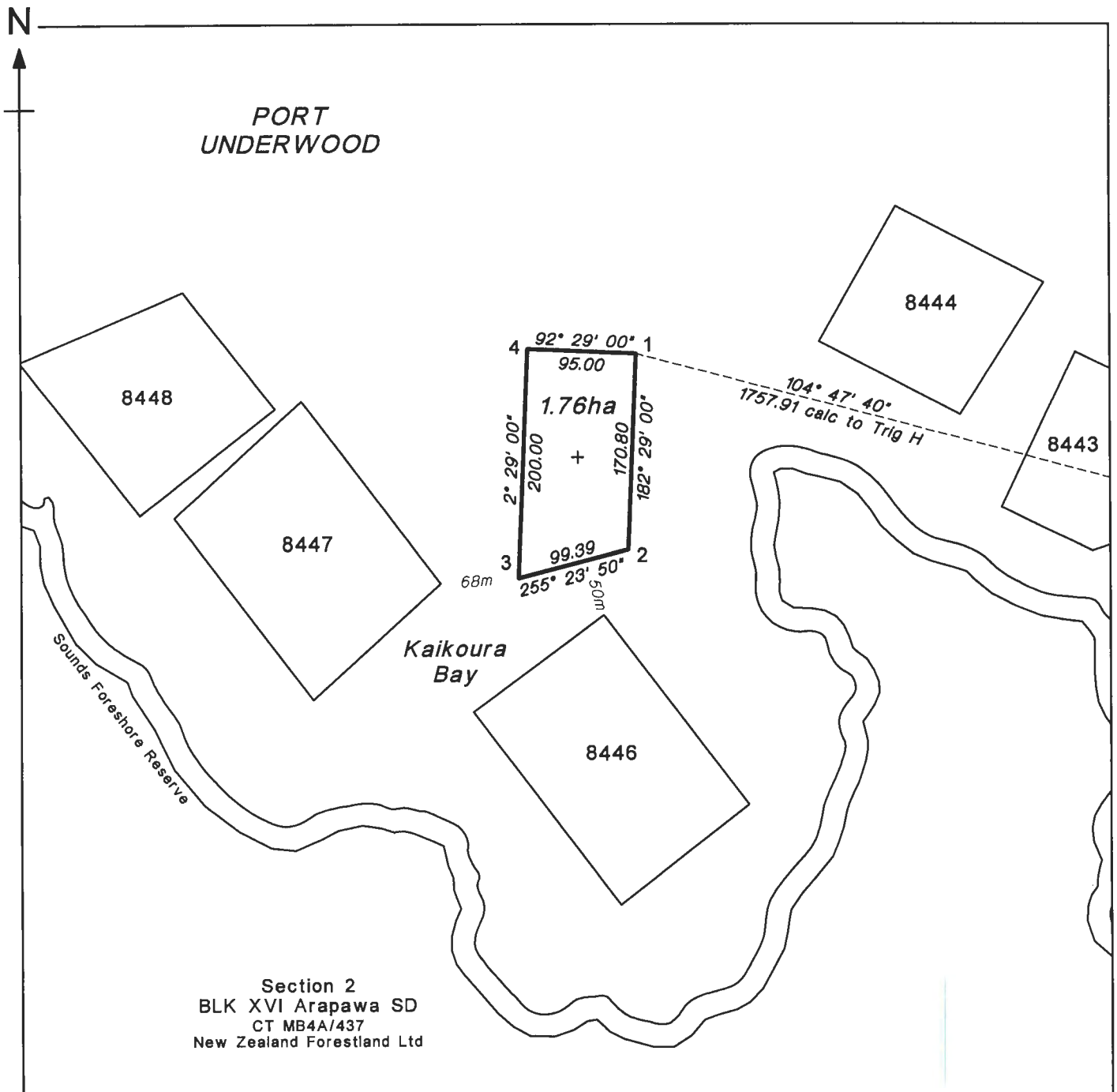
Proposed Marine Farm
Kaikoura Bay - Port Underwood

Scale 1:50,000

500 0 500 1000 1500 2000 2500 3000 3500 Meters

Draughting Plus Limited

Prepared
1 February 2016



SCHEDULE OF COORDINATES DATUM: NZTM2000		
Point	East	North
1	1696185.40	5424732.10
2	1696178.00	5424561.46
3	1696081.82	5424536.40
4	1696090.49	5424736.22
Centroid	1696133.93	5424641.55
Trig H	1697885.03	5424283.22

Datum: NZTM2000
Marlborough District Council
The position of this application has not been surveyed
Cadastral Data from Land Information New Zealand Data

Proposed Coastal Permit

Kaikoura Bay - Port Underwood

SCALE 1:5,000

50 0 100 200 300m

Prepared by
DRAUGHTING PLUS LTD
1 February 2016

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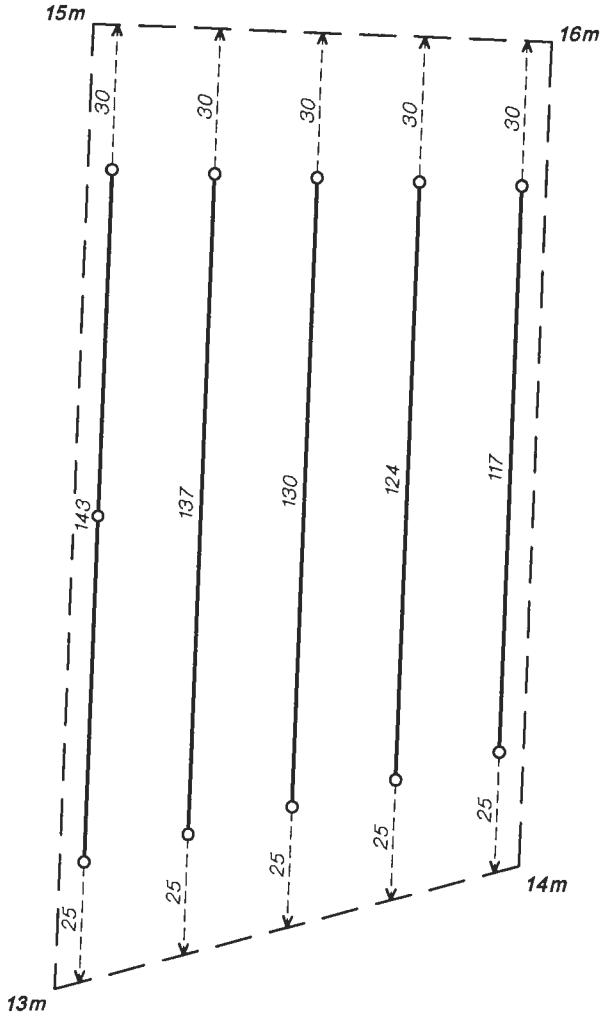


Kaikoura Bay

NOTES:
-Longline Spacing = 21.5m
-Total Longlines = 5
-Backbone Length = as shown
-Total Backbone Length = 651m
-Anchors blocks or screws

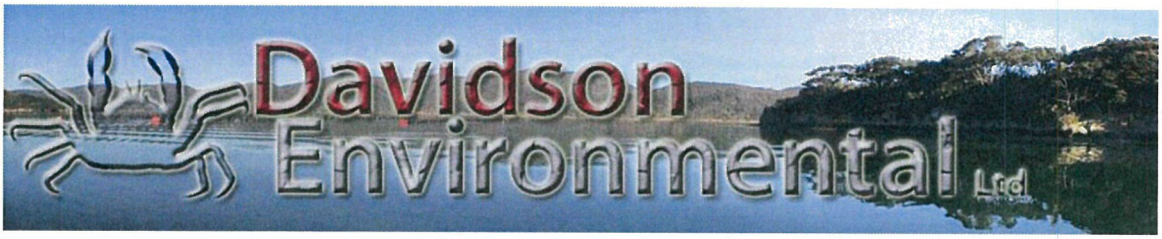
REFERENCE
< Anchor
o Orange Float
—— Backbone
--- Anchor Warp

Structure Layout Plan
Proposed Marine Farm
Kaikoura Bay - Port Underwood

SCALE 1:1,500

25 0 25 50 75 100m

Prepared by
DRAUGHTING PLUS LTD
1 February 2016



Davidson Environmental Limited

Biological report in relation to a new marine farm application located in Kaikoura Bay, Port Underwood

Research, survey and monitoring report number 830

A report prepared for:
Scott Madsen Family Trust
C/O PALMS Ltd.
P.O Box 751
Blenheim

January 2016

Bibliographic reference:

Davidson, R.J. 2016. Biological report in relation to a new marine farm application located in Kaikoura Bay, Port Underwood. Prepared by Davidson Environmental Ltd. for Scott Madsen Family Trust. Survey and monitoring report no. 830.

Prepared by:

Davidson Environmental Limited
P.O. Box 958, Nelson 7040
Phone 03 545 2600
Mobile 027 445 3352
e-mail davidson@xtra.co.nz

January 2016

Table of Contents

1.0 Introduction

The aim of the present study was to provide biological information for a new 1.9 ha marine farm application located along the eastern shoreline of Port Underwood in Kaikoura Bay (Figure 1, Plates 1 and 2). Specifically, this study provides biological information relating to the benthos, habitats and ecological attributes of the marine farm.

Information on the benthos from adjacent areas including representative samples from (a) under an existing mussel farm located south-east of the application, and (b) from a known significant site located near the application were also collected.

Figure 1. Location of the application site (red circle) located in Port Underwood.

Plate 1. Oblique Google Earth aerial showing the location of application (grey) in Kaikoura Bay, Port Underwood.

Plate 2. Looking southward from a position north of the application looking towards the head of Kaikoura Bay.

2.0 Background information

2.1 Study area

Kaikoura Bay is a small bay located along the eastern shoreline of Port Underwood. Kaikoura Bay has a coastline length of approximately 1600 m and covers a sea area of approximately 25.9 ha. The Bay is approximately 745 m wide across the mouth and is approximately 5.2 km from Ngakuta Bay, at the head of the eastern arm of Port Underwood.

A number of existing marine farm consents are located around the present application (Figure 2).

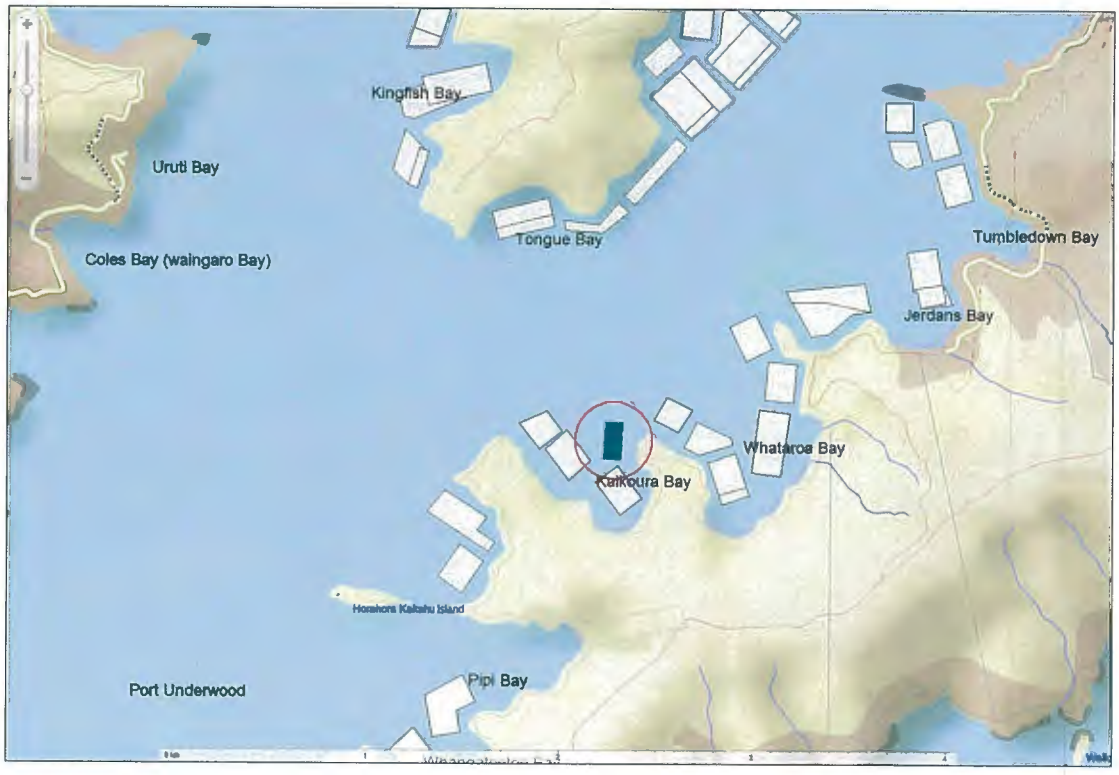


Figure 2. Location of the application area (red circle) and other consented marine farms in the vicinity (grey).

2.2 Historical reports

One biological report was found in relation to an earlier marine farm application at the present site (Brosnan 1999). The author stated:

"This report presents a biological description of benthic habitats and associated conspicuous macrobenthic communities from an area [2.9 ha] proposed as a marine farm located along Kaikoura Point, Port Underwood. The sea floor extends from the shore as large boulders, interspersed with broken shell and fine silt to a depth of around 10 m and to a distance of 70 m from shore. From 70 m, the sea floor is mainly composed of fine silt and clays. The topography of the sea floor is rather constant at a distance of 100 m from the shore, averaging a depth of 15 m.

A total of 26 species was recorded, covering a wide range of animal and plant groups. The most widespread organism along the transects was a polychaete tubeworm that exists in the fine sediments of the sea floor. The density of these tubeworms are reasonably high and are common throughout the fine sediments of Port Underwood. These tubeworms were observed only on fine silt substrates.

The habitat that supported the greatest number of species was the stone and cobble substrates which extended to a depth of around 10 m, with 24 species. The habitat that supported the least number of species was the silt/clay habitats which dominated the majority of the transects. Live horse mussels were observed however the density of the horse mussel was below the trigger levels (DoC, 1995). No lampshells (Brachiopoda) were observed on any of the transects. No large hydroid species were observed. One species of bryozoan was identified as *Caberea solida*. Only one tuft of the bryozoan was observed and was no bigger than 5 cm tall.

Dead tubeworm mounds were observed at a depth of 5 m and a distance of 50 m from shore. These mounds now have a thick covering of coralline paint (Lithothamnion). A transverse dive along the site revealed that all the *Galeolaria hystrix* mounds observed were in fact dead. The only living specimens of *Galeolaria hystrix* were seen growing individually on large boulders or rock."

Brosnan (1999) concluded:

"The present study identified that the most diverse benthic community exists between 0 and 10 m depth which is inshore of the proposed farm boundary. Horse mussels were detected in low densities, below the trigger levels set by the Department of Conservation (DoC, 1995). The bottom type was dominated by fine silt and clays and only the first 10 m of water appeared to contain rock and cobble as the main substrate type. The topography is reasonably consistent beneath the proposed marine farm and a constant depth (14-15 m).

The study site is located well within Port Underwood and experiences low tidal currents and little wave action. An area north of the proposed farm has been identified as containing tubeworm mounds. The transects undertaken in the present study also noted the presence of tubeworm mounds at a depth of around 5 m and located a distance of 50 m from the shore. However, all the tube worm mounds observed in this study were dead and broken."

3.0 Methods

A new biological survey for the present application was conducted on 16th December 2015. Prior to fieldwork, the proposed marine farm application corners were plotted onto mapping software (TUMONZ). The laptop running the mapping software was linked to a portable USB GPS receiver allowing real-time plotting of the corners of marine farm surface structures and to pinpoint drop camera stations in the field. This GPS system has a maximum error of +/- 5 m. The depth at each corner of the proposed marine farm was surveyed using the real-time GPS.

3.1 Sonar

Sonar investigations were conducted using a Furuno colour sounder. This unit provides standard sonar imaging. Prior to the collection of drop camera photographs, the boundaries of the application were investigated using the sonar devise. Any bottom abnormalities such as reefs, hard substrata or abrupt changes in depth were noted for latter inspection using the drop camera (see section 3.2).

3.2 Drop camera stations, site depths and diver inspection

A total of 36 drop camera photographs were collected from the survey area. Most photographs were collected from within the proposed marine farm area, however, photographs were also collected from areas inshore and alongshore of the application. A number of photographs were also collected from under backbones on an adjacent existing mussel farm.

At each site, a Sea Viewer underwater splash camera fixed to an aluminium frame was lowered to the benthos and an oblique still photograph was collected where the frame landed. At most photo-point stations the camera was allowed to drift allowing viewing of a wider area around the photo-point station.

The location of photograph stations was selected in an effort to obtain good coverage of the proposed application area. Additional photographs were taken when any features of particular interest (e.g. shell debris, reef structures, cobbles) were observed on the remote monitor on-board the survey vessel. All photographs collected during the survey have been included in Appendix 1.

Two GPS positions were collected from the low tide mark inshore of the application. This was done by positioning the survey vessel and GPS receiver over the low tide mark. The position of the low tide mark was determined using the transition zone between intertidal and subtidal biological communities.

3.3 Surface photographs

A surface photograph was collected looking towards the proposed marine farm area from an area north of the application. This was collected using the iPhone4s panoramic function to minimize any distortion usually associated with "stitching" separate photos together.

4.0 Results

4.1 Application corner depths

Inshore corner depths of the application ranged from 13.5m to 16.1m, while the offshore corner depths ranged from 13.1 m to 14.5m (Table 1, Figure 3).

The distance between low water and the inshore boundary of the application was 92m (north) and 95m (south) (Figure 3).

Table 1. Depths recorded from the corners of proposed consent corners. Depths adjusted to datum. Coordinates = NZTM (Northing/Easting). Low tide coordinates and the distance to the initially proposed marine farm are listed.

Type	No. & Depth (m)	Coordinates
Application corner	1, 13.5m	1696176.9,5424532.4
Application corner	2, 13.1m	1696081.8,5424536.4
Application corner	3, 14.5m	1696090.5,5424736.2
Application corner	4, 16.1m	1696185.4,5424732.1
Low tide (south)		1696273.4,5424537.1
Low tide (north)		1696274.4,5424638.0

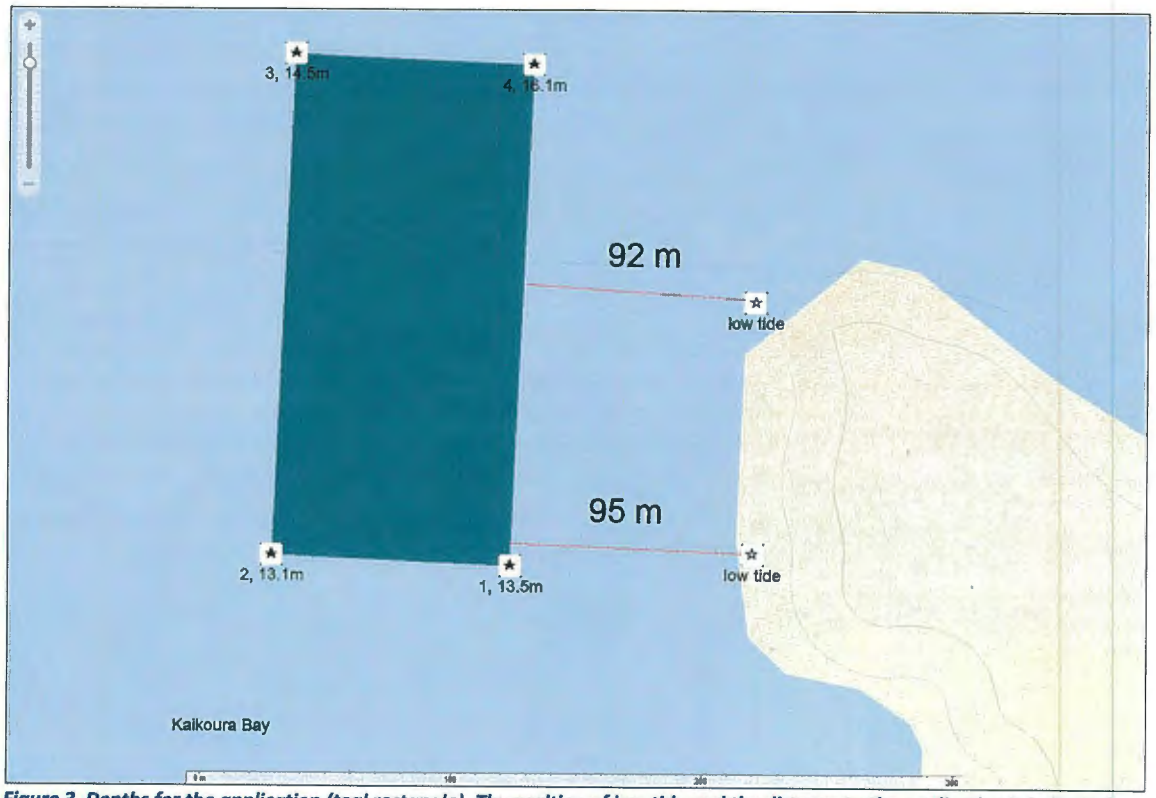


Figure 3. Depths for the application (teal rectangle). The position of low tide and the distance to the application is indicated.

4.2 Substratum and habitats

Substratum and habitat distribution relative to the proposed marine farm application were based on 36 drop camera images combined with sonar depth soundings conducted throughout the application. Topographical and biological features inside the application were compared to adjacent areas and areas under the adjacent mussel farm (Figures 4a, 4b, Table 2, Appendix 1).

Habitats and substratum recorded from the application were characterised by silt and clay substratum (Table 2). This mud substratum supported an abundant population of Maldanid tubeworms (Plate 4). Branching algae were observed amongst and growing over and amongst tubeworms. Soft tubeworms and branching algae were observed from: (a) all photos taken in the application area (e.g. Plate 5); (b) inshore of the application; and (c) under the adjacent mussel farm (e.g. Plate 6). Within increasing distance into Kaikoura Bay including areas inshore of the adjacent farm, the cover of algae and tubeworms appeared to decline (Plate 7, Photos 15-22 In: Appendix 1).

The area north and east of the application and offshore of the promontory is known to support an area of calcareous tubeworms (*Galeolaria hystrix*) (Plate 9) (Davidson *et al.* 1995, Davidson *et al*. 2011, Davidson and Richards 2011, Page *et al*. 2011). Based on the present drop camera images and side-scan sonar collected by Page *et al*. (2011), these tubeworm mounds are located directly offshore of the promontory tip and approximately 50 m from the application boundary.

Plate 4. Silt and clay substratum within the proposed application (photo 1, 15.6m depth). Note: Maldanid tubeworms and branching algae.

Plate 5. Branching algae growing on the substratum and over tubeworms (photo 14, 13.4m depth).

Plate 6. **Branching algae growing over and amongst tubeworms located under the adjacent mussel farm (photo 20, 13.3 m).**

Plate 7. Maldanid tubeworms located inshore of adjacent mussel farm (photo 18, 13.6 m).

Plate 8. Boulder, bedrock and cobble substratum inshore of the application (photo 27, 4.2m).

Plate 9. *Galeolaria hystrix* tubeworm mounds growing on bedrock offshore of the adjacent promontory (photo 33, 7m).

Table 2. Coordinates of drop camera stations showing location relative to the marine farm application (NZTM). Colours are: red = under backbones in adjacent farm, teal = application, grey = adjacent farm, blue = no farm. Depth, substratum & biological data are also listed.

No. & Depth (m)	Coordinates	Location	Position	Substratum and biota	Shell debris
1. 13.6m	1696173.1,5424712.6	In application	No farm structures	Silt and clay, Maldanid tubeworms & branching algae	None
2. 14.7m	1696137.0,5424711.8	In application	No farm structures	Silt and clay, Maldanid tubeworms & branching algae	None
3. 14.2m	1696101.2,5424710.4	In application	No farm structures	Silt and clay, Maldanid tubeworms & branching algae	None
4. 14.4m	1696166.4,5424691.6	In application	No farm structures	Silt and clay, Maldanid tubeworms & branching algae	None
5. 14.2m	1696139.3,5424685.7	In application	No farm structures	Silt and clay, Maldanid tubeworms & branching algae	None
6. 13.6m	1696103.6,5424670.0	In application	No farm structures	Silt and clay, Maldanid tubeworms & branching algae	None
7. 13.7m	1696097.5,5424629.5	In application	No farm structures	Silt and clay, Maldanid tubeworms & branching algae	None
8. 13.6m	1696131.2,5424626.9	In application	No farm structures	Silt and clay, Maldanid tubeworms & branching algae	None
9. 14.0m	1696169.0,5424626.4	In application	No farm structures	Silt and clay, Maldanid tubeworms & branching algae	None
10. 13.6m	1696099.4,5424574.4	In application	No farm structures	Silt and clay, Maldanid tubeworms & branching algae	None
11. 13.8m	1696130.0,5424577.4	In application	No farm structures	Silt and clay, Maldanid tubeworms & branching algae	None
12. 13.6m	1696162.6,5424586.2	In application	No farm structures	Silt and clay, Maldanid tubeworms & branching algae	None
13. 13.6m	1696162.4,5424543.7	In application	No farm structures	Silt and clay, Maldanid tubeworms & branching algae	None
14. 13.4m	1696108.9,5424523.6	In application	No farm structures	Silt and clay, Maldanid tubeworms & branching algae	None
15. 13.4m	1696167.7,5424470.3	In adjacent farm	Under backbones	Silt and clay, Maldanid tubeworms & branching algae	Moderate
16. 13.5m	1696202.1,5424427.1	In adjacent farm	Under backbones	Silt and clay, Maldanid tubeworms & branching algae	Low
17. 13.8m	1696248.0,5424371.6	In adjacent farm	Under backbones	Silt and clay, branching algae	None
18. 13.6m	1696270.9,5424391.5	Inshore of adjacent farm	No farm structures	Silt and clay, Maldanid tubeworms	None
19. 13.2m	1696222.7,5424497.3	Inshore of adjacent farm	No farm structures	Silt and clay, Maldanid tubeworms & branching algae	None
20. 13.3m	1696173.7,5424481.2	In adjacent farm	Under backbones	Silt and clay, Maldanid tubeworms & branching algae	None
21. 14.2m	1696138.3,5424447.4	In adjacent farm	Under backbones	Silt and clay, branching algae	None
22. 13.1m	1696156.5,5424422.3	In adjacent farm	Under backbones	Silt and clay, Maldanid tubeworms & branching algae	None
23. 14.5m	1696195.3,5424595.3	Inshore of application	No farm structures	Silt and clay, Maldanid tubeworms & branching algae	None
24. 11.9m	1696224.2,5424600.7	Inshore of application	No farm structures	Silt and clay, Maldanid tubeworms & branching algae	None
25. 8.3m	1696244.0,5424608.1	Inshore of application	No farm structures	Cobbles, pebbles, shell and silt, branching algae	None
26. 4.0m	1696258.3,5424609.0	Inshore of application	No farm structures	Cobbles, pebbles, shell and silt	None
27. 4.2m	1696259.8,5424647.8	Inshore of application	No farm structures	Boulders, bedrock, cobbles, pebbles, shell and silt	None
28. 5.5m	1696260.2,5424674.1	Inshore of application	No farm structures	Cobbles, pebbles, shell and silt	None
29. 7m	1696263.6,5424696.1	Inshore of application	No farm structures	Bedrock, tubeworm mounds, filamentous algae	None
30. 8.9m	1696249.3,5424685.7	Inshore of application	No farm structures	Natural shell, silt	None
31. 13.6m	1696218.9,5424690.6	Inshore of application	No farm structures	Silt and clay, Maldanid tubeworms & branching algae	None
32. 5.9m	1696256.4,5424718.4	Inshore of application	No farm structures	Bedrock	None
33. 7m	1696251.5,5424720.7	Inshore of application	No farm structures	Bedrock, tubeworm mounds, filamentous algae	None
34. 11m	1696244.1,5424747.9	Inshore of application	No farm structures	Bedrock, tubeworm mounds	None
35. 15.2m	1696214.1,5424747.1	Inshore of application	No farm structures	Silt and clay, Maldanid tubeworms & branching algae	None
36. 14.9m	1696215.1,5424718.1	Inshore of application	No farm structures	Silt and clay, Maldanid tubeworms & branching algae	None

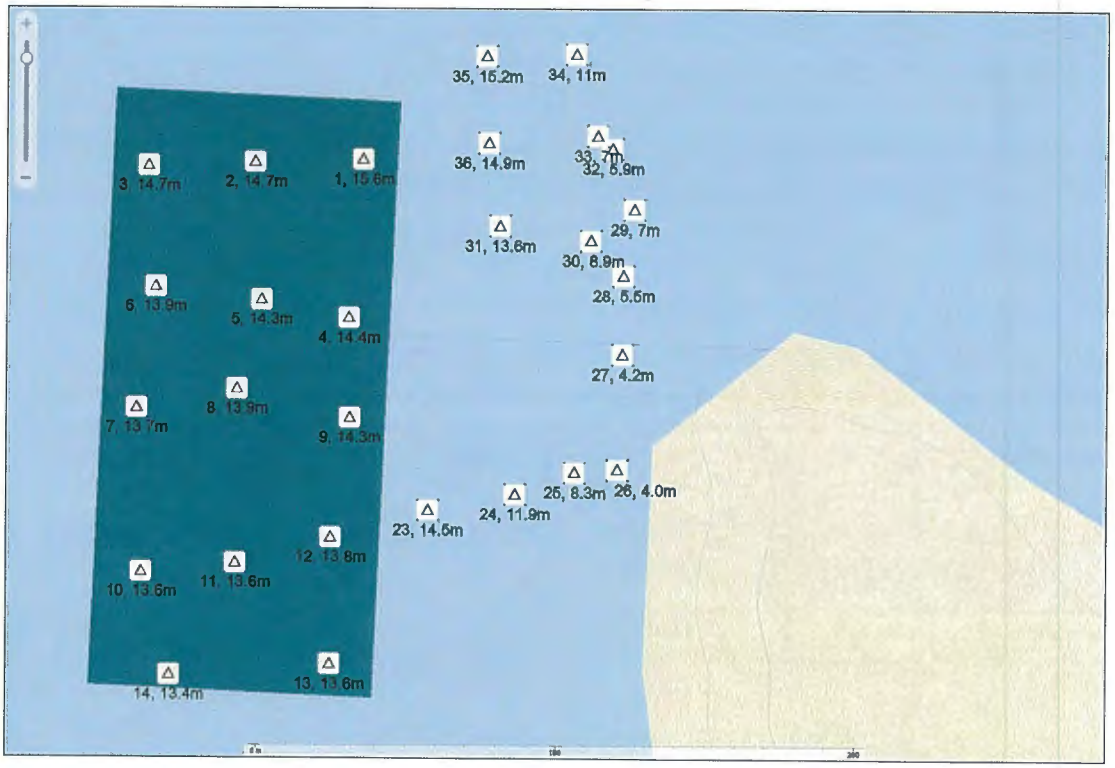


Figure 4a. Drop camera stations (triangles) with photograph number and water depth (m).

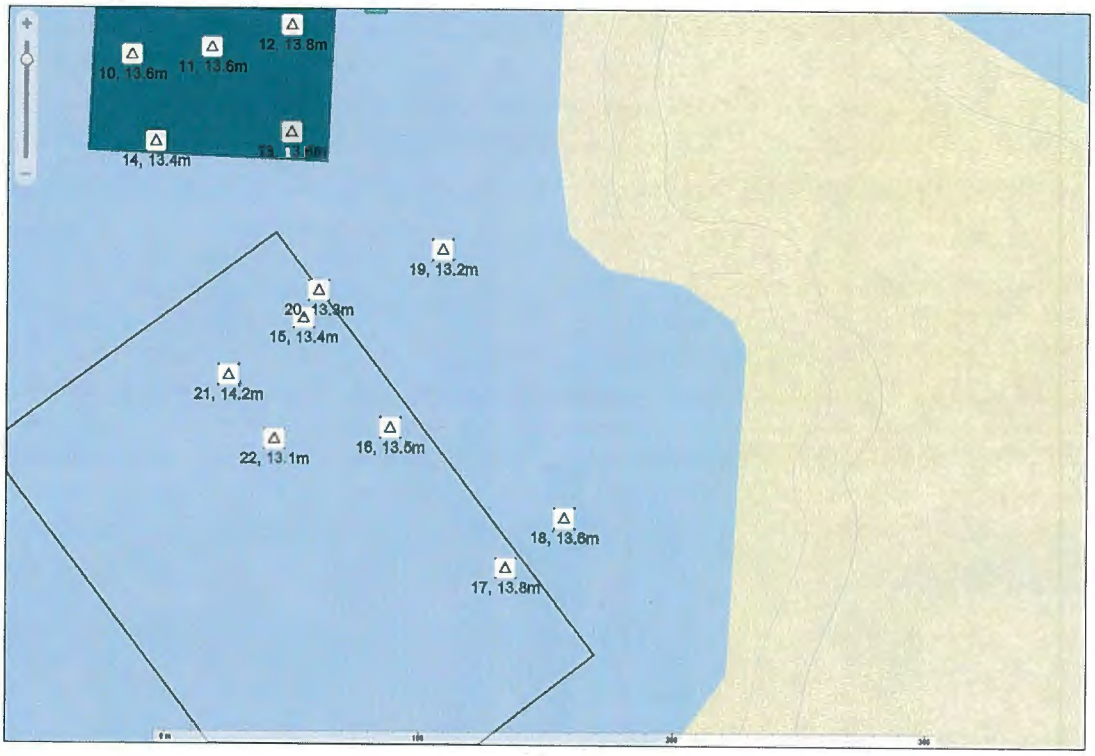


Figure 4b. Drop camera stations (triangles) with photograph number and water depth (m) from a mussel farm south of the application.

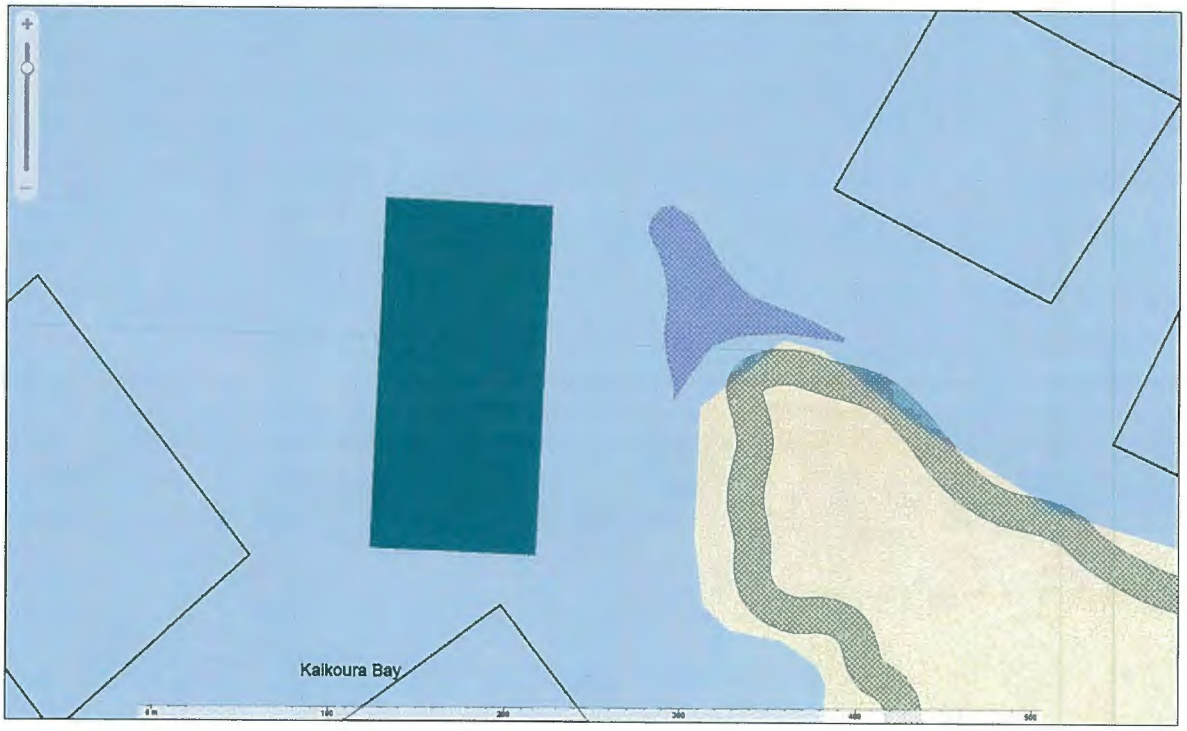


Figure 5. Approximate location of tubeworm mounds (*G. hystrix*) in relation to the application (teal) and other mussel farms (black lines).

5.0 Conclusions

5.1 Benthos

The benthos under the application was dominated by silt and clay. The benthos immediately inshore and alongshore of the application were comparable.

Silt and clay is the dominant substratum in Port Underwood. The Port is notoriously muddy and this is likely due to sediment arriving from river discharges from the Wairau and Awatere Rivers during flood events. This fine sediment is carried northwards by tidal currents where it settles onto the benthos in the calmer waters of the Port. Mud substratum in the Port is very soft and easily disturbed.

Combinations of bedrock, boulders, cobbles, shell and silt were observed as a relatively narrow strip close to shore and at a reef extending from the promontory located north-east of the application. No hard substrata were recorded in or close to the application area.

5.2 Species and communities

Relatively few invertebrate species were observed under the consent. Species present were characteristic of silt dominated shores in sheltered locations in the Sounds (McKnight and Grange 1991).

Of note were low-lying species of algae consistently recorded on the benthos in the application, areas inshore and alongshore of the application and under the adjacent mussel farm. Branching, filamentous and foliose alga is notoriously seasonal and appear little influenced by the presence of mussel farms in Port Underwood. No material samples were collected, but three species were visible on photographs. One species is the adventive alga *Chnoospora minima* that was first recorded from the Marlborough Sounds from the eastern side of Port Underwood (Nelson and Duffy 1991). Maldanid soft tubeworms were also regularly observed in high abundance under and near the application. In the Marlborough Sounds, Maldanid tubeworms are usually recorded in high turbidity areas and are often observed adjacent and under mussel farms in Port Underwood. Both algae and Maldanids were observed under the adjacent mussel farm in the present study.

No scallops or horse mussels were seen in the present study. It is unlikely scallops are present as they are rare in the Port, however, horse mussels are likely to be present, but their absence from photographs suggest they are not common.

Calcareous tubeworm mounds located offshore of the adjacent promontory have been recorded and recognised as being of biological value (Davidson *et al.* 1995, 2011, Davidson and Richards 2011). The tubeworm mounds have been the subject of a survey to assess their distribution and health as part of the marine farm monitoring programme associated with mussel farm 8444 located on the northern side of the promontory (Page *et al.* 2011). The authors reported that tubeworms were in good health and abundant offshore of the promontory.

5.3 Mussel farming impacts

5.3.1 Benthic impacts

This site has previously been consented for mussel farming, however, no mussel shell was observed within the application suggesting that the site has never been farmed or at least not farmed in recent years.

If approved for a new mussel farm, it is probable that the impact of shellfish farming at this site will result in the deposition of mussel shell material. Mussels also act to concentrate sediment from the water column to the benthos under and in close proximity to droppers. Based on the literature and assuming the level of farming activity would be consistent with other farms in the Port, it is very unlikely that the surface sediments would become anoxic, especially as the site is shallow (<16 m depth) (Hartstein and Rowden 2004, Keeley *et al.* 2009, Davidson and Richards 2014). Tidal flows are expected to be relatively low but higher than within the adjacent Kaikoura and Whataroa Bays. Winds are also likely to be an important driver of water movement in this area.

5.3.2 Productivity

Mussel farms can influence adjacent farms by slowing water flow to other farms located in downstream positions. This is particularly pronounced in quiescent areas of the Sounds.

However, published work by Zeldis *et al.* (2008, 2013) suggests that the major factors influencing productivity in the Marlborough Sounds relate to cyclical weather patterns in the summer (El Nino and La Nina) and river derived nutrient inputs in winter. Slow crop cycles in some years are therefore a reflection of a particular weather cycle and much less about the number of farms. Little work on productivity drivers has, however, been conducted in the Port Underwood area. It is likely that productivity is strongly influenced by the proximity of Cook Strait waters and the riverine inputs from the Wairau and Awatere Rivers.

There has been no data presented to show that the ecological carrying capacity of the Marlborough Sounds including Port Underwood has been reached. There is considerable evidence that shows the major drivers of the Pelorus system for example, naturally lead to large within and between year variability. Relative to this, the impact of mussel farms appears to be "material" but relatively small compared to major environmental drivers.

A number of other mussel farm exist in close proximity to the present application area, however, the proximity to the main Reach of Port Underwood is likely to reduce water residence times.

5.3.3 11 arm seastars

Inglis and Gust (2013) raised a concern that because 11 arm sea stars can reach densities 39 times those outside farms, this elevated population could lead to recruitment of these predators into the wider population. In a long term investigation of the recovery of a mussel farm, Davidson and Richards (2014) sampled sites under retired backbones, retired warps and four control sites located away from mussel farms. The 11 arm sea star population was indeed elevated under the retired backbones, but their numbers quickly declined to background levels and remained low and stable throughout the remainder of the study after the farm was removed. Data from this long term study suggests that 11 arm seastar numbers increase under farms (most likely in response to food availability), however, their densities at control sites and under retired warps remained at low levels throughout the study despite concerns that seastars recruit into adjacent areas by either migration or juvenile settlement.

5.4 Boundary adjustments, recommendations and monitoring

The application is located over a substratum considered suitable for shellfish farming.

An area located to the north and east of the application is known to support a significant marine site (Davidson *et al.* 2011). The calcareous tubeworm beds have been investigated as part of a mussel farm monitoring study (Page *et al.* 2011). The authors stated *"tubeworm mounds surveyed were healthy showing no signs of death, damage or necrosis"*. Further authors stated *"habitats at each of these sites show no indication of impact from the farm with high percent live tubeworms occurring and a dominance of flora and fauna common in unimpacted open coast environments"*.

Based on the proximity of the *Galeolaria hystrix* tubeworms and their recognised biological importance, it is recommended that the extent and health of mounds be monitored once every two years for three occasions. After the third sample it is recommended that the results be reviewed and the need for continued monitoring be assessed.

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Appendix 1. Drop camera photographs

Photo site 1

Photo 2

Photo site 3

Photo site 4

Photo 5

Photo site 6

Photo site 7

Photo site 8

Photo 9

Photo 10

Photo 11

Photo 12

Photo 13

Photo 14

Photo 15

Photo 16

Photo 17

Photo 18

Photo 19

Photo 20

Photo 21

Photo 22

Photo 23

Photo 24

Photo 25

Photo 26

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Photo 28

Photo 29

Photo 30

Photo 31

Photo 32

Photo 33

Photo 34

Photo 35

Photo 36