Resource Consent Application

MARLBOROUGH DISTRICT COUNCIL

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

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 for the same activity on the same form.

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

Name: *(full legal name)*
Talleys Group Ltd, Dorothy Myrtle McManaway, Wain & Naysmith Trustees No. 2 Limited, Trustees of the DMAC Family Trust

Mailing address: *(including post code)*
P. O. Box 7064
Nelson Mail Centre
NELSON 7042

Email Address: greg.kingston@nn.talleys.co.nz

Phone: (Daytime) 03 546 3519 Phone: (Mobile) 021 117 0837

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

Name: R D Sutherland

Mailing address:
Property and Land Management Services Ltd
PO Box 751
BLENHEIM 7240

Email Address: palmsltd@xtra.co.nz

Phone: (Daytime) (03) 578 1733 Phone: (Mobile) 027 220 7299

3. Consent/Application Details

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

4. Brief Description of the Activity

To establish a 1.327 ha extension to marine farm site 8423 & renew consents U100119, MFL 241 (7.174 ha) to give a total area of 8.5011 ha. An area of 0.184 ha is to be surrendered. To enable the continuing cultivation of Green Shell mussels (Perna *canaliculus),* Blue Shell Mussels *(Mytilus galloprovinicialis),* Scallops *(Pecten novaezelandiae),* Dredge Oysters *(Toistrea chilensis)* and seaweed and algae species *(Macrocystis pyrifera, Ecklonia radiata, Gracilaria, Pterocladia lucida, Undaria pinnatifida and Asparayopsis armata).*

Consent is also sought to disturb the seabed with anchoring devices and to harvest marine farming produce including taking and discharge of coastal seawater and discharge biogradable and organic waste matter during harvest. Length of term requested is 20 years to 2037. U100119 / MFL 241 will be surrendered on confirmation of consent being issued.

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): Marine farm site 8423, Kingfish Bay, Port Underwood

Legal description (i.e. Lot 1 DP 1234): _____

(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):

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 the 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.

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)* R D Sutherland

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

Signature of ~~applicant~~ or authorised agent: RD Sutherland

Date 01-05-2017

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.

Topomap 50 Sheet: BQ29

Locality Map

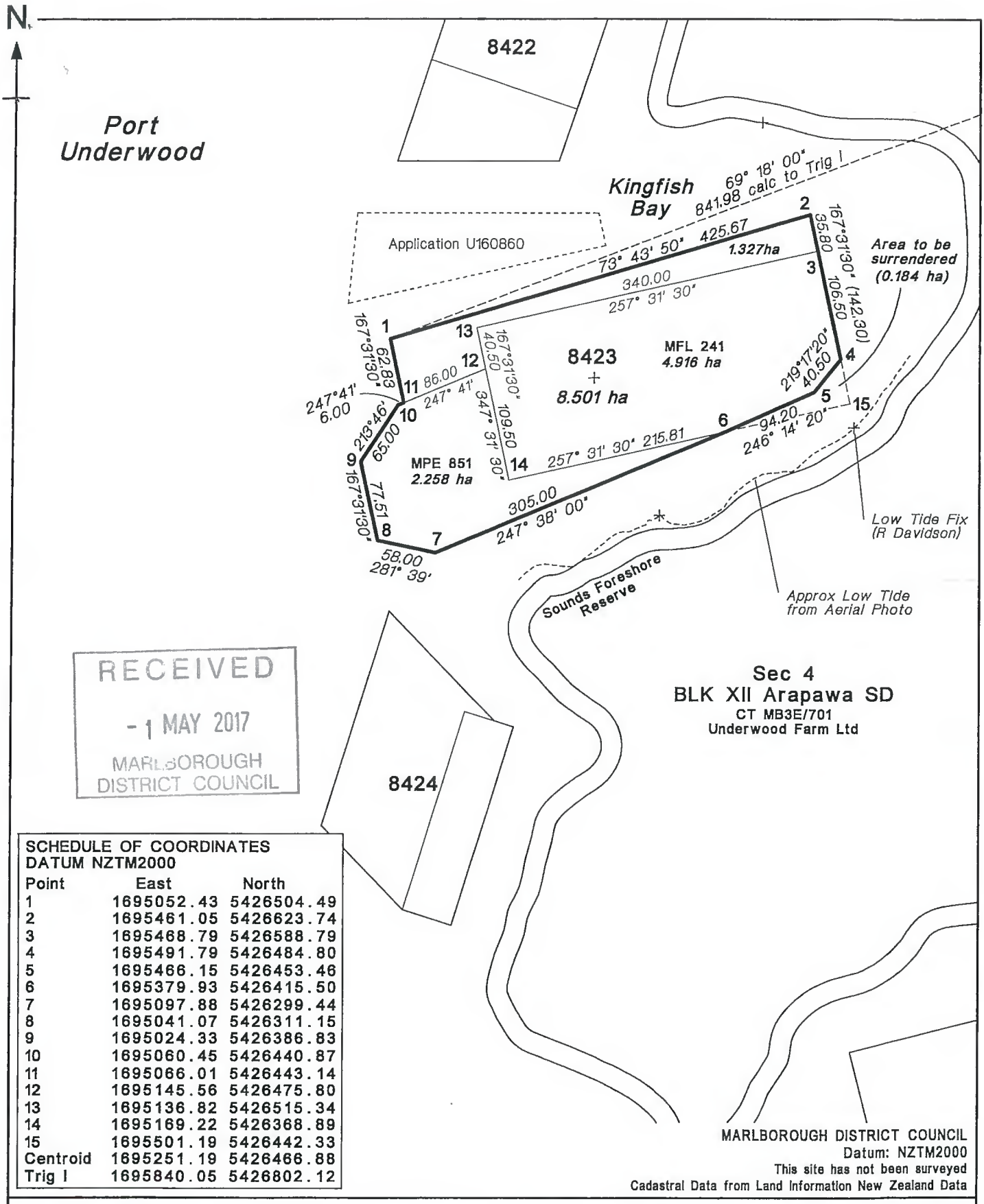
Marine Farm 8423 & Extension
Kingfish Bay - Port Underwood

PALMS
Prepared
13 January 2017

Scale 1:50,000

500 0 500 1000 1500 2000 2500 3000 3500 Metres

MF_2313d



SCHEDULE OF COORDINATES
DATUM NZTM2000

Point	East	North
1	1695052.43	5426504.49
2	1695461.05	5426623.74
3	1695468.79	5426588.79
4	1695491.79	5426484.80
5	1695466.15	5426453.46
6	1695379.93	5426415.50
7	1695097.88	5426299.44
8	1695041.07	5426311.15
9	1695024.33	5426386.83
10	1695060.45	5426440.87
11	1695066.01	5426443.14
12	1695145.56	5426475.80
13	1695136.82	5426515.34
14	1695169.22	5426368.89
15	1695501.19	5426442.33
Centroid	1695251.19	5426466.88
Trig I	1695840.05	5426802.12

MARLBOROUGH DISTRICT COUNCIL
Datum: NZTM2000
This site has not been surveyed
Cadastral Data from Land Information New Zealand Data

PROPERTY AND LAND MANAGEMENT SERVICES
PALMS

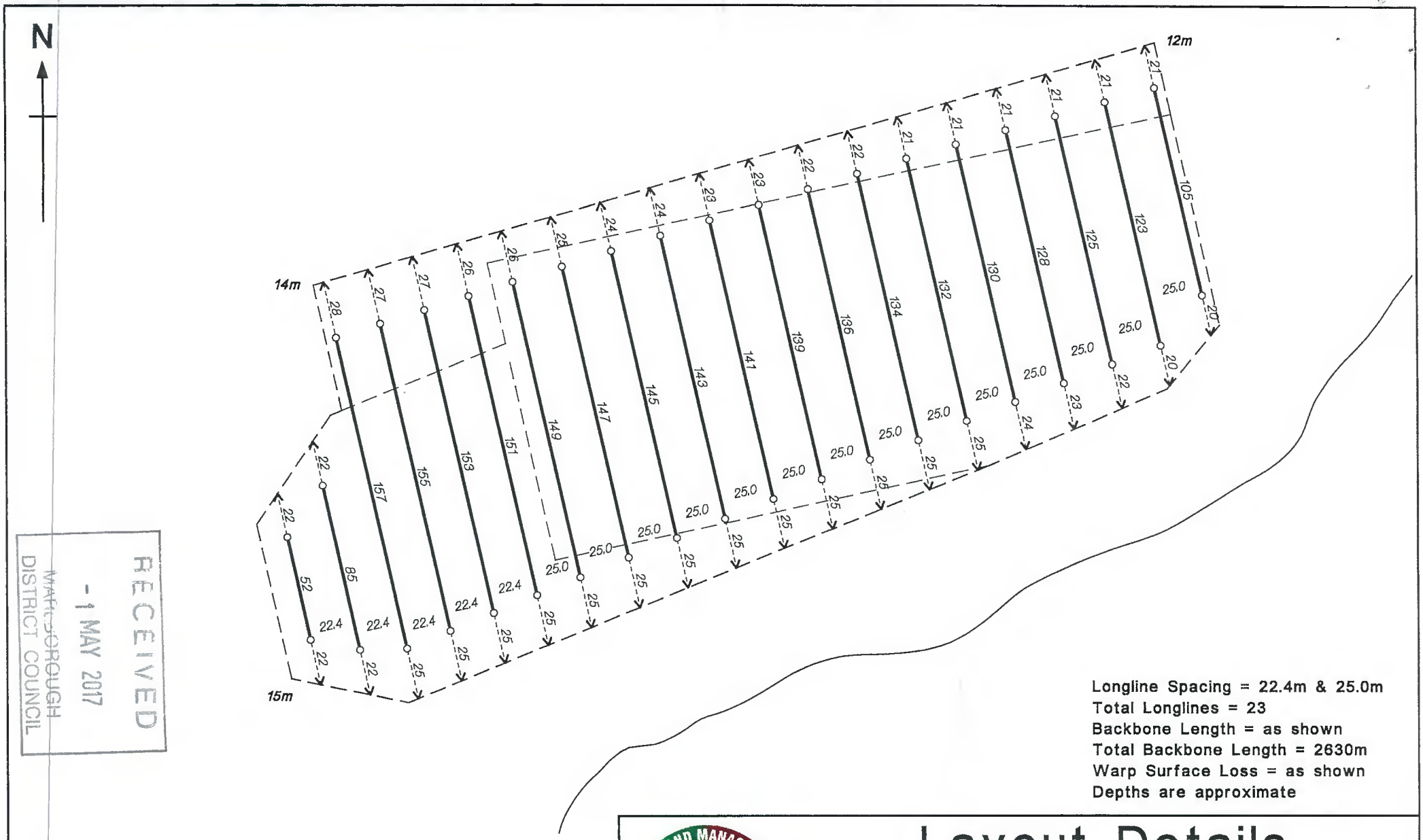
Proposed Coastal Permit
Marine Farm 8423 and Extension
Kingfish Bay - Port Underwood

SCALE 1:5,000

50 0 100 200 300 400 metres

11 April 2017

MF_2313e



REFERENCE

- Orange Float
- Anchors
- Anchor Warp
- Backbone

Longline Spacing = 22.4m & 25.0m
Total Longlines = 23
Backbone Length = as shown
Total Backbone Length = 2630m
Warp Surface Loss = as shown
Depths are approximate

Layout Details

Marine Farm 8423 & Extension

20 0 20 40 60 80 100 120 140 160 180 200m

SCALE 1:2,500

PALMS 11 April 2017 MF_2313d

ASSESSMENT OF ENVIRONMENTAL IMPACT FOR A COASTAL PERMIT OCCUPANCY, DISTURBANCE OF THE SEABED AND TO TAKE AND DISCHARGE SEAWATER AND ORGANIC MATTER AT HARVEST

APPLICATION BY DOROTHY MYRTLE MCMANAWAY, WAIN & NAYSMITH TRUSTEES NO. 2 LIMITED, TRUSTEES TO THE DMAC FAMILY TRUST LIMITED AND TALLEY'S GROUP LIMITED FOR AN EXTENSION TO MARINE FARM SITE 8423 AND RENEWAL OF U100119, MFL 241 IS ALSO PROPOSED TO COINCIDE WITH THE RENEWAL DATE OF 2037 OF MARINE FARM 8423, IN KINGFISH BAY, PORT UNDERWOOD

1.0 INTRODUCTION

Marine farm licence (MFL 241) was issued to the McManaway family in June 1987 for a 3.0 ha site. In June 1989 a variation was granted to extend the site by 2.1 ha to the west.

In 1974 the Nelson Ranger Fishing Company Limited became a half shareholder.

In October 2000 Council granted resource consent U991391 for a further 2257 ha extension. The associated marine farming permit MPE 851 was subsequently issued under the Fisheries Act 1983.

Subsequently a half share in 2005, the McManaway share was transferred to Dorothy Myrtle McManaway and to Wain & Naysmith Trustees No. 2 Limited as Trustees to the DMAC Family Trust Limited.

The following year the partners made an application for an offshore marine farm application. The application though lodged does not appear to have been completed. Application was made to renew U991391, MPE 851 which was granted in August 2010 U100119) with renewal due in 2030. The parent farm is due for renewal in December 2024.

In 2016 Nelson Ranger Farms Limited sold their share of site 8423 to Talleys Group Limited. Day to day management is undertaken by Scott Madson.

Early development of a proposal at this site intended a further 2.729 ha extension offshore to the west of the site to align it with farms to the north and south. The benthic investigation of the site showed a parchment worm, sponge and red algae zone that represents one of the highest relative abundance densities for this species in the Marlborough Sounds. The offshore area of the proposed initial extension is therefore unsuitable for development as a marine farm and has been removed from the proposal.

2.0 THE PROPOSAL

It is proposed to extend site 8423 by 1.327 ha as shown in the site plans. This extends out on the northern side of the site and encompasses the existing anchor blocks and warps which are offshore.

An area on the south-east corner some 0.184 ha will be surrendered. This area on the south-east corner of the existing consent is within 20 m of Mean Low Water as fixed by R. Davidson. The removal of this part of the consent will ensure cobble benthic habitat be maintained and greater access will extend from surface structures to the shore which will be some 20 m from the farm boundary.

On the northern side of the proposed site existing anchors are currently offsite will be encompassed within the extended site.

Restructuring of the site will be gradually undertaken to renew existing anchoring systems which are obsolete.

The proposal also includes the option to allow cultivation of oysters, scallops and algae as follows:-

i)	Green Shell Mussels	*(Perna canaliculus)*
ii)	Scallops	*(Pecten novaezelandiae)*
iii)	Blue Shell Mussels	*(Mytilus galloprovincialis)*
iv)	Dredge Oysters	*(Toistrea chilensis)*
v)	Pacific Oysters	*(Crassostrea gigas)*

It is also proposed to continue to farm the following seaweed and algae species: -

i) *Macrocystis pyrifera*
ii) *Ecklonia radiata*
iii) *Gracilaria sp.*
iv) *Pterocladia lucida*
v) *Undaria pinnatifida*
vi) *Asparagopsis armata.*

All species will be farmed using conventional longline methods. Alage grow naturally in these waters. *Undaria pinnatifidia* is a pest plant which colonises backbone and growing ropes. Harvest of this product is proposed as a method to manage it on the site.

3.0 SITE DIMENSIONS

The site dimensions are shown on the site plan. The original site plan was of irregular shape, whereas the proposal is to create a more regular and consistent shape layout.

The eastern boundary will be 142.3 m long, the northern boundary 425.67 m long, the western boundary 205.34 m long and the southern boundary 403.50 m. The total area of the combined site will be 8.501 ha. The inshore boundary lies some 50 m from Mean Low Water while the outer boundary at point 1 lies 250 m from the land towards point 1 on the plan.

3.1 Site Layout

There will be 20 longlines in total, with restructured lines for all lines inshore. Line spacing of 25.0 m in the original site (MFL 241) and 22.4 m in the west. This allows good access between longlines.

Longlines are of variable length, ranging from 52 m offshore to 157 m offshore. Total longline length is 2630 m. Warp longlines are also of variable length dependent on water depth, ranging from 20 – 28m. Screw and block anchors will be utilised.

4.0 STATUS OF THE APPLICATION

The site is located within the Coastal Marine Zone 2 (CMZ2) in the Marlborough Sounds Resource Management Plan (the Plan). The site is one of several marine farms along the western shore of The Tongue. Marine farming at the site is currently authorised by coastal permits U100119 and MFL 241. The existing farm was applied for prior 1 August 1996.

The proposed extension extends beyond 200m (250m) from the shore, and is therefore a Non-complying Activity under rule 35.5 in the Plan.

The applicant accepts that it is appropriate to consider the renewal and extension together. The application is therefore for a Non-Complying Activity.

Existing consents U100119 and MFL 241 will be relinquished on confirmation of a grant of consent for the existing area and/or for the extended site.

5.0 THE PRESENT ENVIRONMENT

5.1 The Marine Environment

Davidson Environmental Limited advised one historic biological report was found for the farm extension by Handley & Alcock 1999. This is summarised by Davidson at 2.2 on page 8 of this report.

The most recent assessment undertaken by Davidson Environmental Limited evaluated parts of the parent farm and the proposed extension area. They acknowledged that the original assessment had found parchment worms and also found that

The aims of the investigation were to provide a biological description of the benthos within and adjacent to the farm site, and to identify any potential threats to any sub-tidal ecological values posed by the proposed activity. In the study, he found that:

"Proposed extension

Drop camera images collected from the proposed extension revealed an abundance of parchment tubeworms, red algae and small sponges. Handley and Alcock (1999) also recorded parchment tubeworms during the survey for an earlier proposed extension to the parent farm. The authors stated "Spiochaetopterus sp. was mostly found on the sloping mud between 14-17 m. This species could not be fully identified and could be a new species endemic to New Zealand with a wide distribution (C. Glasby, NIWA, pers. comm.)." The authors also stated that "as this species appears to bind sediment together and produced elongated tubes, it is not expected that they will be significantly adversely impacted by marine farming activities unless they become smothered from mussel shell drop."

5.3 Mussel farming impacts

5.3.1 Benthic impacts

Benthic mussel shell was recorded from drop camera photos collected under and near backbones. Shell debris impact levels were within the range known for mussel farms in the Marlborough Sounds and towards the low to moderate-high impact range apart from directly under droppers where it did occasionally reach high levels.

It is probable that the impact of continued shellfish farming at this site will result in the deposition of more shell and fine sediment under and near droppers. Based on the literature and assuming the present level of activity remains relatively consistent, it is very unlikely that the surface sediments would become anoxic, especially as the site is shallow (<10 m depth) (Hartstein and Rowden 2004, Keeley et al. 2009, Davidson and Richards 2014). Tidal flows are expected to be relatively low; however, winds are likely to be an important driver of water movement in this area.

It is noted that benthic impacts of mussel farms are not permanent. If structures are removed, the benthos recovers over a period of approximately 10 years (Davidson and Richards 2014).

5.3.2 Productivity

Mussel farms can influence adjacent farms by slowing water flow to 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 weather cycle and much less about the number of farms.

There has been no data presented to show that the ecological carrying capacity of the Sounds 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.

Port Underwood is near Cook Strait and also receives sediment from the nearby Wairau River. It is likely that Cook Strait delivers nutrients to the area and algae primary production occurs during the longer residence times compared to the Strait.

5.4 Boundary adjustments, recommendations and monitoring

The parchment worm, sponge and red algae zone observed from much of the proposed extension appears to represent one of the highest relative abundance densities for this species in the Marlborough Sounds. This parchment worm bed also supports red algae and sponges. Photographs collected within the parent farm suggest that this community type has been lost and it is therefore likely that the same would happen within the proposed

extension if it was approved. The offshore area of the proposed extension is therefore unsuitable for development as a marine farm (Figure 7).

The northern side of the parent farm is also proposed as an extension, however, much of this area also supports parchment worms. This area is located under existing warps but does not appear to have been adversely impacted by the farm. Parchment worms are very tolerant of high turbidity. The presence of existing marine farm structures may act to ensure the area is note dredged or trawled. This part of the extension is therefore suitable for inclusion are part of the farm.

Based on the resilience of parchment worms to high turbidity and their presence directly adjacent to farm structures, no monitoring is suggested.

The full report of Davidson Environmental Limited is an integral part of this application and is attached.

5.2 The Land Environment

The land adjacent to the site is owned by Underwood Farm Limited who have planted the land to exotic forest. The forest is in its second rotation with roading and skid sites already in place.

Low cliffs are located adjacent the rough cobble tidal zone to the south while a small pocket beach exists in the head of Kingfish Bay.

Adjacent the shore and on the rocky bluffs indigenous species have established and intermixed with radiata pines. The pines dominate the landscape in the bay.

6.0 MARINE MAMMALS – WHALES & DOLPHINS

R Davidson in his assessment of the benthic Environment reported that:

"Marine Mammals: Hector's dolphin (*Cephalorhyhncus hectori hectori*), is endemic to New Zealand and is currently listed as Nationally Endangered by the NZ threat classification scheme (Baker *et al.*, 2010) and considered Endangered by the IUCN since 2000 (Reeves *et al.*, 2008). Based on a series of historic boat and plane surveys conducted from 1997–2001, their abundance around the South Island was estimated at approximately 7300 animals (95% 5303–9966; Slooten et al., 2004). In the most recent aerial survey found Hector's dolphin abundance to be approximately 9130 (CV: 19%; 95% CI: 6342–13 144) in summer and 7456 (CV: 18%; 95% CI: 5224–10 641) in winter (MacKenzie and Clement, 2014). The authors stated that the population of Hector's dolphin was larger than expected from previous estimates. MacKenzie and Clement (2014) stated this difference was mainly due to approximately half of their summer estimate being distributed across previously un-surveyed regions in offshore waters between 4 and 20 nautical miles. The authors emphasized that, at least in summer, a large portion of the ECSI Hector's dolphin population occurs in waters around Banks Peninsula and within Clifford and Cloudy Bays.

Hector's and other species of dolphin overlap with marine farms areas in particular parts of New Zealand. An overlap for Hector's dolphin occurs around Banks Peninsula and East Bay, Marlborough Sounds. Admiralty Bay in the Marlborough Sounds

supports many mussel farms and is visited annually in winter by large numbers of dusky dolphins (Markowitz, 2002). Despite these spatial overlaps, no entanglements have been documented.

There are, however, two reported incidences of dolphin entanglement and death at a salmon farm in New Zealand, both from the Marlborough Sounds (M. Aviss, MDC). In one, an unidentified dolphin species became trapped while a predator net was being replaced, and in the other case, a Hector's dolphin became trapped under a predator net. Internationally, fatal entanglements of dolphins in predator nets on finfish farms have been reported from Australia (Gibbs and Kemper, 2000; Kemper and Gibbs, 2001; Kemper *et al.*, 2003) and Italy (Díaz López and Bernal Shirai, 2007). This may reflect attraction of dolphins to a food source (Kemper and Gibbs, 2001) although such interactions between finfish farms and cetaceans have not been proven (Kemper *et al., 2003).*

There is also one record of a marine mammal becoming trapped or tangled in a mussel farm (i.e. a Bryde's whale) (Wursig and Gailey, 2002). The low incidence of mussel farm entanglements is probably related warps and backbones being under tension thereby reducing the chance of entanglement. This is in stark contrast to lobster pots that have a single line to the surface. This line is usually under little or no tension. Whales migrating up the east coast of the South Island pass hundreds of lobster lines that present a serious entanglement threat (Plate 12). Wursig and Gailey (2002) stated that entanglements by larger whales in aquaculture facilities are relatively rare events.

Displacement of Hector's dolphin by new marine farms have been discussed in a report in Pegasus Bay (DuFresne *et al.*, 2010). The authors considered that there existed the "*possibility that mussel farms may not be optimal habitat for Hector's dolphin, and in that case, some level of displacement was possible.*" The authors reported that in Golden Bay, Hector's dolphins have been observed at least in the access lanes between blocks of lines in a mussel farm (Slooten *et al.*, 2001). In the same farm, there are anecdotal reports of dolphins regularly entering the farm area (Slooten *et al.*, 2001), however, a lack of before-after data, and in this case a general paucity of data, preclude making any statements about the impact or otherwise of this farm on Hector's dolphins. DuFresene *et al.* (2010) concluded that "*there are no easy answers to the question of whether Hector's dolphins will be displaced by a mussel farm*", but they did state that "*Given the size of the proposed marine farm in Pegasus Bay (i.e. 2695 ha) relative to available Hector's dolphin habitat in the immediate vicinity, the presence of a mussel farm was unlikely to have a catastrophic impact on the dolphins*".

Port Underwood is known as a significant site and part of the Cook Strait whale migratory corridor (Site 7.15 In: Davidson *et al.*, 2011). This area includes the greater Cook Strait, Cloudy and Cliffrd Bays, Tory Channel and Queen Charlotte Sound (Figure 1). The authors stated "*The Cook Strait is part of a migratory corridor along the NZ coast for humpbacks, as they move north from Antarctic feeding grounds to tropical waters for calving and breeding during the winter months (May - August). The Cook Strait is also utilised by other large whales including southern right whales (winter months), blue whales (possibly all year round but very little known about this species distribution) and sperm whales (probably all year round in the deeper waters of the Strait i.e., 300m and below). Humpback whales in New Zealand are part of the oceania subpopulation and in*

2008 were recently reclassified by the international union for Conservation of nature (IUCN) as endangered. They were previously classed as Vulnerable but research on the oceania subpopulation has indicated this population is more threatened than previously thought. The Department of Conservation has conducted systematic

annual surveys of humpbacks as they migrate through Cook Strait during the winters of 2004 to 2010, as well as collecting anecdotal sightings of humpbacks all year round to improve our understanding of the distribution and abundance of these species in New Zealand waters. Nationally endangered southern right whales are also seen in New Zealand coastal waters, including the Cook Strait, in winter months. The New Zealand subpopulation of southern right whales is thought to be very small, with potentially as few as four to eleven breeding females (Patenaude, 2003). Other marine mammal species that have been observed utilising the Cook Strait area include sperm, minke and blue (Endangered) whales as well as orca (Nationally Critical), common, dusky, bottlenose (Nationally Endangered) and Hector's (Nationally Endangered) dolphins."

Other marine mammals may use the area but their use is likely temporary and uncommon. Large whales occasionally enter Port. Overall, there is a low risk of entanglement and displacement."

7.0 NAVIGATION MATTERS

The right to navigate to and from the farm, and to anchor, moor and load crop is preserved by s27 of the Marine and Coastal Area (Takutai Moana) Act 2011.

7.1 The Shoreline

The site holds with the conventions established in the Marlborough Sounds Resource Management Plan. That is, the farm beyond 50m from the mean low water mark. The outer boundary is some 300m of the shore and is therefore a Non-complying Activity in the Plan.

7.2 Headlands

There are no headlands in the vicinity.

7.3 Navigational Routes

The area lies inside of the navigational route along this part of Port Underwood. Vessels can navigate between the site and the shore, through the farm and on the outside of the site into Kingfish Bay. There is minor inconvenience navigating to the shore at the head of the bay due to the existing marine farms.

7.4 Anchorages or Moorings Areas

There is one mooring close by to the site which was granted in 2004 under U040725 to Nelson Ranger Farms Limited. This was transferred to Talley's Group Limited in that company acquiring the asset of Nelson Ranger Farms Limited. The mooring is to accommodate vessels up to 12.0 m in length. The mooring has a number 2432 assigned to it.

Vessels from time to time do tie up to the marine farm and may travel inside the marine farm to obtain shelter from wind and waves. There is ample room for vessels to navigate to the moorings.

7.5 Water Ski Lanes

There are no water ski lanes in the vicinity.

7.6 Sub-Aqueous Cables

There are no sub-aqueous cables in the vicinity.

8.0 LANDSCAPE AND NATURAL CHARACTER

8.1 Land Zoned For Residential Use or Proximity to Residences.

There are no residences in the vicinity. The land has not been subdivided and is zoned Coastal Environmental Zone in the Plan.

There are no coastal living zones in the area. The nearest is at Opihi Bay to the north and the zone is scattered between Whangataupa Bay and Oyster Bay to the south.

8.2 Effects on Landscape

The site is not within or adjacent to an Area of Outstanding Landscape Value (AOLV) in the Plan. The proposed Marlborough Environment Plan (MEP) does not identify the waters of Port Underwood as an outstanding natural feature and landscape (ONFL). The adjoining land is mapped as an ONL. The area does not form part of the high amenity value Marlborough Sounds Coastal Landscape, which includes all of the Marlborough Sounds.[1]

The waters of Port Underwood were not mapped as ONFL in the 2009 Boffa Miskell Marlborough Landscape Study.

The site lies within the "working" environment of Port Underwood where marine farming and forestry have been practiced in the past, and continue to this day.

The site lies adjacent to other marine farms to the north and south of the site. The effect of the farm, even in its extended form, is consistent with the scenic values of this part of the Tongue and Port Underwood, given its present use.

The site and the proposed extension will not have an effect on the Marlborough Sounds Coastal Landscape, which is vast compared to this very small area in Port Underwood.

8.3 Effects on Natural Character

The area is not considered to have a high coastal natural character rating. The 2014 Boffa Miskell study *Natural Character of the Marlborough Coast*, which is reflected in the natural character maps in the MEP, does not map the waters of Port Underwood as having outstanding, very high or high natural character. The land immediately adjoining the site is not also mapped as having natural character rating. The area is mapped as Marlborough Sounds Coastal Landscape.

According to Rob Davidson, the marine farm will have limited effect on the marine environment at the site. This limited effect, combined with the productive nature of the bay, means that the farm and the limited proposed extension will not have a significant effect on the natural character values at that location.

[1] Based on the 2015 Boffa Miskell Marlborough Landscape Study.

9.0 AMENITY VALUES

Visual and noise effects are considered to be minor. Vessels visit the area to service the farm on an irregular basis. Because this is a remote location vessels working this and the other farms work on a number of sites while they are present.

Given the presence of other marine farms along the tongue, the buoys associated with renewal of the existing site and the proposed extension would have only a minor additional impact on visual amenity. The proposed extension will not extend further offshore than the seaward boundary of the existing marine farm to the south and north. In a visual sense the farm will be enclosed by existing marine farming in the bay. Visual amenity will remain essentially the same for residents or the boating public.

10.0 RECREATIONAL VALUE

In terms of recreational use, there is boat access only to the area. The area is zoned for aquaculture which is already established.

Some recreationalists may visit Kingfish Bay but the applicant's contractors advise this is highly infrequent.

The visual impact of the marine farm will not cause any significant alteration to the physical environment in what is essentially already a commercial marine farming area. Marine farming is consistent with the productive character of this part of Port Underwood.

10.1 Recreational Fishing

It is the applicant's view that the marine farm at the site enhances opportunities for recreational fishing, as marine farms generally tend to create an ecosystem which is conducive to the presence of both reef fish, and other fish species such as cod and snapper. Access to the coast for recreationalists is maintained.

Recreational fishing does take place along the coastline utilising the small reefs and rubble shore which is inhabited by fish targeted by recreational fishers. The marine farm itself is located offshore and will encourage the presence of fish species over time. In the long run, as with other marine farms in the Port, fish are drawn to marine farm sites. Recreational fishing is an activity encouraged by the applicant.

11.0 HISTORICAL OR CUTURAL VALUES

The New Zealand Historical Places Trust Inventory has been consulted to identify any sites of significance in this location. None appear in published information.

From the applicant's knowledge no sites of historical or traditional value are present in the area. Given that site has had previous consultation it is not expected that values important to iwi would be affected.

12.0 COMMERCIAL FISHING

Commercial fishing is known to occur in parts of Port Underwood. It is unlikely in Kingfish Bay, due to the line of marine farms along the coast. This area is not subject to, or affected by that activity.

13.0 EFFECTS ON WATER QUALITY AND ECOLOGY

The water quality of the area is high. The site relies on excellent water quality to enable the process of marine farming to flourish. It is a large area with good capacity for mixing of water with tidal current, wind and wave action.

Consent is required for the amount of organic waste matter which is discharged during the harvesting process and for the take and use of coastal water. No significant historical adverse effects have been recorded or are anticipated and any visual evidence of harvesting quickly dissipates in the coastal environment.

14.0 EFFECTS ON PRODUCTIVITY

Water quality is unlikely to be a problem to marine farming. The activity in itself is unlikely to create any significant detrimental effects on water quality. This renewal and extension has no effect on the productivity of existing marine farms in the general vicinity, because of the separation distances between farms and large water area of this section of Port Underwood, with its close proximity to the waters of Cook Strait.

15.0 ALIENATION OF PUBLIC SPACE

The Port Underwood area has been utilised by marine farmers for many years. Recreation and commercial boat owners are aware of marine farms in this area and recreational fishermen have the opportunity to use the sites and transit through them. Given the wider than average spacing between the longlines, there are further opportunities for access by vessels wanting to transit the site.

From time to time, vessels utilise the longlines for mooring and overnighting. This process, as far as the applicant is concerned, will continue.

16.0 ON SHORE FACILITIES

The applicant does not require onshore marine farm facilities. Farm work is undertaken by the applicant and contractors.

17.0 VALUE OF INVESTMENT

As part of this application to renew site 8423, the applicant is also seeking to extend the site. It is anticipated they would surrender the existing consents when the application is granted for a period of 20 years. As a result, this is an application to which s165ZH(1)(c) applies and the Council must, when considering the application, have regard to the value of the investment of the existing consent holder under s104(2A).

The site has been held by the applicants since the 1987. Equipment costs are estimated at $10,000.00 per line and total investment of the existing site is $200,000. With the extension, it is

expected investment on the site will exceed $230,000 given that the whole site is to be restructured.

Harvest and growth rates reflect climatic conditions and spat source. Kaitaia spat tends to be slower to fatten and has a 20-30 month cycle. Costs of seeding and maintenance per year are $50,000.00 per year cycle.

The farm produces some 20 - 25 tonnes per crop line (Green Weight Tonne) and is sold directly to processing companies for processing.

Returns to the grower have averaged in the order of $550 tonne with a range of $450 to $950 per tonne being essential to return and to the processor.

18.0 PART II RESOURCE MANAGEMENT ACT ISSUES

18.1 Section 5

In terms of the enabling provisions in Section 5 of the Resource Management Act the marine farm industry has been, and will continue, to be a source of substantial revenue production and in turn employment in the Sounds and in the Nelson/Marlborough regions.

In addition, export income for the nation is generated. Applications such as this enable sustainable use of the marine resources in a way that enables people and communities to provide for their economic and social wellbeing.

The site is in the CMZ2, an area zoned as appropriate for marine farms in the Plan and can meet sustainable use and management of environment criteria. It is in the "working" environment of the Sounds. The site position and distances from other facilities are not detrimental to other uses of the area. Section 5 of the RMA is given effect through the New Zealand Coast Policy Statement 2010 ("NZCPS"), the Marlborough Regional Policy Statement and the Plan. The MEP is still in the notification phase. The application is assessed against the relevant provisions of these documents below, and in Appendix A, B and C.

18.2 Section 6

Matters of national importance have been assessed under the requirements of the Plan.

The proposal recognises the:

(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:

Section 6(a) is given effect through Policy 13 of NZCPS, which is considered later in this application. The adjacent vegetation is adjacent exotic forest. The existing farm and proposed extension do not effect that.

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

See above at section 7.2.

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

See above at sections 5.1, 14.0 and 15.0.

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

Public access is maintained with good separation from the coast and main navigational routes.

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

The site is not known to be of importance to Maori although Port Underwood is important to Iwi. The applicants are unaware of any historical site on land nearby. The site has been positioned to avoid habitat that may be important to Maori. This will be confirmed with consultation with Iwi.

18.3 Section 7

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:*
A number of iwi are identified as having interests in the Port Underwood area. The proposal has been developed to avoid offending the guardianship and protection of resources valued by Iwi. The notion of care and protection of the environment and resources is also an important concept in management of resources, which the applicant also holds as important in its day to day management of water space.

(b) *The efficient use and development of natural and physical resources:*
The proposal is confined and concentrated in a locality out of the way of normal public. Being confined and sited together with other marine farms brings efficiencies in applying resources to manage the growing of mussels.

(c) *The maintenance and enhancement of amenity values*:
Amenity values will have moderate change with the extension; however, the parent farm is an existing one surrounded by other farms which shelter and obscure the parent farm and proposed extension.

(d) *Intrinsic values of ecosystems*:
The values of the ecosystems have been identified in the report prepared, to detail the benthic environment. Importantly no significant resources have been identified on the site. The structures are situated over a mud benthos that is widespread in the Marlborough Sounds and is identified as the environment most suited to have aquaculture over it. Species are low in number and diversity.

(e) *Recognition and protection of the heritage values of the sites, buildings, place, or areas*:
There are no heritage sites, buildings or places in the near vicinity.

(f) *Maintenance and enhancement of quality of the environment:*
The quality of the environment will not be endangered by the proposal to grow mussels. The process needs high water quality and, as filter feeders, mussels will enhance water quality by the filtration process during feeding.

(g) Any finite characteristics of natural and physical resources:
The proposal is to occupy a small part of a large bay. Mussels are naturally occurring in the water column and filter feed off naturally occurring phytoplankton and zooplankton.

(h) *The protection of the habitat of trout and salmon.*
Section (h) is not relevant to this application.

18.4 Treaty of Waitangi

Matters of potential concern in relation to the Treaty of Waitangi have also been considered earlier in the original proposals to the site. No matters of concern were raised at that time. See also section 23.1 below.

19.0 NEW ZEALAND COASTAL POLICY STATEMENT 2010 (NZCPS)

The NZCPS 2010 is of general relevance to this application and all policies have been considered in the development of the proposal. The NZCPS policies of immediate relevance to the applications are policies 2, 6, 8, 11, 13, 15, 18, 22 and 23.

23.1 Policy 2

Policy 2 sets out a number of matters which are relevant to the taking into account of the principles of the Treaty of Waitangi and kaitiakitanga, in relation to the coastal environment.

The applicant recognizes that Ngāti Apa ki te Rā Tō, Ngāti Kuia, Rangitāne o Wairau, Ngāti Kōata, Ngāti Rārua, Ngāti Tama ki Te Tau Ihu, Te Ātiawa o Te Waka-a-Māui and Ngati Toa Rangatira have statutory acknowledgements in the area of the application site. Those acknowledgements have been considered during the preparation of this application, as outlined above.

The applicant has also reviewed the Iwi management plans of Ngāti Kōata, Te Ātiawa o Te Waka-a-Māui and Ngati Kuia. No areas of conflict have been identified.

There are no taiāpure or mahinga mātaitai in the area of the application. There are also no established areas of protected customary rights or customary marine title within the meaning of the Marine and Coastal Area (Takutai Moana) Act 2011.

The applicant will discuss the proposal further with relevant Iwi representatives.

23.2 Policy 6

Policy 6 of the NZCPS is in two parts, the first dealing with activities in the coastal environment more broadly, and the second with those in the coastal marine area more specifically.

The farm is consistent with the character of the existing built environment in that part of Port Underwood. No areas of indigenous biodiversity or historic heritage value have been identified in relation to the site, so the farm complies with subpart 1(j).

Subpart 2 of the Policy 6 is particularly relevant. Mussel farming clearly has a functional need to be located in the coastal marine area. It directly contributes to the social and economic wellbeing of people and communities, in accordance with subpart 2(a). This is discussed in relation to Policy 8 below.

23.3 Policy 8

Policy 8 of the NZCPS provides for the recognition of the significant existing and potential contribution of aquaculture to the social, economic and cultural wellbeing 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, recognizing that relevant consideration may include:*

   i). *The need for high quality water 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 an 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.*

The application will enable production from the site, contributing to the social and economic benefits of aquaculture to the community. No changes to the impact on water quality are anticipated. This application satisfies the requirement of Policy 8.

23.4 Policy 11

Policy 11 relates to protecting the indigenous biological diversity of the coastal environment.

The farm is located over mud habitat and avoids any reef areas or any other areas of significant biodiversity. Marine mammals have beend discussed above at section 15.0. There will be no adverse effects on indigenous biodiversity.

23.5 Policy 13

Policy 13 provides for the avoidance of significant adverse effects on areas of the coastal environment with outstanding natural character and the avoidance, remediation and mitigation of other adverse effects on natural character.

See above at section 7.3.

The site lies within a bay and coastline with substantial human modification and patterns that dominates the visual environment.

23.6 Policy 15

Policy 15(a) provides for the avoidance of adverse effects of activities on outstanding natural features and outstanding landscapes in the coastal environment. Policy 15(b) provides for the avoidance of significant adverse effects and the avoidance, remediation, and mitigation of other adverse effects of activities on other natural features and natural landscapes in the coastal environment.

This application is not within an area of outstanding landscape value under the Marlborough Sounds Resource Management Plan. There will be a minor additional impact on the landscape compared with that already occurring under the current consent. The layout of existing adjoining sites is such that the proposed extension will fit well with the existing environment. The effects of the application on the landscape will be minor and the effects are not likely to impact on the values which contribute to the landscape.

23.7 Policy 18

Policy 18 recognises the need for public open space within and adjacent to the coastal marine area, for public use and appreciation including activities and passive recreation.

There is no access by road. Most of the access to this area is by boat. Nevertheless, the visual impact of the marine farm will not change significantly. The area has a low viewing audience. Access to the coast for recreationalists is maintained.

There is one registered mooring inshore and to the east of the site, and no formal water ski lanes. Opportunities for recreational fishing may be enhanced by the presence of the marine farm.

23.8 Policy 22

Policy 22 requires an assessment of sedimentation levels, and that use will not result in a significant increase in those levels. Davidson's biological report, stated that while shell and fine sediment would be deposited under and in proximity to droppers, the farm structures are located over habitat considered suitable for this type of activity. No monitoring appeared to be necessary.

23.9 Policy 23

Subpart 1 of Policy 23, which relates to managing discharges to water in the coastal environment, is relevant to this application. Silts and organic matter released at harvest are readily assimilated into the water column and seabed. The effects of harvesting mussels are only transitory, and quickly become indistinguishable from background sedimentation.

20.0 REGIONAL POLICY STATEMENT/MARLBOROUGH SOUNDS RESOURCE MANAGEMENT PLAN

Certain provisions of the Marlborough Regional Policy Statement have relevance to this application and are considered in Appendix A.

The Plan contains a number of provisions that are relevant to this application. An assessment of the application against the requirements of that plan is contained in Appendix B.

Conclusion

Taken overall, the application is consistent with the relevant objectives and policies of the Regional Policy Statement and Marlborough Sounds Resource Management Plan.

21.0 PROPOSED MARLBOROUGH ENVIRONMENT PLAN

Rules applying to marine farming have been specifically excluded from the proposed MEP at this stage, hence consideration of the proposal under the operative Plan. However, some recognition does need to be given to the relevant policies in the MEP. An analysis table assessing the proposal against the relevant provisions is included at Appendix C.

The site is located in the Overlay Marlborough Sounds Coastal Landscape. The terrestrial landscape has been classified and graded as an outstanding natural feature or landscape.

MEP objectives and policies relevant to the proposal include:

- Chapter 4 – Natural & Physical Resources
- Chapter 5 – Allocation of Public Resources
- Chapter 6 – Natural Character
- Chapter 9 – Public Access and Open Space
- Chapter 15 – Resource Quality

Note that the provisions of chapter 13, Use of the Coastal Environment, specifically do not apply to marine farms.

All are considered to be relevant to such applications as this and have been generally outlined in this AEE. In my view the proposal provides for the needs of primary production and tourism.

Infrastructure is protected. The nature and character of the Sounds is protected. Access to coastal water is maintained and exclusive occupation of water space is minimized allowing access between lines and the shore.

Adverse effects in areas of outstanding natural character, outstanding natural landscapes, and outstanding natural features have been avoided, as has any effect on ecosystems and biodiversity.

Heritage values are recognised, and are unaffected, including Maori Culture and traditions. Structures and activities are "clustered" in Port Underwood and do not diminish amenity values.

The character of TheTongue in Port Underwood is one of forestry with a large zone of marine farming. Residential housing is absent nearby but is present to the north and west side of the Port well beyond the site and its proposed extension.

22.0 CONSULTATION

An initial letter has been sent to all Iwi listed below identifying the site.

Name	Address	Phone
Ngati Koata Trust	PO Box 1659, Nelson 7040	(03) 548 1639
Te Runanga a Rangitane o Wairau	PO Box 883, Blenheim 7240	(03) 578 6180
Te Runanga O Ngati Kuia	PO Box 1046, Blenheim 7240	(03) 579 4328
Ngāti Apa ki te Rā Tō	PO Box 708, Blenheim 7240	(03) 578 9695
Te Atiawa Manawhenua Ki Te Tau Ihu Trust	PO Box 340, Picton	(03) 573 5170

Ngati Toarangatira Manawhenua Ki Te Tau Ihu Trust	PO Box 5061, Blenheim 7240	(03) 577 8801
Ngati Rarua Trust	PO Box 1026, Blenheim 7240	(03) 577 8468

23.0 CONCLUSION

The applicant considers that the use of this area for aquaculture is appropriate, allowing the farming of mussels. The activity enables people and communities to provide for the social, economic and cultural wellbeing, while ensuring the principles of sustainable management are met.

RD Sutherland
Property and Land Management Services Limited,
On behalf of the Applicants

APPENDIX A: MARLBOROUGH REGIONAL POLICY STATEMENT – POLICY ANALYSIS

Objective	Policy	Assessment
5.3.2: That water quality in the coastal marine area be maintained at a level which provides for the sustainable management of the marine ecosystem.	5.3.5: Avoid, remedy or mitigate the reduction of coastal water quality by contaminants arising from activities occurring within the coastal marine area.	No artificial feed or attractants are added. No chemicals, antibiotics or other therapeutants added. Any discharges of organic matter associated with harvesting will be transitory.
5.3.10: The natural species diversity and integrity of marine habitats be maintained or enhanced.	5.3.11: Avoid, remedy or mitigate habitat disruption arising from activities occurring within the coastal marine area.	Any disruption associated with the existing mooring of the farm is minor in scale and transitory. The seabed is already in a modified state due to terrestrial run off.
7.1.9: To enable present and future generations to provide for their wellbeing by allowing use, development and protection of resources provided any adverse effects of activities are avoided, remedied or mitigated.	7.1.10: To enable appropriate type, scale and location of activities by: • Clustering activities with similar effects; • Ensuring activities reflect the character and facilities available in the communities in which they are located; • Promoting the creation and maintenance of buffer zones (such as stream banks or 'greenbelts'); • Locating activities with noxious elements in areas where adverse environmental effects can be avoided, remedied or mitigated.	The marine farm is consistent with the current Policy and the designated consented area is within a Port Underwood as in a well-established for marine farming zone. Marine farms are clustered in the area along the west side of The Tongue.
	7.1.12: To ensure that no undue barriers are placed on the establishment of new activities (including new primary production species) provided the life supporting capacity of air, water, soil and ecosystems is safeguarded and any adverse environment effects are avoided, remedied or mitigated.	This area has a primary production character, and is well suited to marine farming. This policy supports the proposed extension. The life supporting capacity of the area will be safeguarded.

APPENDIX A: MARLBOROUGH REGIONAL POLICY STATEMENT – POLICY ANALYSIS

Objective	Policy	Assessment
7.2.7: The subdivision use and development, of the coastal environment, in a sustainable way.	7.2.8: Ensure the appropriate subdivision, use and development of the coastal environment.	The marine farm is within a bay suitable for marine farming. The marine farm activity is biologically sustainable.
	7.2.10(a) – (d)	The marine farm will be located within the consented area when it is approved for marine farming.
7.3.2: Buildings, sites, trees and locations identified as having significant cultural or heritage value are retained for the continued benefit of the community.	7.3.3: Protect identified significant cultural and heritage features.	No sites of cultural or heritage significance have been identified on the area of the application site.
8.1.2: The maintenance and enhancement of the visual character of indigenous, working and built landscapes.	8.1.3: Avoid, remedy or mitigate the damage of identified outstanding landscape features arising from the effects of excavation, disturbance of vegetation, or erection of structures.	The site is not within an area of outstanding natural landscape and will have no additional impact on landscape values. The farm will well managed and will comply with the Aquaculture New Zealand A+ Sustainable Management Framework for Mussels.
	8.1.5: Promote enhancement of the nature and character of indigenous, working and built landscapes by all activities which use land and water.	The marine farm will have no additional impact on landscape values.
	8.1.6: Preserve the natural character of the coastal environment.	The site will have only a minor effect on the already modified natural character of the coastal environment.

APPENDIX B: MARLBOROUGH SOUNDS RESOURCE MANAGEMENT PLAN – POLICY ANALYSIS

Objective	Policy	Assessment
Ch 2, 2.2, Obj 1: The preservation of the natural character of the coastal environment of the coastal environment, wetlands, lakes, and rivers and their margins and the protection of them from inappropriate subdivision, use and development.	Policy 1.1: Avoid the adverse effects of subdivision, use of development within those areas of the coastal environment and freshwater bodies which are predominantly in their natural state and have natural character which has not been compromised.	This application is set in an area which is dominated by other human modifications, including forestry, roads, tracks, dwellings across the bay and marine farms.
	Policy 1.2: Appropriate use and development will be encouraged in areas where the natural character of the coastal environment has already been compromised, and where the adverse effects of such activities can be avoided, remedied or mitigated.	As above.
	Policy 1.3: To consider the effects on those qualities, elements and features which contribute to natural character, including: a) Coastal and freshwater landforms; b) Indigenous flora and fauna, and their habitats; c) Water and water quality; d) Scenic or landscape values; e) Cultural heritage values, including historic places, sites of early settlement and sites of significance to Iwi; and f) Habitat of trout.	These matters have been considered in the assessment of environmental effects and in the Davidson Environment Report.

APPENDIX B: MARLBOROUGH SOUNDS RESOURCE MANAGEMENT PLAN – POLICY ANALYSIS

	Policy 1.4: In assessing the actual or potential effects of subdivision, use or development on natural character of the coastal and freshwater environments, particular regard shall be had to the policies in Chapters, 3, 4, 5, 6, 12, 13 and Sections 9.2.1. 9.3.2 and 9.4.1 in recognition of the components of natural character.	The application will not have any additional impact on the components of these policies which impact natural character values.
	Policy 1.6: In assessing the appropriateness of subdivision, use or development in coastal and freshwater environments regard shall be had to the ability to restore or rehabilitate natural character in the area subject to the proposal.	Any residual impact on natural character will naturally rehabilitate on removal of the farm.
	Policy 1.7: To adopt a precautionary approach in making decisions where the effects on the natural character of the coastal environment, wetlands, makes and rivers (and their margins) are unknown.	The effects of this application are not unknown and are discussed elsewhere in the assessment of environmental effects. A precautionary approach is not justified.
Ch 4, 4.3, Obj 1: The protection of significant indigenous flora and fauna (including trout and salmon) and their habitats from the adverse effects of use and development.	Policy 1.2: Avoid, remedy or mitigate the adverse effects of land and water use on areas of significant ecological value.	The farm is not sited over an area of significant ecological value. Areas of significant value have been avoided
Ch 5, 5.3. Obj 1: Management of the visual quality of the Sounds and protection of outstanding natural features and landscapes from inappropriate subdivision, use and development.	Policy 1.1: Avoid, remedy and mitigate adverse effects of subdivision, use and development, including activities and structures, on the visual quality of outstanding natural features and landscapes, identified according to criteria in Appendix One.	The application site is not within an area of outstanding landscape value identified in the Plan. The effects of the application on the landscape will be the similar to other marine farm sites. The effects are not likely to impact on the values which contribute to the landscape.

APPENDIX B: MARLBOROUGH SOUNDS RESOURCE MANAGEMENT PLAN – POLICY ANALYSIS

Ch 6, 6.1.2, Obj 1: Recognition and provision for the relationship of Marlborough's Maori to their culture and traditions with their ancestral lands, waters, sites, waahi tapu and other taonga.	Policies 1.1 – 1.5:	In preparing this application, the applicants have had regard to the Statutory Acknowledgements and have reviewed the statements of association for each Iwi. No areas of conflict have been identified by the applicants. Consultation will be undertaken with iwi, including sending an initial letter regarding the proposal. The applicants understand there are no known wahi tapu, taiapure, mataitai or other areas of significance to Maori in the vicinity of the application.
Ch 8, 8.3, Obj 1: That public access *to and along* the coastal marine area, lakes and rivers be maintained and enhanced.	Policy 1.2: Adverse effects on public access caused by the erection of structures, marine farms, works or activities in or along the coastal marine area should as far as practicable be avoided. Where complete avoidance is not practicable, the adverse effects should be mitigated and provision made for remedying those effects, to the extent practicable.	There are no additional adverse effects on public access caused by the marine farm, as the extension will still not extend as far offshore as the larger adjacent farm to the east. Access inshore and between lines is maintained.
	Policy 1.3: To prevent the erection of structures and marine farms that restrict public access in the coastal marine area where it is subjected to high public usage.	There are no additional adverse effects on public access caused by the marine farm.
	Policy 1.8: Public access to and along the coastal marine area should be maintained and enhanced except where it is necessary to [circumstances do not apply].	There are no additional adverse effects on public access caused by the marine farm.

APPENDIX B: MARLBOROUGH SOUNDS RESOURCE MANAGEMENT PLAN – POLICY ANALYSIS

Ch 9, 9.2.1, Obj 1: The accommodation of appropriate activities in the coastal marine area whilst avoiding, remedying or mitigating the adverse effects of those activities.	Policy 1.1: Avoid, remedy and mitigate adverse effects of use and development of resources in the coastal marine area on any of the following: a) Conservation and ecological values; b) Cultural and Iwi values; c) Heritage and amenity values; d) Landscape, seascape and aesthetic values; e) Marine habitats and sustainability; f) Natural character of the coastal environment; g) Navigational safety; h) Other activities, including those on land; i) Public access to and along the coast; j) Public health and safety; k) Recreation values; and l) Water quality.	The way in which adverse effects on the stated values will be avoided, remedied and mitigated is addressed elsewhere in the assessment of environmental effects. Overall, the proposal is consistent with this policy.
	Policy 1.2: Adverse effects of subdivision, use or development in the coastal environment should as far as practicable be avoided. Where complete avoidance is not practicable, the adverse effects should be mitigated and provision made for remedying those effects to the extent practicable.	Adverse effects from the proposal and extension will be minor and will be mitigated to the extent practicable.
	Policy 1.3: Exclusive occupation of the coastal marine area or occupation which effectively excludes the public will only be allowed to the extent reasonably necessary to carry out the activity.	Consistent with other marine farms in the Marlborough Sounds, exclusive occupation of the consent area is not sought, other than for the area physically occupied by the lines and anchoring devices.

APPENDIX B: MARLBOROUGH SOUNDS RESOURCE MANAGEMENT PLAN – POLICY ANALYSIS

	Policy 1.6: Ensure recreational interests retain a dominant status over commercial activities that require occupation of coastal space and which preclude recreational use in Queen Charlotte Sound, including Tory Channel, but excluding Port and Marina Zones.	Not applicable.
	Policy 1.7: Avoid adverse effects from the occupation of coastal space in or around recognized casual mooring areas.	Exclusive occupation of the consent area is not sought. The farm will not impede access to the two nearby moorings.
	Policy 1.12: To enable a range of activities in appropriate places in the waters of the Sounds including marine farming, tourism and recreation.	Policy 1.12 enables marine farming in appropriate places. This area is established for marine farming. The benthic assessment shows that this location is appropriate for the activity. Overall, the application is consistent with this policy.
	Policy 1.13: Enable the renewal as controlled activities of marine farms authorized by applications made prior to 1 August 1996 as controlled activities, apart from exceptions in Appendix D2 in the Plan.	The parent farm is a controlled activity enabled by this policy.
Ch 9, 9.3.2, Obj 1: Management of the effects of activities so that water quality in the coastal marine area is at a level which enables the gathering or cultivating of shellfish for human consumption (Class SG).	Policy 1.1 to 1.11:	This application is not anticipated to have any impact on shellfish quality.

APPENDIX B: MARLBOROUGH SOUNDS RESOURCE MANAGEMENT PLAN – POLICY ANALYSIS

Ch 9, 9.4.1, Obj 1:	Policy 1.1: Avoid, remedy or mitigate the adverse effects of activities that disturb or alter the foreshore and/or seabed on any of the following: [criteria specified in Plan].	Anchor blocks will cause a minor additional disturbance of the seabed. The owners of the farm in Kingfish Bay will have regular beach clean ups in which the greater percentage of rubbish is from recreational users of the Sounds.
Ch 9, 9.4A.1, Obj 1:	N/A	These policies are no longer relevant due to abolition of AMAs through legislation.
Ch 19, 19.3, Obj 1: Safe, efficient and sustainably managed water transport systems in a manner that avoids, remedies and mitigates adverse effects.	Policy 1.1: Avoid, remedy or mitigate the adverse effects of activities and structures on navigation and safety, within the coastal environment.	There have been no reported navigational incidences at the site. There will be no changes to the existing consent conditions regarding the navigational aids placed on the farm. The navigational lighting requirements will provide better navigational aids within the Bay.
Ch 22, 22.3, Obj 1: To avoid, remedy and mitigate the adverse effects of unreasonable noise, while allowing for reasonable noise associated with port activites.	Policy 1.1: Avoid, remedy or mitigate community disturbance, disruption or interference by noise within coastal, rural and urban areas.	The farm is not positioned near to any residence. The contractors servicing vessel is estimated to spend approximately 65-90 hours maintaining and harvesting the lines per year. The applicant complies with the 'Code of Practice' to avoid, remedy or mitigate noise from marine farming activities in the Marlborough Sounds on other users and residents.

Appendix C.

RESOURCE CONSENT APPLICATION BY TALLEY'S GROUP LIMITED, DOROTHY MYRTLE MCMANAWAY, WAIN & NAYSMITH TRUSTEES NO. 2 LIMITED, AND TRUSTEES TO THE DMAC FAMILY TRUST LIMITED
Analysis of Consistency with the Proposed Marlborough Environment Plan (Volume 1)

MEP Provision	Evaluation
Objective 3.2 – Natural and physical resources are managed in a manner that takes into account the spiritual and cultural values of Marlborough's tangata whenua iwi and respects and accommodates tikanga Māori. [RPS]	No particular customary activities have been identified for the site. However, recognition is given to Māori culture and traditions and confirmation from Iwi will be sought to ensure the proposal does not affect these values.
Objective 3.3 – The cultural and traditional relationship of Marlborough's tangata whenua iwi with their ancestral lands, water, air, coastal environment, waahi tapu and other sites and taonga are recognised and provided for. [RPS]	The applicant has had regard to Kaitiakitanga and will consult with Iwi, recognising their relationship with the waters of Te Tau Ihu. Consultation on the matter will be with Ngāti Apa ki te Rā Tō, Ngāti Kuia, Rangitāne o Wairau, Ngāti Kōata, Ngāti Rārua, Ngāti Tama ki Te Tau Ihu, Te Ātiawa o Te Waka-a-Māui and Ngati Toa Rangatira, recognising rohe under Statutory Acknowledgment protocols. The applicant has also reviewed the Iwi management plans of Ngāti Kōata and Te Ātiawa o Te Waka-a-Māui and Ngati Kuia. No areas of conflict have been identified. The applicant is aware of the importance of the waters of the Marlborough Sounds to Iwi.
Objective 3.5 – Resource management decision making processes that give particular consideration to the cultural and spiritual values of Marlborough's tangata whenua iwi. [RPS]	The applicant has given particular consideration to the matters in objective 3.5, as discussed above and in the AEE, in order to assist decision makers.
Policy 3.1.1 – Management of natural and physical resources in Marlborough will be carried out in a manner that: (a) takes into account the principles of the Treaty of Waitangi/Te Tiriti o Waitangi, including kāwanatanga, rangatiratanga, partnership, active protection of natural resources and spiritual recognition. (b) recognises that the way in which the principles of the Treaty of Waitangi/Te Tiriti o Waitangi will be applied will continue to evolve; (c) promotes awareness and understanding of the Marlborough District Council's obligations under the Resource	See above.

MEP Provision	Evaluation
Management Act 1991 regarding the principles of the Treaty of Waitangi/Te Tiriti o Waitangi among Council decision makers, staff and the community; (d) recognises that tangata whenua have rights protected by the Treaty of Waitangi/Te Tiriti o Waitangi and that consequently the Resource Management Act 1991 accords iwi a status distinct from that of interest groups and members of the public; and (e) recognises the right of each iwi to define their own preferences for the sustainable management of natural and physical resources, where this is not inconsistent with the Resource Management Act 1991. [RPS]	
Policy 3.1.2 – An applicant will be expected to consult early in the development of a proposal (for resource consent or plan change) so that cultural values of Marlborough's tangata whenua iwi can be taken into account. [RPS]	[To be undertaken].
Policy 3.1.3 – Where an application for resource consent or plan change is likely to affect the relationship of Marlborough's tangata whenua iwi and their culture and traditions, decision makers shall ensure: (a) the ability for tangata whenua to exercise kaitiakitanga is maintained; (b) mauri is maintained or improved where degraded, particularly in relation to fresh and coastal waters, land and air; (c) mahinga kai and natural resources used for customary purposes are maintained or enhanced and that these resources are healthy and accessible to tangata whenua; (d) for waterbodies, the elements of physical health to be assessed are: i. aesthetic and sensory qualities, e.g. clarity, colour, natural character, smell and sustenance for indigenous flora and fauna; ii. life-supporting capacity, ecosystem robustness and habitat richness; iii. depth and velocity of flow (reflecting the life force of the river through its changing character, flows and fluctuations); iv. continuity of flow from the sources of a river to its mouth at the sea;	The applicant has had regard to the matters in Policy 3.1.3, as set out above, and in the AEE. Ecological effects have been assessed by Rob Davidson in his report.

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v. wilderness and natural character; vi. productive capacity; and vii. fitness to support human use, including cultural uses. (e) how traditional Māori uses and practices relating to natural and physical resources such as mahinga maataitai, waahi tapu, papakāinga and taonga raranga are to be recognised and provided for. [RPS]	
Policy 3.1.5 – Ensure iwi management plans are taken into account in resource management decision making processes. [RPS]	The applicant has reviewed the Iwi management plans of Ngāti Kōata and Te Ātiawa o Te Waka-a-Māui and Ngati Kuia. No areas of conflict have been identified.
Objective 4.1 – Marlborough's primary production sector and tourism sector continue to be successful and thrive whilst ensuring the sustainability of natural resources. [RPS]	The proposal ensures the sustainability of natural resources, as the adverse effects of aquaculture in Port Underwood are likely to be limited. Within months of removing the farms, any trace of their presence will dissipate. Therefore, the proposal does not restrict the ability of future generations to decide how they wish to use these resources. Moreover, the farming of algae will assist in countering the effects of ocean acidification. The proposal has economic and employment benefits to the applicants and community
Policy 4.1.2 – Enable sustainable use of natural resources in the Marlborough environment. [RPS]	As above at Objective 4.1.
Policy 4.1.3 – Maintain and enhance the quality of natural resources. [RPS]	The proposal will have less than minor effects on the quality of the natural resources at Port Underwood, and those effects are reversible upon removal of the farms.

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Objective 4.3 – The maintenance and enhancement of the visual, ecological and physical qualities that contribute to the character of the Marlborough Sounds. [RPS]	The ecological character of the site will be maintained (see Davidson report. The application site is located over a muddy habitat, typical of sheltered muddy areas in the Sounds. The effects of mussel farming are not likely to be significant. The farm would not have adverse effects on the water column. Shellfish farming at the site would have little impact on sediment enrichment and the infauna.
Policy 4.3.1 – Integrate management of the natural and physical resources within the Marlborough Sounds environment. [RPS]	Integrated management is arguably a matter for Council under Policy 4 of the NZCPS.
Policy 4.3.2 – Identify the qualities and values that contribute to the unique and iconic character of the Marlborough Sounds and protect these from inappropriate subdivision, use and development. [RPS]	The applicant has had regard to the qualities and values identified by the Council in the MEP, as indicated elsewhere in this policy assessment and in the application. Overall, the proposal is appropriate.
Policy 4.3.3 – Provide direction on the appropriateness of resource use activities in the Marlborough Sounds environment. [RPS]	The aquaculture provisions of the MEP have yet to be notified. The proposed site in Port Underwood can appropriately be rezoned as CMZ2 under the operative MSRMP. Policy 9.2.1.1.14 of the MSRMP enables marine farming in appropriate places, with zoning being a key method of implementation. The AEE shows that the proposed farm will have no significant adverse effects on these values.
Policy 4.3.4 – Enhance the qualities and values that contribute to the unique and iconic character of the Marlborough Sounds. [RPS]	The proposal will not have significant effects on the qualities and values of the Sounds, and any effects are reversible upon removal of the farms.
Policy 4.3.5 – Recognise that the Marlborough Sounds is a dynamic environment [RPS]	The applicant recognises that the Sounds is a dynamic environment. Port Underwood has the capacity to absorb change, particularly given the backdrop of forest land. The appropriateness of the farm can be re-assessed by future generations in the context of the future environment of the Port through the resource consenting process.

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Objective 5.10 – Equitable and sustainable allocation of public space within Marlborough's coastal marine area. [RPS, C]	The applicant acknowledges that it is a privilege to occupy public space in the coastal marine area. The public will still have access around and through the site, and the proposal will not affect the ability of future generations to enjoy that public space.
Policy 5.10.1 – Recognition that there are no inherent rights to be able to use, develop or occupy the coastal marine area. [RPS, C]	The applicant recognises that it has no right to occupy and use the coastal marine area, and requires a resource consent for the proposed activity.
Policy 5.10.2 – The 'first in, first served' method is the default mechanism to be used in the allocation of resources in the coastal marine area. Where competing demand for coastal space becomes apparent, the Marlborough District Council may consider the option of introducing an alternative regime. [RPS, C]	The applicant considers that the first in first served method of allocation is appropriate in respect of the proposed site in Port Underwood. The farm is in existence and an extension is proposed that aligns the site with marine farms adjacent to north and south. There is good separation distances from those farms.
Policy 5.10.3 – Where a right to occupy the coastal marine area is sought, the area of exclusive occupation should be minimised to that necessary and reasonable to undertake the activity, having regard to the public interest. [RPS, C]	The design of the site layout ensures the public will have access inshore of and through the farm. Access ways have been provided around the site.
Policy 5.10.4 – Coastal occupancy charges will be imposed on coastal permits where there is greater private than public benefit arising from occupation of the coastal marine area. [C]	The applicant would be comfortable paying coastal occupancy charges to reflect the private benefit from occupying space in Port Underwood. However, it is concerned that the level of these charges or at least the method of setting these, is not set out in the MEP.
Policy 5.10.5 – The Marlborough District Council will waive the need for coastal occupancy charges for the following: … (b) monitoring equipment; [C]	If any monitoring equipment is required to be permanently installed at the site as a condition of consent, the applicant agrees that coastal occupancy charges for that equipment should be waived. However, Mr Davidson concluded that there were no biological reasons for site specific monitoring.
Policy 5.10.6 – Where there is an application by a resource consent holder to request a waiver (in whole or in part) of a coastal occupation charge, the following circumstances will be considered: [(a) – (d)] [C]	The applicant does not request a waiver of coastal occupancy charges.

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Objective 6.1 – establish the degree of natural character in the coastal environment.and in lakes and rivers and their margins. RPS	The applicant has had regard to the natural character overlay in the MEP. The area around the Tongue has no natural ranking in the overlay
Policy 6.1.1 – Recognise that the following natural elements, patterns, processes and experiential qualities contribute to natural character: (a) areas or water bodies in their natural state or close to their natural state; (b) coastal or freshwater landforms and landscapes (including seascape); (c) coastal or freshwater physical processes (including the natural movement of water and sediments); (d) biodiversity (including individual indigenous species, their habitats and communities they form); (e) biological processes and patterns; (f) water flows and levels and water quality; and (g) the experience of the above elements, patterns and processes, including unmodified, scenic and wilderness qualities. [RPS]	Between them, the applicant and Rob Davidson have assessed the effects of the proposal on biological processes and people's perceptions of those processes.
Policy 6.1.2 – The extent of the coastal environment is identified in the Marlborough Environment Plan to establish the areas of land and coastal marine area to which management may need to be applied in order to protect the natural character of the coastal environment from inappropriate subdivision, use and development. [RPS]	This is a matter for Council; however, the applicant has been mindful of the extent of the coastal environment in making this application.
Policy 6.1.3 – Determine the degree of natural character in both the coastal marine and coastal terrestrial components of the coastal environment by assessing: (a) the degree of human-induced modification on abiotic systems and landforms, marine and terrestrial biotic systems and experiential qualities; and (b) natural character at a range of scales. [RPS]	The Council has undertaken this assessment in the MEP. The natural character of the coastal marine area of Port Underwood has not been assessed as High. Parts of Port Underwood are mapped as high Natural Character in the south west land zone but with a substantial human modification on the land forestry, residence, access roads , power pylons.

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Policy 6.1.4 – Identify those areas of the coastal environment that have high, very high or outstanding natural character. [RPS]	The Council has not identified the coastal marine area of Port Underwood as having Outstanding High and very high natural character. For the terrestrial and marine environments combine to create the natural character value of this location, with an overall rating of Moderate. Forestry on land dominates the area with aquaculture also significant. That causes some disruption to natural processes (reducing natural science values) and reduces perceptual/sensory values (through reduced perceived naturalness, coherence and visual amenity).
Objective 6.2 – Preserve the natural character of the coastal environment, and lakes and rivers and their margins, and protect them from inappropriate subdivision, use and development. [RPS, R, C, D]	The proposal is appropriate, fits with the existing context and will not adversely compromise the existing values of the area.
Policy 6.2.1 – Avoid the adverse effects of subdivision, use or development on areas of the coastal environment with outstanding natural character values... [RPS, R, C, D]	N/A - Port Underwood is not identified in the MEP has having outstanding natural character values at this location.
Policy 6.2.2 – Avoid significant adverse effects of subdivision, use or development on coastal natural character, having regard to the significance criteria in Appendix 4. [RPS, R, C, D]	The proposal avoids significant adverse effects. The degree of modification is moderate, with no damage, loss or destruction. The effects are reversible upon removal of the farm. This is an existing farm occupying space. The location is resilient to change, as it is able to absorb the proposed farm given the layout and extent of surrounding marine farms.
Policy 6.2.3 – Where natural character is classified as high or very high, avoid any reduction in the degree of natural character of the coastal environment or freshwater bodies. [RPS, R, C, D]	The natural character of the coastal marine area in Port Underwood is not mapped as having high, very high or outstanding natural character in the MEP. None of the surrounding terrestrial area is mapped as having high to very high natural character. The farm will not impact on the terrestrial ecology of the values that lead a higher classification.
Policy 6.2.4 – Where resource consent is required to undertake an activity within coastal or freshwater environments with high, very high or outstanding natural character, regard will be had to the potential adverse effects of the proposal on the elements, patterns, processes and experiential qualities that contribute to natural character.	Assessment of the natural science (biophysical) values of the site as being low-moderate overall. Rob Davidson notes that the application site is located over a mud habitat, typical of sheltered bays in the Sounds. The epibiota and infaunal communities are typical of muddy sheltered areas in the Sounds. It is well established that mussel

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[RPS, R, C, D]	farming has a less than minor impact on the biophysical attributes of natural character. The site is of mixed character set within a wider working landscape. There are existing structures, but the "managed" character of the context dominates. Vegetation patterns are fragmented. There is some sense of remoteness and enclosure. While the farm would reduce the perceived naturalness and have a moderate effect on natural character, the site is considered able to absorb the proposed level of change.
Policy 6.2.5 – Recognise that development in parts of the coastal environment and in those rivers and lakes and their margins that have already been modified by past and present resource use activities is less likely to result in adverse effects on natural character. [RPS, R, C, D]	The wider Port has extensive forestry that has left a highly visible roading and harvest pattern There are dwellings scattered throughout the Port. The proposal is less likely to have an adverse effect on natural character given this existing development. Access roads and old logging tracks traverse the environment.
Policy 6.2.6 – In assessing the appropriateness of subdivision, use or development in coastal or freshwater environments, regard shall be given to the potential to enhance natural character in the area subject to the proposal. [RPS, R, C, D]	No enhancement is proposed.
Policy 6.2.7 – In assessing the cumulative effects of activities on the natural character of the coastal environment, or in or near lakes or rivers, consideration shall be given to: (a) the effect of allowing more of the same or similar activity; (b) the result of allowing more of a particular effect, whether from the same activity or from other activities causing the same or similar effect; and (c) the combined effects from all activities in the coastal or freshwater environment in the locality. [RPS, R, C, D]	There are existing marine farms along The Tongue. There are no significant adverse cumulative effects. Navigational lighting at night would be less intrusive than lighting associated with dwellings. There is a clustering of activity that focuses effects to a confined area of Port Underwood. The proposed extension will infill an obvious gap, but will not extend beyond the line established by existing farms... Visually, it is not likely to have an adverse effect in that context.
Policy 6.2.9 – Encourage and support private landowners, community groups and others in their efforts to restore the natural character of the coastal environment, wetlands, lakes and rivers. [RPS, R, C, D]	N/A

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Objective 7.1 – Identify Marlborough's outstanding natural features and landscapes and landscapes with high amenity value. [RPS]	The applicant has had regard to the landscape overlay in the MEP. The site lies within a cluster of marine farms. Amenity values include the marine farms. The area is identied as Marlborough Sounds Coastal landscape.
Policy 7.1.1 – When assessing the values of Marlborough's landscapes, the following criteria will be used: (a) biophysical values, including geological and ecological elements; (b) sensory values, including aesthetics, natural beauty and visual perception; and (c) associative values, including cultural and historic values and landscapes that are widely known and valued by the immediate and wider community for their contribution to a sense of place. [RPS]	
Policy 7.1.2 – Define the boundaries of significant landscapes using the following methods: (a) land typing; (b) contour line; (c) contained landscape features; (d) visual catchment; and/or (e) land use. [RPS]	Port Underwood is part of the wider Marlborough Sounds Coastal Landscape in the MEP; however, it is not identified as an outstanding natural feature or landscape (ONFL) in the MEP. The wider area is noted in Marlborough Sounds coastal landscape reflecting the aquaculture and forestry that takes place there.
Policy 7.1.3 – Assessment of the values in Policy 7.1.1 will determine: (a) whether a landscape is identified as an outstanding natural feature and landscape in terms of Section 6(b) of the Resource Management Act 1991; (b) whether the landscape has high amenity value in terms of Section 7(c) of the Resource Management Act 1991; or (c) where landscape values are not sensitive to change.	Port Underwood seascape is not an ONFL in terms of s 6(b) of the Act, so Policy 7.1.3(a) does not apply. The MEP maps the entirety of the Marlborough Sounds as having high amenity values. The visual amenity baseline in Port Underwood at a local scale is of moderate rating. There is a limited viewing audience for the proposed site, being passing recreational vessels and static views from dwellings a considerable distance away above the west shore of Opihi Bay. The site has low sensitivity to change in terms of landscape and

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[RPS]	natural character, consistent with Policy 7.1.3(c). The presence of dwellings to the west increases the sensitivity in relation to visual amenity. Clustering of marine farms will remain in feature of the Port.
Policy 7.1.4 – Landscapes that meet the criteria to be identified as an outstanding natural feature and landscape, or landscapes with high amenity value, where those values are more sensitive to change: (a) are specifically identified on the Landscape Overlay; and (b) the specific values associated with the identified landscapes are set out in Appendix 1 of Volume 3 of the Marlborough Environment Plan. [RPS, R, C, D]	The Marlborough Sounds Coastal Landscape is mapped as a high amenity landscape in the MEP and the values are set out in Appendix 1. The applicant has had regard to these values when preparing this application.
Policy 7.1.5 – Refine the boundaries of outstanding natural features and landscapes and landscapes with high amenity value in response to: (a) landscape change over time; or (b) more detailed assessment of landscape values. [RPS, R, C, D]	The proposed application does not prevent Council from refining boundaries in the future.
Objective 7.2 – Protect outstanding natural features and landscapes from inappropriate subdivision, use and development and maintain and enhance landscapes with high amenity value.	The proposal will not have an impact on the values that lead to the entirety of the Marlborough Sounds being mapped as a high amenity landscape. The impacts are localised, and would occur in a bay that is not particularly representative of the values listed in Appendix 1.
Policy 7.2.1 – Control activities that have the potential to degrade those values contributing to outstanding natural features and landscapes by requiring activities and structures to be subject to a comprehensive assessment of effects on landscape values through the resource consent process. [R, C, D]	The seascape of Port Underwood is not an ONFL.
Policy 7.2.3 – Control activities that have the potential to degrade the amenity values that contribute to those areas of the Marlborough Sounds Coastal Landscape not identified as being an outstanding natural feature and landscape by: (a) using a non-regulatory approach as the means of maintaining and enhancing landscape values in areas of this landscape zoned as Coastal Living;	Policy 7.2.3(b) does not apply to the proposed site, because aquaculture rules have yet to be included in the MEP. As a result, this application proposal must be assessed against the rules applying under the operative MSRMP. This has been done in a separate policy analysis table.

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(b) setting standards/conditions that are consistent with the existing landscape values and that will require greater assessment where proposed activities and structures exceed those standards; and... [C, D]	
Policy 7.2.4 – Where resource consent is required to undertake an activity within an outstanding natural feature and landscape or a landscape with high amenity value, regard will be had to the potential adverse effects of the proposal on the values that contribute to the landscape. [R, C, D]	The proposal will not have an effect on this wider landscape. Port Underwood is capable of absorbing the level of activity.
Policy 7.2.5 – Avoid adverse effects on the values that contribute to outstanding natural features and landscapes in the first instance. Where adverse effects cannot be avoided and the activity is not proposed to take place in the coastal environment, ensure that the adverse effects are remedied. [R, C, D]	N/A – Port Underwood seascape is not an ONFL.
Policy 7.2.7 – Protect the values of outstanding natural features and landscapes and the high amenity values of the Wairau Dry Hills and the Marlborough Sounds Coastal Landscapes by: (a) In respect of structures: (i) avoiding visual intrusion on skylines, particularly when viewed from public places; (ii) avoiding new dwellings in close proximity to the foreshore; (iii) using reflectivity levels and building materials that complement the colours in the surrounding landscape; (iv) limiting the scale, height and placement of structures to minimise intrusion of built form into the landscape; (v) recognising that existing structures may contribute to the landscape character of an area and additional structures may complement this contribution; (vi) making use of existing vegetation as a background and utilising new vegetation as a screen to reduce the visual impact of built form on the surrounding landscape, providing that the vegetation used is also in keeping with the surrounding landscape character; and	The structures are already in place in the parent farm. The farm follows the contour of the shoreline. Mussel buoys are low profile and predominantly black, save for orange navigation buoys required for navigational safety. The remainder of policy 7.2.7 does not apply to marine farming structures.

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(vii) encouraging utilities to be co-located wherever possible... [R, C, D]	
Policy 7.2.8 – Recognise that some outstanding natural features and landscapes and landscapes with high amenity value will fall within areas in which primary production activities currently occur. [C, D]	Port Underwood seascape is not an ONFL. Existing marine farming and forestry already occurs within the Port. The proposal is consistent with this primary production character.of the area
Policy 7.2.9 – When considering resource consent applications for activities in close proximity to outstanding natural features and landscapes, regard may be had to the matters in Policy 2.2.7. [R, C, D]	N/A -The site is not in close proximity to an ONFL (on the terrestrial area of Port Underwood) Policy 7.2.7 has been considered above.
Policy 7.2.10 – Reduce the impact of wilding pines on the landscape by: (a) supporting initiatives to control existing wilding pines and limit their further spread; and... [D]	N/A.
Objective 8.1 – Marlborough's remaining indigenous biodiversity in terrestrial, freshwater and coastal environments is protected.	The applicant has had regard to Objective 8.1 in preparing this application, as outlined in relation to the policies below.
Objective 8.2 – An increase in area/extent of Marlborough's indigenous biodiversity and restoration or improvement in the condition of areas that have been degraded.	N/A
Policy 8.1.1 – When assessing whether wetlands, marine or terrestrial ecosystems, habitats and areas have significant indigenous biodiversity value, the following criteria will be used: (a) representativeness; (b) rarity; (c) diversity and pattern; (d) distinctiveness;	The applicant has had regard to the significance criteria, and notes that these are based on the criteria in Davidson's 2011 report *Ecologically Significant Marine Sites in Marlborough, New Zealand.* Davidson undertook a biological survey of the proposed site in 2017, Davidson has identified ecosystems or marine habitats of note over the outer original proposed farm... The application site is located over a mud habitat, typical of sheltered bays in the Sounds. He concluded that the effects of low intensity farming are not likely to be significant.

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(e) size and shape; (f) connectivity/ecological context; (g) sustainability; and (h) adjacent catchment modifications. For a site to be considered significant, one of the first four criteria (representativeness, rarity, diversity and pattern or distinctiveness/special ecological characteristics) must rank medium or high.	
Policy 8.1.2 – Sites in the coastal marine area and natural wetlands assessed as having significant indigenous biodiversity value will be specifically identified in the Marlborough Environment Plan.	The applicant has had regard to the ecologically significant marine sites mapped in volume 4 of the proposed MEP.
Policy 8.1.3 – Having adequate information on the state of biodiversity in terrestrial, freshwater and coastal environments in Marlborough to enable decision makers to assess the impact on biodiversity values from various activities and uses.	The applicant notes that the Council will continue to undertake surveys to improve knowledge. A site specific assessment was undertaken by Rob Davidson for this proposal. His report will add to the general body of knowledge.
Policy 8.2.1 – A variety of means will be used to assist in the protection and enhancement of areas and habitats with indigenous biodiversity value, including partnerships, support and liaison with landowners, regulation, pest management, legal protection, education and the provision of information and guidelines.	The proposal is consistent with policy 8.2.1. It is prepared over habitat appropriate for marine farming.
Policy 8.2.3 – Priority will be given to the protection, maintenance and restoration of habitats, ecosystems and areas that have significant indigenous biodiversity values, particularly those that are legally protected.	N/A
Policy 8.2.7 – A strategic approach to the containment/eradication of undesirable animals and plants that impact on indigenous biodiversity values will be developed and maintained.	N/A
Policy 8.2.8 – Where monitoring of ecosystems, habitats and areas with significant indigenous biodiversity value shows that there is a loss of or deterioration in condition of these sites, then the Marlborough District Council will review the approach to protection.	The applicant is aware of this policy, and acknowledges the Council's role in protecting biodiversity.

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Policy 8.2.9 – Maintain, enhance or restore ecosystems, habitats and areas of indigenous biodiversity even where these are not identified as significant in terms of the criteria in Policy 8.1.1, but are important for: (a) the continued functioning of ecological processes; (b) providing connections within or corridors between habitats of indigenous flora and fauna; (c) cultural purposes; (d) providing buffers or filters between land uses and wetlands, lakes or rivers and the coastal marine area; (e) botanical, wildlife, fishery and amenity values; (f) biological and genetic diversity; and (g) water quality, levels and flows.	Marine farming in Port Underwood would not interfere with the continued functioning of ecological processes, biological and genetic diversity or water quality, levels and flows to any noticeable degree. The presence of surface buoys and harvest vessels would have some impact on amenity values, particularly for owners and users of nearby dwellings. The applicant recognises that resources are finite. Future generations could decide to remove the farm, and the effects will be reversible. In particular, amenity would be restored instantly upon removal of the farm.
Policy 8.2.10 – Promote to the general public and landowners the importance of protecting and maintaining indigenous biodiversity because of its intrinsic, conservation, social, economic, scientific, cultural, heritage and educational worth and for its contribution to natural character.	The applicant recognises the importance of protecting and maintaining indigenous biodiversity. Natural character has been considered above in relation to the policies in chapter 6.
Policy 8.2.12 – Encourage and support private landowners, community groups and others in their efforts to protect, restore or re-establish areas of indigenous biodiversity.	N/A
Policy 8.3.1 – Manage the effects of subdivision, use or development in the coastal environment by: (a) avoiding adverse effects where the areas, habitats or ecosystems are those set out in Policy 11(a) of the New Zealand Coastal Policy Statement 2010; (b) avoiding adverse effects where the areas, habitats or ecosystems are mapped as significant wetlands or ecologically significant marine sites in the Marlborough Environment Plan; or (c) avoiding significant adverse effects and avoiding, remedying or mitigating other adverse effects where the areas, habitats or ecosystems are those set out in Policy 11(b) of the New Zealand Coastal Policy Statement 2010 or are not identified as significant in terms of Policy 8.1.1 of the Marlborough Environment Plan.	Port Underwood is not specifically recognised as an important area. There is nothing to suggest that the site is significant for marine mammals

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Policy 8.3.2 – Where subdivision, use or development requires resource consent, the adverse effects on areas, habitats or ecosystems with indigenous biodiversity value shall be: (a) avoided where it is a significant site in the context of Policy 8.1.1; and (b) avoided, remedied or mitigated where indigenous biodiversity values have not been assessed as being significant in terms of Policy 8.1.1	Port Underwood is included in the Whale and Dolphin Overlays in the MEP These matters have been addressed in Mr Davidson's report and in the application.
Policy 8.3.5 – In the context of Policy 8.3.1 and Policy 8.3.2, adverse effects to be avoided or otherwise remedied or mitigated may include: (a) fragmentation of or a reduction in the size and extent of indigenous ecosystems and habitats; (b) fragmentation or disruption of connections or buffer zones between and around ecosystems or habitats; (c) changes that result in increased threats from pests (both plant and animal) on indigenous biodiversity and ecosystems; (d) the loss of a rare or threatened species or its habitat; (e) loss or degradation of wetlands, dune systems or coastal forests; (f) loss of mauri or taonga species; (g) impacts on habitats important as breeding, nursery or feeding areas, including for birds; (h) impacts on habitats for fish spawning or the obstruction of the migration of fish species; (i) impacts on any marine mammal sanctuary, marine mammal migration route or breeding, feeding or haul out area; (j) a reduction in the abundance or natural diversity of indigenous vegetation and habitats of indigenous fauna; (k) loss of ecosystem services; (l) effects that contribute to a cumulative loss or degradation of habitats and ecosystems; (m) loss of or damage to ecological mosaics, sequences, processes or integrity; (n) effects on the functioning of estuaries, coastal wetlands and their margins;	. The proposal avoids the adverse effects in Policy 8.3.5. In particular, Port Underwood is not a marine mammal sanctuary, migration route, breeding, feeding or haul out area. .

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(o) downstream effects on significant wetlands, rivers, streams and lakes from hydrological changes higher up the catchment; (p) natural flows altered to such an extent that it affects the life supporting capacity of waterbodies; (q) a modification of the viability or value of indigenous vegetation and habitats of indigenous fauna as a result of the use or development of other land, freshwater or coastal resources; (r) a reduction in the value of the historical, cultural and spiritual association with significant indigenous biodiversity held by Marlborough's tangata whenua iwi; (s) a reduction in the value of the historical, cultural and spiritual association with significant indigenous biodiversity held by the wider community; and (t) the destruction of or significant reduction in educational, scientific, amenity, historical, cultural, landscape or natural character values.	
Policy 8.3.8 – With the exception of areas with significant indigenous biodiversity value, where indigenous biodiversity values will be adversely affected through land use or other activities, a biodiversity offset can be considered to mitigate residual adverse effects. Where a biodiversity offset is proposed, the following criteria will apply: (a) the offset will only compensate for residual adverse effects that cannot otherwise be avoided, remedied or mitigated; (b) the residual adverse effects on biodiversity are capable of being offset and will be fully compensated by the offset to ensure no net loss of biodiversity; (c) where the area to be offset is identified as a national priority for protection under Objective 8.1, the offset must deliver a net gain for biodiversity; (d) there is a strong likelihood that the offsets will be achieved in perpetuity; (e) where the offset involves the ongoing protection of a separate site, it will deliver no net loss and preferably a net gain for indigenous biodiversity protection; and (f) offsets should re-establish or protect the same type of ecosystem or habitat that is adversely affected, unless an alternative ecosystem or habitat will provide a net gain for indigenous biodiversity.	N/A.

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Objective 9.1 – The public are able to enjoy the amenity and recreational opportunities of Marlborough's coastal environment, rivers, lakes, high country and areas of historic interest. [RPS, R, C, D]	The proposal is sited in a cluster of marine farms. The public will still have access between longlines and inshore of the site. The layout is designed to minimise the visual amenity impact from the water properties to the west shore of Opihi Bay some distance from the site. There is one registered mooring in the vicinity of the site, and no formal water ski lanes. Opportunities for recreational fishing may be enhanced by the presence of the marine farm.
Policy 9.1.1 – The following areas are identified as having a high degree of importance for public access and the Marlborough District Council will as a priority focus on enhancing access to and within these areas: (b) high priority waterbodies for public access on the Wairau Plain and in close proximity to Picton, Waikawa, Havelock, Renwick, Seddon, Ward and Okiwi Bay; (c) coastal marine area, particularly in and near Picton, Waikawa and Havelock, Kaiuma Bay, Queen Charlotte Sound (including Tory Channel), Port Underwood, Kenepuru Sound, Mahau Sound, Mahikipawa Arm and Croiselles Harbour, Rarangi to the Wairau River mouth, Wairau Lagoons, Marfells Beach and Ward Beach... [RPS]	This part of Port Underwood is not identified as an area having a high degree of importance for public access. This area is not frequented by recreationalists and the general public to any significant degree due to its remote location. The public will not be excluded from the area of the proposed site.
Policy 9.1.2 – In addition to the specified areas in Policy 9.1.1, the need for public access to be enhanced to and along the coastal marine area, lakes and rivers will be considered at the time of subdivision or development, in accordance with the following criteria: (a) there is existing public recreational use of the area in question, or improving access would promote outdoor recreation; (b) connections between existing public areas would be provided; (c) physical access for people with disabilities would be desirable; and (d) providing access to areas or sites of cultural or historic significance is important. [RPS, C, D]	See above. The farm will not prevent access to areas or sites of cultural and historic significance in the area.
Policy 9.1.5 – Acknowledge the importance New Zealander's place on the ability to have free and generally unrestricted access to the coast. [RPS, C, D]	The applicant acknowledges the importance to New Zealanders of having unrestricted access to the coast. The site design ensures that the public will continue to have access through the site and along the shore.

MEP Provision	Evaluation
Policy 9.1.7 – Recognise there is an existing network of marinas at Picton, Waikawa and Havelock, publicly owned community jetties, landing areas and launching ramps that make a significant contribution in providing access for the public to Marlborough's coastal areas. [RPS, C]	The applicant's contractors will make use of this existing network of facilities. The proposed farm will not affect access.
Policy 9.1.8 – Enable public use of jetties for the purposes of access to the Sounds Foreshore Reserve and legal road along the coast. [RPS, C]	There are no jetties in the vicinity of the site.
Policy 9.1.13 – When considering resource consent applications for activities, subdivision or structures in or adjacent to the coastal marine area, lakes or rivers, the impact on public access shall be assessed against the following: (a) whether the application is in an area identified as having a high degree of importance for public access, as set out in Policy 9.1.1; (b) the need for the activity/structure to be located in the coastal marine area and why it cannot be located elsewhere; ... (d) the extent to which the activity/subdivision/structure would benefit or adversely affect public access, customary access and recreational use, irrespective of its intended purpose; (e) in the coastal marine area, whether exclusive rights of occupation are being sought as part of the application; (f) for the Marlborough Sounds, whether there is practical road access to the site of the application; (g) how public access around or over any structure sought as part of an application is to be provided for; (h) whether the impact on public access is temporary or permanent and whether there is any alternative public access available; and (i) whether public access is able to be restricted in accordance with Policies 9.2.1 and 9.2.2. [C, D]	The structures have a functional need to be located in the coastal marine area. The public will have access through and around the site. Exclusive occupation is not sought. There is no road access. The proposed farm will not restrict boat access to this area. Any impact on public access would be temporary, being reversible upon removal of the farm. Any restrictions on public access will be consistent with the purpose of a resource consent to farm, in line with policy 9.2.1. The effects on public access will be no more than minor, in accordance with policy 9.2.2.

MEP Provision	Evaluation
Policy 9.3.2 – Seek diversity in the type and size of open spaces and recreational facilities to meet local, district, regional and nationwide needs, by: ... (d) recognising and protecting the value of open space in the coastal marine area, high country environments and river beds. [RPS, C, D]	The applicant recognises the value of open space and has designed the site layout with this in mind.
Policy 9.3.3 – Support the management of reserves through strategies and reserve management plans prepared under the Conservation and Reserves Acts. [D]	N/A.
Objective 10.1 – Retain and protect heritage resources that contribute to the character of Marlborough. [RPS]	The applicant has had regard to historic and cultural sites within the vicinity of the proposed farm. The application will not have an impact on heritage resources.
Policy 10.1.3 – Identify and provide appropriate protection to Marlborough's heritage resources, including: (a) historic buildings (or parts of buildings), places and sites; (b) heritage trees; (c) places of significance to Marlborough's tangata whenua iwi; (d) archaeological sites; and (e) monuments and plaques. [RPS, C, D]	The Historic Places Inventory notes has been consulted and none are recorded nearby. If sites are present the proposed farm will not impact adversely on these sites. The applicant is aware of the importance of the waters of the Marlborough Sounds to Iwi. It recognises that there are Maori archaeological sites within the wider Port. Iwi will be consulted and will be provided with a final copy of the proposal at lodgement.
Chapter 13 objectives and policies.	N/A – Chapter 13 expressly states that it "does not contain provisions managing marine farming."
Objective 15.1a – Maintain and where necessary enhance water quality in Marlborough's rivers, lakes, wetlands, aquifers and coastal waters, so that: (a) the mauri of wai is protected;	Marine farming will not have an adverse effect on water quality within the Port.

MEP Provision	Evaluation
(b) water quality at beaches is suitable for contact recreation; (c) people can use the coast, rivers, lakes and wetlands for food gathering, cultural, commercial and other purposes; ... (f) coastal waters support healthy ecosystems. [RPS, R, C]	
Policy 15.1.1 – As a minimum, the quality of freshwater and coastal waters will be managed so that they are suitable for the following purposes: (a) Coastal waters: protection of marine ecosystems; potential for contact recreation and food gathering/marine farming; and for cultural and aesthetic purposes; ... [RPS, R, C]	Aquaculture requires excellent water quality. The proposed farm will not have an adverse effect on water quality and would assist in removing some anthropogenic nitrogen from the water column.
Policy 15.1.9 – Enable point source discharge of contaminants or water to water where the discharge will not result: (a) in any of the following adverse effects beyond the zone of reasonable mixing: (i) the production of conspicuous oil or grease films, scums, foams or floatable or suspended materials; (ii) any conspicuous change in the colour or significant decrease in the clarity of the receiving waters; (iii) the rendering of freshwater unsuitable for consumption by farm animals; (iv) any significant adverse effect on the growth, reproduction or movement of aquatic life; or (d) in the flooding of or damage to another person's property. [R, C]	
15.1.10 – Require any applicant applying for a discharge permit that proposes the discharge of contaminants to water to consider all potential receiving environments and adopt the best practicable option, having regard to: (a) the nature of the contaminants; (b) the relative sensitivity of the receiving environment;	The March 2017 Davidson Environmental Ltd report assessed the likely sedimentation levels and their impact on the coastal environment. Discharge occurs during harvesting, and the effects are momentary and insignificant. Contaminants are materials that are already in the water column, such as sediments and organic materials

MEP Provision	Evaluation
(c) the financial implications and effects on the environment of each option when compared with the other options; and (d) the current state of technical knowledge and the likelihood that each option can be successfully applied. [RPS, R, C]	trapped by lines and structures.
15.1.11 – When considering any discharge permit application for the discharge of contaminants to water, regard will be had to: (a) the potential adverse effects of the discharge on spiritual and cultural values of Marlborough's tangata whenua iwi; (b) the extent to which contaminants present in the discharge have been removed or reduced through treatment; and (c) whether the discharge is of a temporary or short term nature and/or whether the discharge is associated with necessary maintenance work for any regionally significant infrastructure. [RPS, R, C]	No particular customary activities have been identified for the site. However, as above, recognition is given to Māori culture and traditions and confirmation from Iwi is sought to ensure the proposal does not affect these values. The applicant is aware of the importance of the waters of the Marlborough Sounds to Iwi. Iwi will be consulted and will be provided with a final copy of the proposal at lodgement. Discharge during harvest is temporary in nature and sedimentation soon reverts to background levels.
15.1.12 – After considering Policies 15.1.10 and 15.1.11, approve discharge permit applications to discharge contaminants into water where: (a) the discharge complies with the water quality classification standards set for the waterbody, after reasonable mixing; or (b) in the case of non-compliance with the water quality classification standards set for the waterbody: (i) the consent holder for an existing discharge can demonstrate a reduction in the concentration of contaminants and a commitment to a staged approach for achieving the water quality classification standards within a period of no longer than five years from the date the consent is granted; and (ii) the degree of non-compliance will not give rise to significant adverse effects. [RPS, R, C]	Water discharged during harvesting of mussels will comply with SG standards.

MEP Provision	Evaluation
Policy 15.1.14 – Except as provided for by Policy 15.1.15, apply a zone of reasonable mixing to the receiving waters for all point source discharges to water. The zone shall not exceed (as measured from the discharge point): (d) For coastal waters, limited to the extent necessary to achieve effective mixing, having regard to: (i) the characteristics of the discharge, including the contaminant type, concentration and volume; (ii) the coastal processes that exist at and near the point of discharge; and (iii) the nature, sensitivity and use of the coastal waters. [R, C]	
Policy 15.1.16 – The duration of any new discharge permit will be either: (a) Up to a maximum of 15 years for discharges into waterbodies or coastal waters where the discharge will comply with water quality classification standards for the waterbody or coastal waters; ... (c) no more than five years where the existing discharge will not comply with water quality classification standards for the waterbody or coastal waters. With the exception of regionally significant infrastructure, no discharge permit will be granted subsequent to the one granted under (c), if the discharge still does not meet the water quality classification standards for the waterbody or coastal waters. [R, C]	NB. Policy relates to point source discharges This policy is inconsistent with s 123A of the Resource Management Act, which provides for a minimum 20 year term for coastal permits authorising aquaculture activities, unless a shorter period is required to ensure that adverse effects on the environment are adequately managed. This high threshold is not met in these circumstances. The applicants seek a 20 year term of consent.
Policy 19.1.3 – Enable primary industries to adapt to the effects of climate change. [R, C, D]	Part of the purpose this application proposal is to enable algae to be cultivated and harvested in Port Underwood to counter the emerging threat of ocean acidification.

Davidson Environmental Limited

Ecological report for a proposed extension to farm 8423 in Kingfish Bay, Port Underwood

Research, survey and monitoring report number 847

A report prepared for:
For: Talley's Group Limited
C/o PALMS Ltd.
P.O. Box 751
Blenheim 7240

March 2017

Bibliographic reference:

Davidson, R.J.; Richards, L.A.; Rayes, C.; Sutherland, R. 2017. Ecological report for a proposed extension to farm 8423 in Kingfish Bay, Port Underwood. Prepared by Davidson Environmental Ltd. for Talley's Group Limited. Survey and monitoring report no. 847.

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Table of Contents

1.0 Introduction

The main aim of the present study was to describe the impact zone and biological features associated with a 2.73 ha proposed extension to a 7.36 ha existing marine farm (site 8423) located in Kingfish Bay, Port Underwood (Figure 1, Plates 1 and 2).

This report was commissioned by the farm owner, Talley's Group Limited.

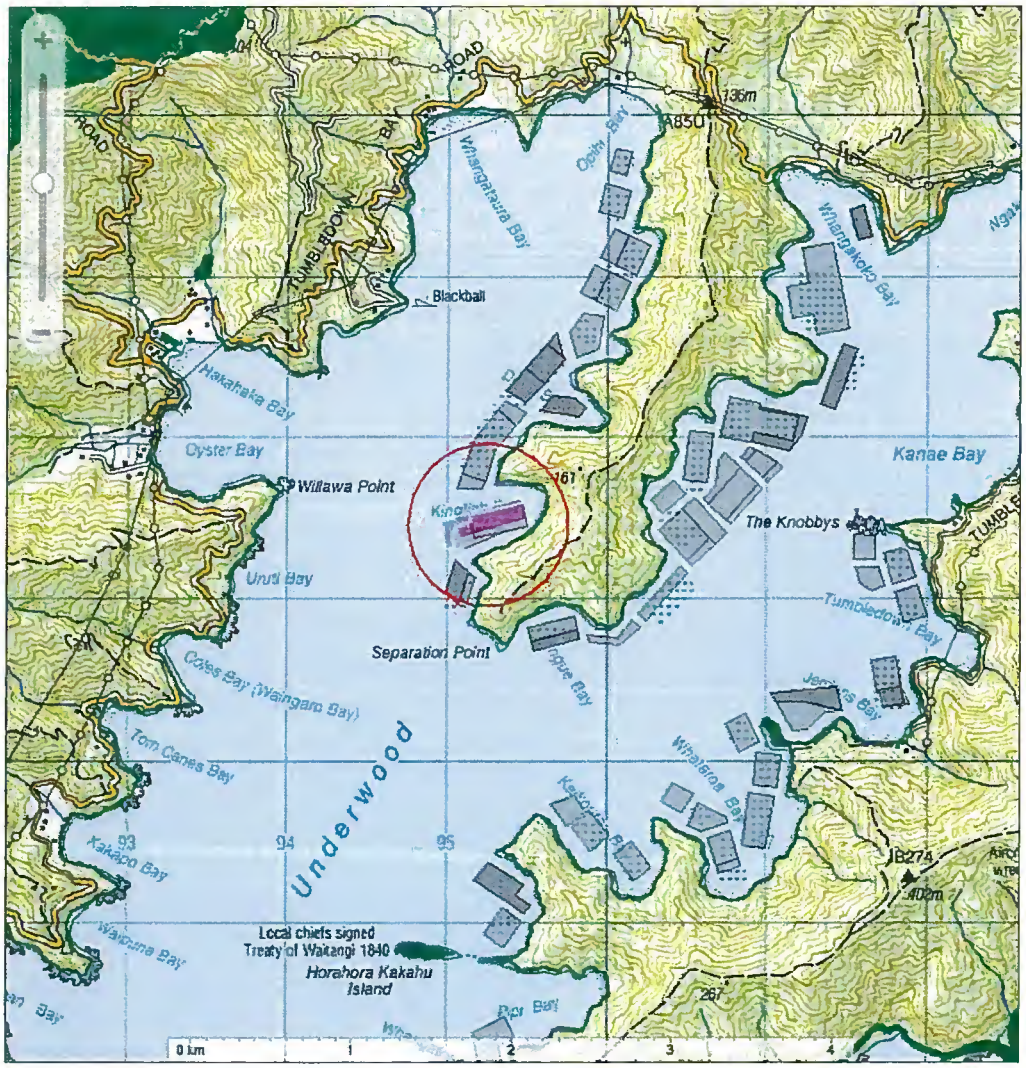

Figure 1. Location of marine farm site 8423 (red circle) in Kingfish Bay, Port Underwood.

Plate 1. Marine farm site 8423. Taken from a location alongshore and north of the existing offshore backbones, looking southwards into the consent and area proposed as an offshore extension.

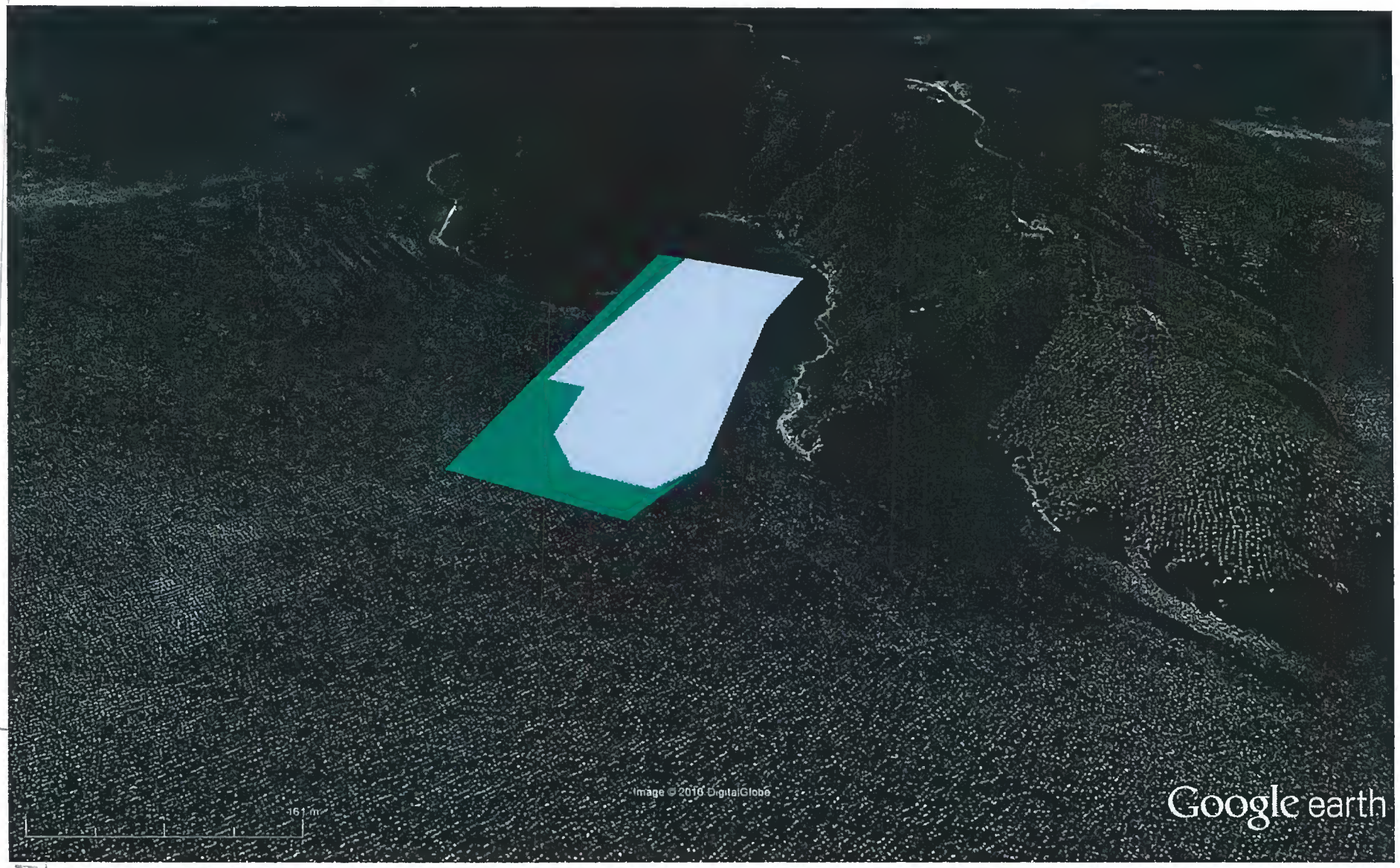

Plate 2. Oblique view of existing consent 8423 (light blue) and proposed extension (teal) in Kingfish Bay.

2.0 Background information

2.1 Study area

Kingfish Bay is on the eastern shoreline of the western arm at the head of Port Underwood (towards Separation Point). Kingfish Bay has a coastline length of approximately 1015 m and covers an area of sea of approximately 11.8 ha. Kingfish Bay is approximately 510 m wide across the mouth and is approximately 2.9 km from Opihi Bay, at the head of the western arm of Port Underwood.

Marine farm 8423 is in the centre of Kingfish Bay. The proposed extension is offshore and alongshore of the existing marine farm 8423 (Figure 2).

Figure 2. Location of parent farm (light blue), proposed extension (teal) and other marine farm consents in the area.

2.2 Historical reports

One historic biological report was found for the first marine farm extension application (U991391; Handley and Alcock, 1999). In this report, the authors recorded the following:

"No rock outcrops were found on the echo-sounder run along the inside boundary of the site. The intertidal rocky platform extended down to about 2.5 m where it was interspersed with cobbles and patches of gravel to about 4 m depth. From this depth, sand and mud dominated with a notable dense cover of zone-forming red seaweeds. By 10 m, these seaweeds became less dense and past 14 m, the substratum was mainly mud.

The site in question is fairly typical of much of Port Underwood. The species which could be impacted by the proposed farm expansion and those which are in densities which should trigger further study by the DoC Guidelines (DoC, 1995) is the bed of dense red seaweeds between 4-10 m depth. As the impacts of mussel farming are likely to be limited to within 10's of metres of the farm, the greater portion of these beds would remain unaffected. Moving the inner boundary out to 75 m from the shore would ensure their further protection if deemed appropriate.

Another species that may raise concern occurring below this depth is the relatively common parchment tubeworm *Spiochaetopterus* sp. which was mostly found on the sloping mud between 14-17 m. This species could not be fully identified and could be a new species endemic to New Zealand with a wide distribution (C. Glasby, NIWA, pers. comm.). As this species appears to bind the sediment together and produces elongated tubes, it is not expected that they will be significantly adversely impacted by marine farming activities unless they become smothered from mussel shell-drop."

3.0 Methods for present study

The area was investigated on 23rd January 2017. Prior to fieldwork, the consent corners were plotted onto mapping software (TUMONZ Professional). The laptop running the mapping software was linked to a Lowrance HDS-12 Gen2 with an external Lowrance Point 1 high sensitivity GPS 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 corners of the existing marine farm surface structures were surveyed by positioning the survey vessel immediately adjacent to the corner floats and the position plotted. It should be noted that surface structures can move due to environmental variables such as tidal current and wind. The plot of surface structures is variable from day to day and over the duration of tidal cycles. These data should not therefore be regarded as a precise measurement of the position of surface structures, but rather an approximate position.

3.1 Sonar imaging

Sonar investigations of the area were conducted using a Lowrance HDS-12 Gen 2 and HDS-8 Gen2 linked with a Lowrance StructureScan™ Sonar Imaging LSS-1 Module. These units provide right and left side imaging as well as DownScan Imaging™. The unit also allows real time plotting of StructureMap™ overlays onto the installed Platinum underwater chart. A Lowrance HDS 10 Gen 1 unit fitted with a high definition 1kw Airmar transducer was used to collect traditional sonar data from the site.

Prior to the collection of underwater photographs, the boundaries of both the consent area and the marine farm surface structure area were investigated using the sonar. Any bottom abnormalities such as reefs, hard substrata or abrupt changes in depth were noted for inspection using the drop camera (see section 3.2).

3.2 Drop camera stations and site depths

Drop camera photographs were collected from the marine farm site during the present study. A total of 24 photographs have been collected from the existing farm and proposed extension

area, including under droppers and warps. At each drop camera station, 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.

The cover of benthic mussel shell from drop camera photographs were ranked as: None = no benthic mussel shell, Low = 1-30%, Moderate = 31-50%, Moderate to High = 51-75%, and High = 76-100% cover. This assessment is displayed in Table 2 of the present report.

The location of photograph stations was selected to obtain a representative range of habitats and depths within the consent. Additional photographs were taken when any features of interest (e.g. mussel shell, 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.

Low tide was determined at locations inshore of the consent. The survey vessel was positioned over the low water mark and the position recorded using the mapping software. Low tide was determined by using the transition between intertidal and subtidal species.

4.0 Results

On the day of the survey, low tide was 0.6 m at 9.55 am and high tide was 1.3 m at 3.54 pm. During the present biological survey, the tide was incoming.

4.1 Consent corners and surface structures

Corner depths of the existing marine farm consent ranged from 4 m to 10.5 m inshore and 13 m to 14.8 m offshore, while the offshore extension is located over depths from 10.5 m to 15 m (Figure 3). The bottom topography under the existing consent and the proposed extension comprised a gently sloping shore that increased from inshore to offshore.

Existing surface structures consisted of backbones covering 4.49 ha of the 7.36 ha parent farm consent.

The distance between low tide and the consent boundary was measured from positions established by positioning the survey vessel over low water. Separation distances between the existing consent boundary and the low tide mark were: low tide 3 = 50 m, low tide 1 = 23 m and low tide 2 = 133 m (Figure 3, Plate 3).

Table 1. Depths recorded from the corners of mussel farming surface structures, consent corners and low tide positions. Depths adjusted to datum. Coordinates = NZTM (Northing/Easting).

Location	No. & Depth (m)	Coordinates
Extension corner	1, 14.3m	1694960.3,5426477.9
Extension corner	2, 15.0m	1694992.1,5426300.6
Extension corner	3	1695097.8,5426299.6
Extension corner	4, 14.8m	1695041.3,5426311.8
Extension corner	5, 14.1m	1695024.7,5426386.9
Extension corner	6, 13.0m	1695060.1,5426441.2
Extension corner	7, 13.0m	1695145.4,5426476.1
Extension corner	8, 13.0m	1695137.1,5426515.1
Extension corner	9, 10.5m	1695468.5,5426589.1
Extension corner	10, 11.6m	1695458.8,5426623.1
Consent corner	11, 4.0m	1695501.1,5426442.5
Consent corner	12, 10.8m	1695379.8,5426415.9
Structure corner	A, 10.0m	1695488.1,5426498.4
Structure corner	B, 11.3m	1695444.6,5426603.0
Structure corner	C, 13.7m	1695062.3,5426481.5
Structure corner	D, 14.0m	1695083.6,5426377.7
Low tide 1	Low tide 1	1695505.0,5426419.2
Low tide 2	Low tide 2	1695414.1,5426712.5
Low tide 3	Low tide 3	1695315.6,5426335.0

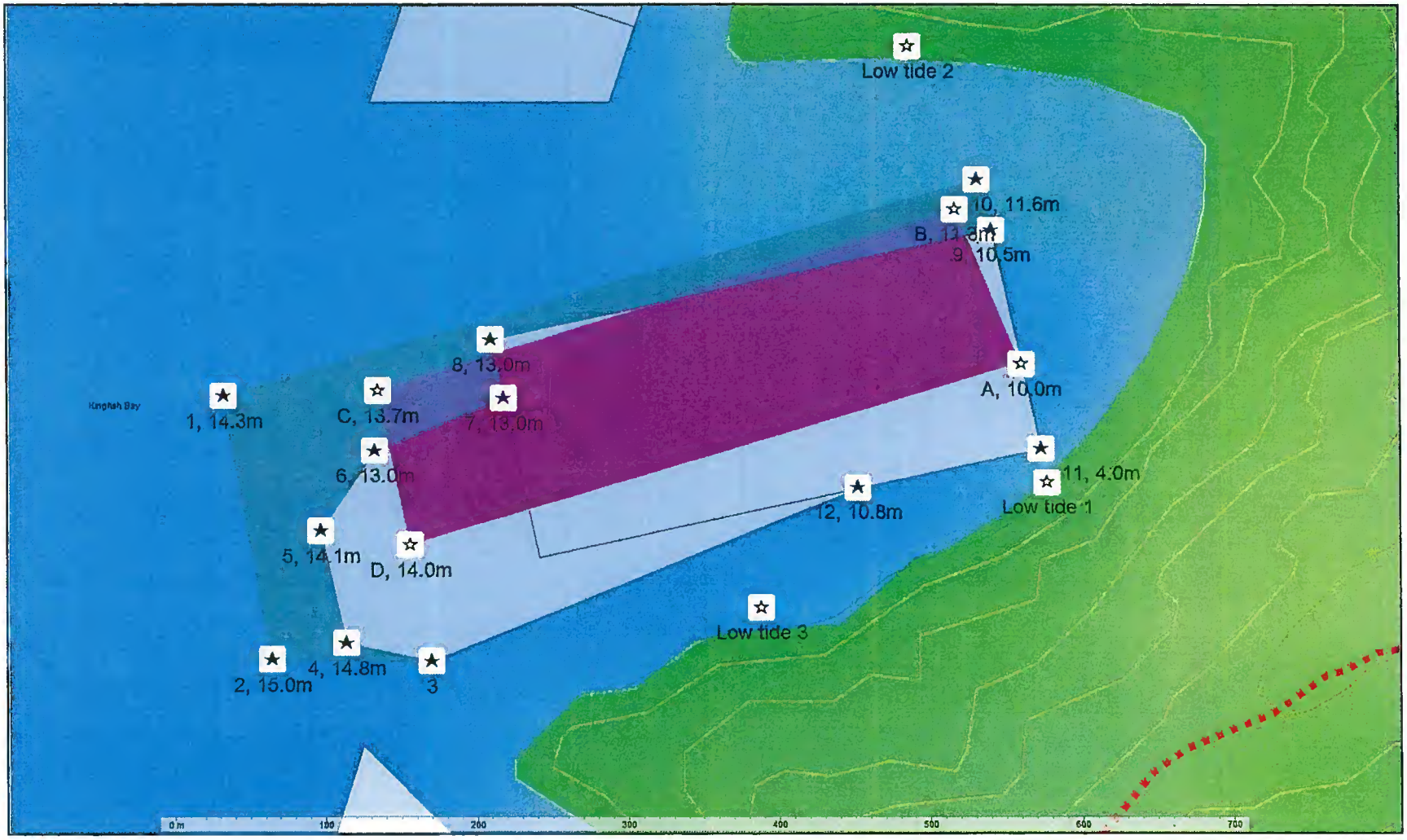

Figure 3. Depths of the existing consent area (light blue), proposed extension (teal) and existing surface structures (pink). Low tide positions also included.

4.2 Drop camera stations

Substratum and habitat distribution relative to the consent area were based on drop camera images (Table 2, Figure 4, Appendix 1) and sonar.

Substratum under the existing consent and proposed extension was dominated by base of silt and clay (i.e. mud, Table 3). Mussel shell was observed under backbones and appeared to be widespread, but was not common or abundant (Table 2, Plate 4). Drift *Undaria* algae was also observed on the seafloor under the parent farm (Plate 5). It is likely these were originally growing on the marine farm structures. Patches of green and red algae were also observed under droppers (Plate 4).

The proposed extension was dominated by silt and clay with common presence of parchment tubeworms and associated sponges and red algae (Table 2, Plates 6 and 7). Handley and Alcock (1999) also recorded this species during the survey for a proposed extension to the parent farm and stated it was likely *Spiochaetopterus* sp.

4.3 Sonar

The sonar run revealed a flat, featureless seafloor through the consent and proposed extension (Figures 5 and 6). A zone of rock, boulders and cobbles was observed inshore of the consent near the southern promontory. The sonar detected no rocky substratum within the parent farm or proposed extension. Benthic mussel shell debris and live mussels were observed on the sonar under and close to droppers.

Table 2. Coordinates of drop camera stations showing depths, substratum, biological features and level of benthic mussel shell. Depths adjusted to datum. None = no benthic mussel shell, Low = 1-30%, Moderate = 31-50%, Moderate to High = 51-75%, and High = 76-100% cover.

No. & Depth (m)	Coordinates	Location	Position	Substratum	Biological features	Shell debris
1, 15.0m	1694995.4,5426316.6	In proposed extension	No structures	Silt and clay	Parchment worms (abundant)	none
2, 15.0m	1695029.6,5426311.7	In proposed extension	No structures	Silt and clay	Parchment worms (abundant)	none
3, 15.2m	1695042.0,5426306.5	In proposed extension	No structures	Silt and clay	Parchment worms (abundant)	none
4, 14.0m	1695007.2,5426485.8	In proposed extension	No structures	Silt and clay	Parchment worms (abundant)	none
5, 15.6m	1694962.0,5426466.7	In proposed extension	No structures	Silt and clay	Parchment worms (abundant)	none
6, 14.5m	1694979.3,5426407.0	In proposed extension	No structures	Silt and clay	Parchment worms (abundant)	none
7, 14.2m	1695019.2,5426435.4	In proposed extension	No structures	Silt and clay	Parchment worms (abundant)	none
8, 13.8m	1695080.4,5426414.3	In consent	Under backbones	Silt and clay	Mussel shell	moderate-high
9, 13.8m	1695075.9,5426384.3	In consent	Near backbones	Silt and clay	Drift Undaria	low
10, 15.0m	1695041.0,5426366.8	In consent	No structures	Silt and clay	Parchment worms (common)	low
11, 14.7m	1694993.6,5426377.3	In proposed extension	No structures	Silt and clay	Parchment worms (common), red algae (common)	none
12, 15.1m	1695020.9,5426325.7	In proposed extension	No structures	Silt and clay	Parchment worms (abundant), red algae (common)	none
13, 13.1m	1695125.7,5426422.0	In consent	Under backbones	Silt and clay	Mussel shell (moderate), green algae, red algae (common)	low
14, 14.1m	1695101.4,5426496.6	In proposed extension	Under backbones	Silt and clay	Red algae (common)	low
15, 13.2m	1695115.3,5426470.6	In proposed extension	Under backbones	Silt and clay	Drift Undaria	moderate-high
16, 13.0m	1695143.6,5426522.6	In proposed extension	Under warps	Silt and clay	Parchment worms (abundant), red algae (abundant)	none
17, 12.8m	1695231.1,5426541.6	In proposed extension	Under warps	Silt and clay	Parchment worms (abundant), red algae (abundant)	none
18, 11.9m	1695324.3,5426568.1	In proposed extension	Under warps	Silt and clay	Parchment worms (common)	none
19, 11.8m	1695382.2,5426589.6	In proposed extension	Under warps	Silt and clay	Parchment worms (occasional)	none
20, 11.6m	1695437.0,5426603.0	In proposed extension	Under warps	Silt and clay	Parchment worms (occasional)	none
21, 11.4m	1695457.4,5426616.0	In proposed extension	No structures	Silt and clay	Parchment worms (common)	none
22, 15.0m	1694827.2,5426428.9	Offshore	No structures	Silt and clay		none
23, 14.7m	1694887.8,5426356.9	Offshore	No structures	Silt and clay	Parchment worms (abundant), sponges (common)	none
24, 15.2m	1694886.5,5426265.2	Offshore	No structures	Silt and clay	Parchment worms (abundant), sponges (common)	none

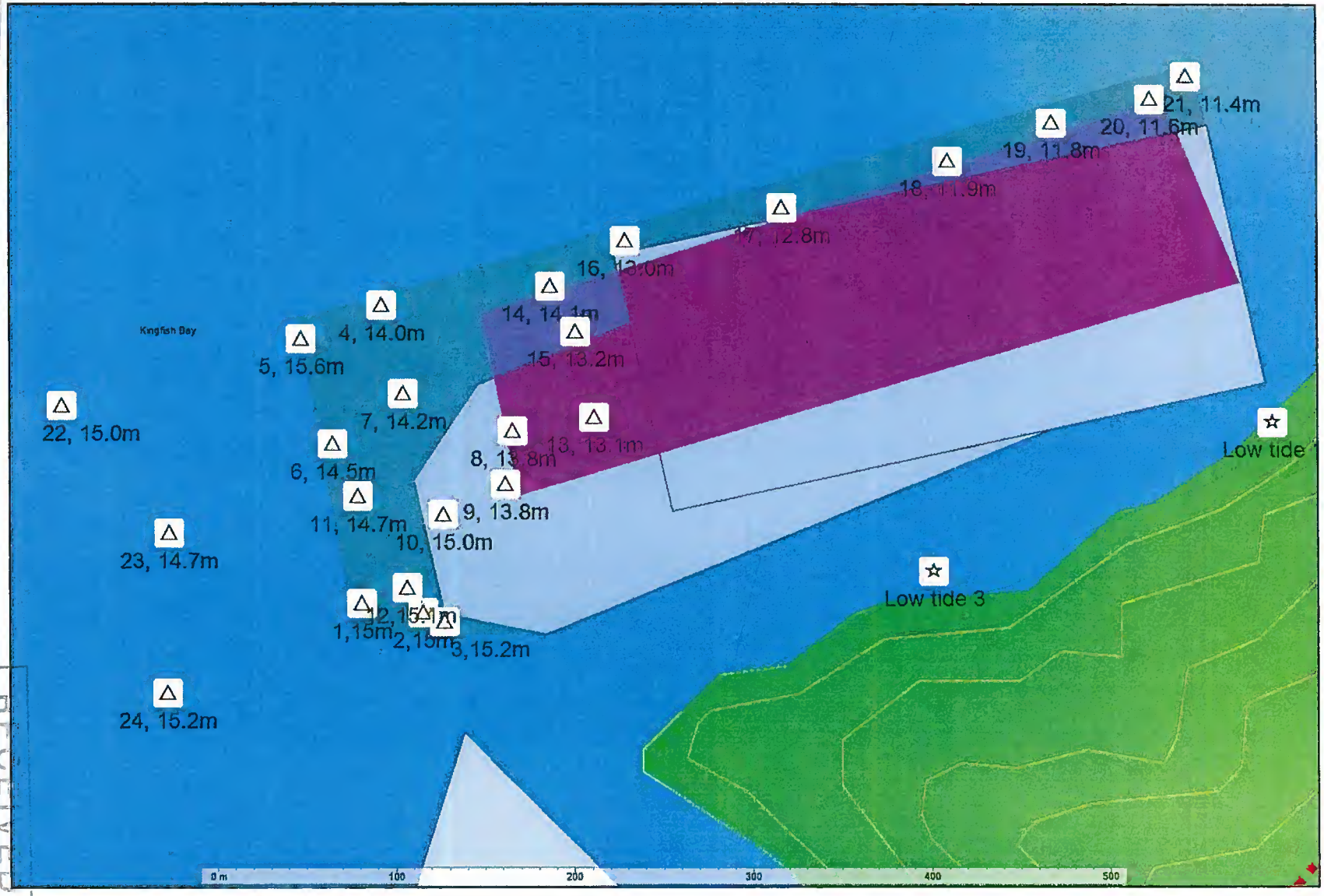

Figure 4. Existing consent (light blue), proposed extension (teal), surface structures (pink) and drop camera stations with depths (triangles).

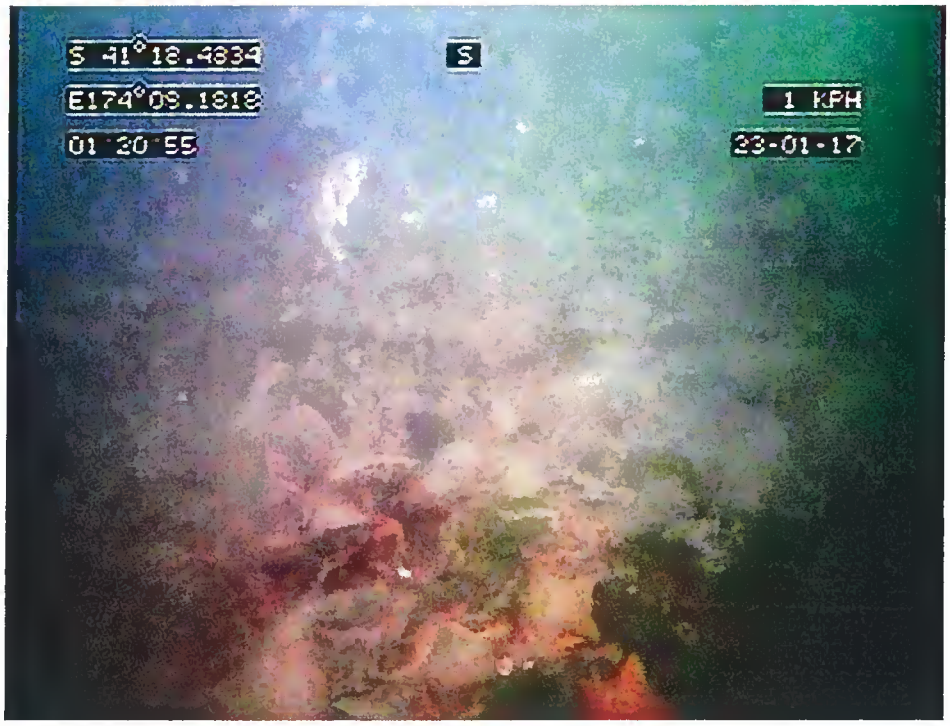

Plate 4. Silt and clay located in the consent away under backbones (photo 13, 13.1 m depth). Note patches of green and red algae.

Plate 5. Silt and clay with drift *Undaria* near existing backbones (photo 9, 13.8 m depth).

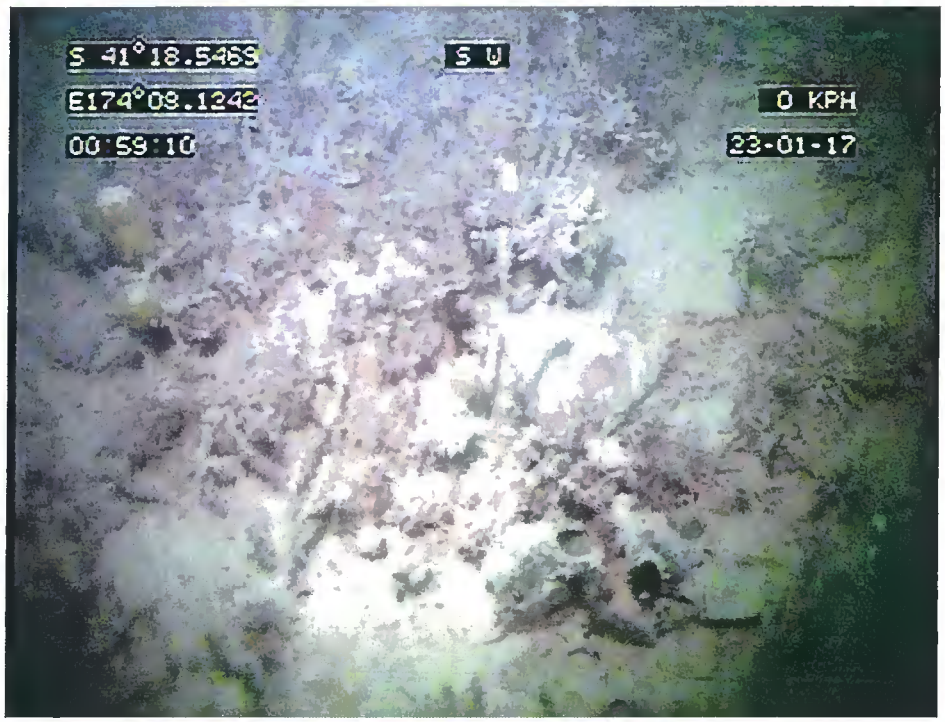

Plate 6. Silt and clay with abundant cover of parchment tubeworms in the proposed extension. Note red presence of small sponges (photo 3, 15.2 m depth).

Plate 7. Silt and clay with abundant parchment worms, sponges and red algae in the proposed extension (photo 5, 25.2 m depth).

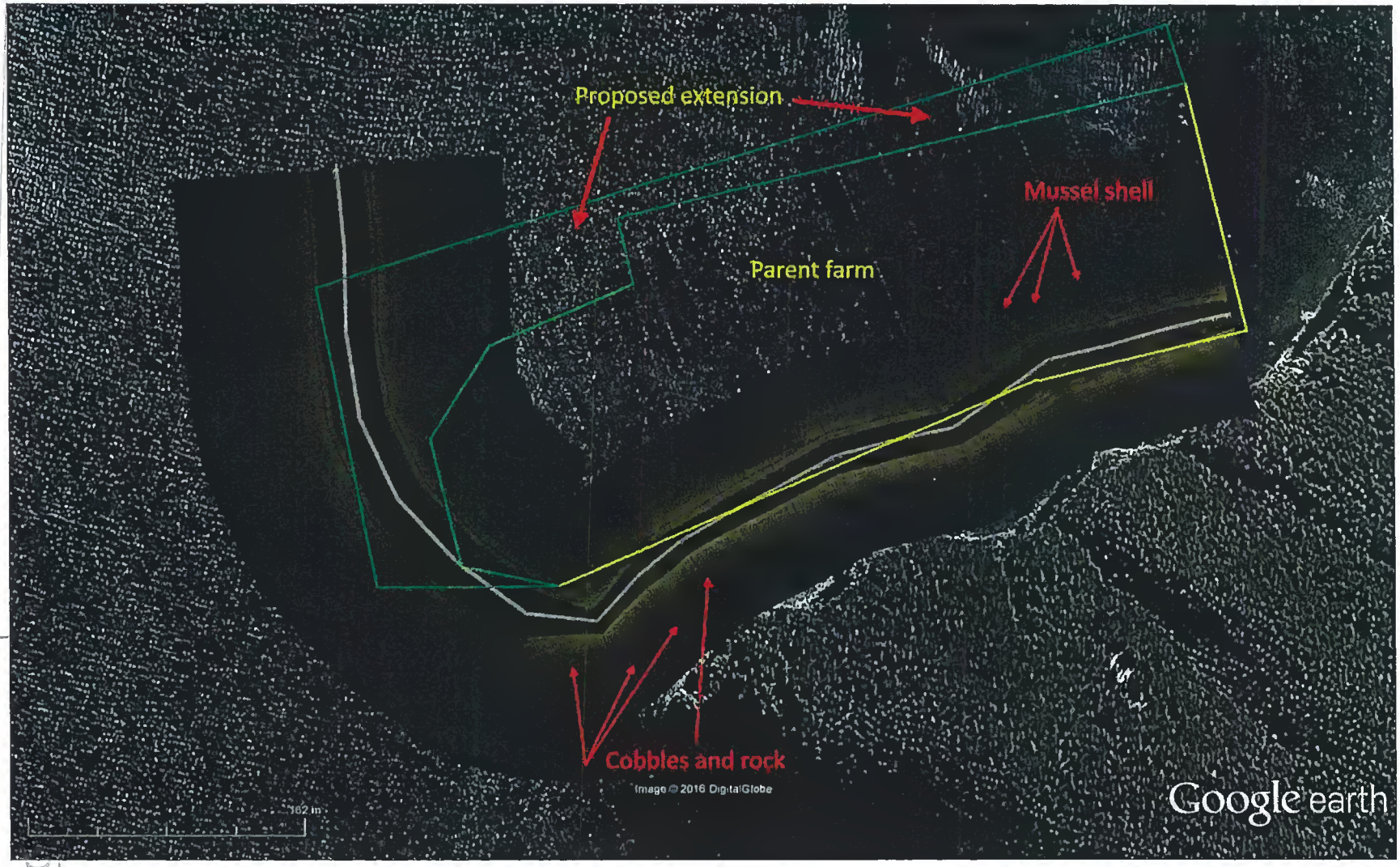

Figure 5. Sonar run at farm 8423. Yellow polygon = consent boundary, teal polygon = extension, white line = sonar track.

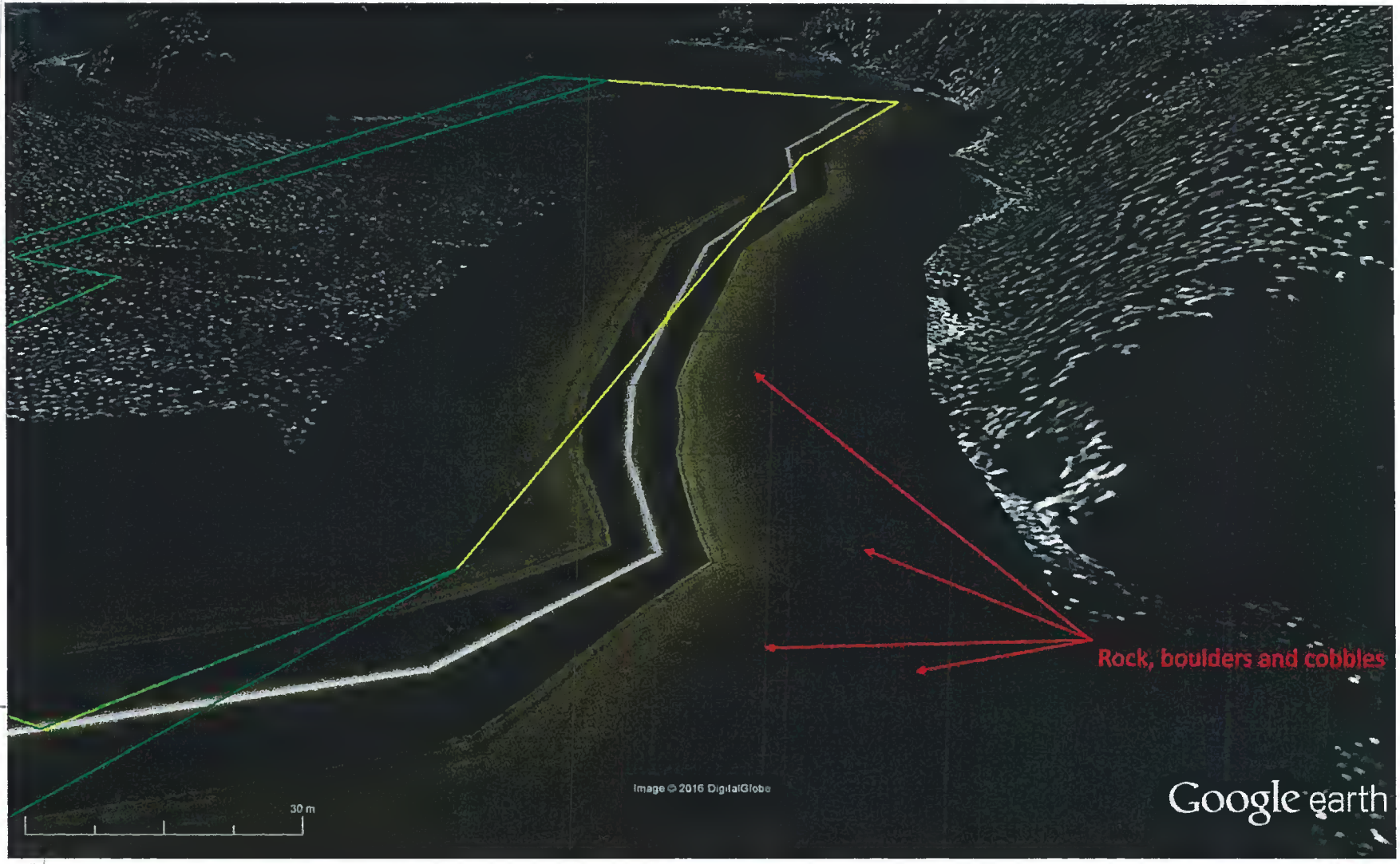

Figure 6. Oblique aspect of sonar runs at farm 8423. Yellow polygon = consent boundary, teal polygon = extension, white line = sonar track.

5.0 Summary and conclusions

5.1 Benthos

The benthos under the existing consent was dominated by silt and clay with little or no natural shell. This type of substrata dominates most of Port Underwood and many areas of the sheltered Marlborough Sounds.

A cobble shore was detected inshore of the parent farm. No other rocky substrata were detected within the consent or proposed extension during the present study.

Mussel shell debris was observed under and close to backbones. When present, it ranged from low to high levels. Several photos collected close to backbones lines had no benthic mussel shell suggesting shell is often limited to areas very close to dropper lines. It is also likely dead mussel shell from the farm has sunk into the soft sediment over time, or has been smothered by fine sediment.

The proposed extension was dominated by the same substratum as the parent farm, however, no mussel shell was observed.

5.2 Species and communities

Parent farm

Relatively few invertebrate species were observed on the silt and clay areas of the consent. Species abundance and diversity increased in the inshore area, but was still relatively low compared to rocky shores in the Marlborough Sounds. All areas under the consent and the proposed extension are likely characterised by infaunal species representative of mud shores in sheltered locations in the Sounds (McKnight and Grange, 1991).

No species or communities of scientific, conservation or ecological importance were observed during the present study (see Davidson *et al.*, 2011 for criteria and biological features). No scallops were seen under the Consent or proposed extension.

Occasional clumps of red algae and green were observed. Red algae was very patchy and was absent from most photos. Overall, the densities observed do not constitute a red algae bed.

Proposed extension

Drop camera images collected from the proposed extension revealed an abundance of parchment tubeworms, red algae and small sponges. Handley and Alcock (1999) also recorded parchment worms during the survey for an earlier proposed extension to the parent farm. The authors stated "*Spiochaetopterus* sp. was mostly found on the sloping mud between 14-17 m. This species could not be fully identified and could be a new species endemic to New Zealand with a wide distribution (C. Glasby, NIWA, pers. comm.)." The authors also stated that "as this species appears to bind sediment together and produced elongated tubes, it is not expected that they will be significantly adversely impacted by marine farming activities unless they become smothered from mussel shell drop."

5.3 Mussel farming impacts

5.3.1 Benthic impacts

Benthic mussel shell was recorded from drop camera photos collected under and near backbones. Shell debris impact levels were within the range known for mussel farms in the Marlborough Sounds and towards the low to moderate-high impact range apart from directly under droppers where it did reach high levels.

It is probable that the impact of continued shellfish farming at this site will result in the deposition of more shell and fine sediment under and near droppers. Based on the literature and assuming the present level of activity remains relatively consistent, it is very unlikely that the surface sediments would become anoxic, especially as the site is shallow (<10 m depth) (Hartstein and Rowden, 2004; Keeley *et al.*, 2009; Davidson and Richards, 2014). Tidal flows are expected to be low; however, winds are likely to be an important driver of water movement in this area.

It is noted that benthic impacts of mussel farms are not permanent. If structures are removed, the benthos recovers over a period of approximately 10 years (Davidson and Richards, 2014).

5.3.2 Productivity

Mussel farms can influence adjacent farms by slowing water flow to 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 weather cycle and much less about the number of farms.

There has been no data presented to show that the ecological carrying capacity of the Sounds has been reached. There is considerable evidence that shows the major drivers of the Pelorus system, for example, naturally leads 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 (Broekhuizen *et al.*, 2015).

Port Underwood is near Cook Strait and also receives sediment from the nearby Wairau River. It is likely that Cook Strait delivers nutrients to the area and algae primary production occurs during the longer residence times compared to the Strait.

5.4 Marine mammals

Hector's dolphin (*Cephalorhyhncus hectori hectori*), is endemic to New Zealand and is currently listed as Nationally Endangered by the NZ threat classification scheme (Baker *et al.*, 2010) and considered Endangered by the IUCN since 2000 (Reeves *et al.*, 2008). Based on a series of historic boat and plane surveys conducted from 1997–2001, their abundance around the South Island was estimated at approximately 7300 animals (95% 5303–9966; Slooten *et al.*, 2004). In the most recent aerial survey found Hector's dolphin abundance to be approximately 9130 (CV: 19%; 95% CI: 6342–13 144) in summer and 7456 (CV: 18%; 95% CI: 5224–10 641) in winter (MacKenzie and Clement, 2014). The authors stated that the population of Hector's dolphin was larger than expected from previous estimates. MacKenzie and Clement (2014) stated this difference was mainly due to approximately half of their summer estimate being distributed across previously un-surveyed regions in offshore waters between 4 and 20 nautical miles. The authors emphasized that, at least in summer, a large portion of the ECSI Hector's dolphin population occurs in waters around Banks Peninsula and within Clifford and Cloudy Bays.

Hector's and other species of dolphin overlap with marine farms areas parts of New Zealand. An overlap for Hector's dolphin occurs around Banks Peninsula, East Bay and Port Underwood, Marlborough Sounds. Admiralty Bay in the Marlborough Sounds supports many mussel farms and is visited annually in winter by large numbers of dusky dolphins (Markowitz, 2002). Despite these spatial overlaps between dolphins and mussel farms, no entanglements have been documented.

There are, however, two reported incidences of dolphin entanglement and death at a salmon farm in New Zealand, both from the Marlborough Sounds (M. Aviss, MDC). In one, an unidentified dolphin species became trapped while a predator net was being replaced, and in the other case, a Hector's dolphin became trapped under a predator net. Internationally, fatal entanglements of dolphins in predator nets on finfish farms have been reported from Australia (Gibbs and Kemper, 2000; Kemper and Gibbs, 2001; Kemper *et al.*, 2003) and Italy (Díaz López and Bernal Shirai, 2007). This may reflect attraction of dolphins to a food source (Kemper and Gibbs, 2001) although such interactions between finfish farms and cetaceans have not been proven (Kemper *et al.*, 2003).

There is also one record of a marine mammal becoming trapped or tangled in a mussel farm (i.e. a Bryde's whale) (Wursig and Gailey, 2002). The low incidence of mussel farm entanglements is probably related warps and backbones being under tension thereby reducing the chance of entanglement. This is in stark contrast to lobster pots that have a single line to the surface. This line is usually under little or no tension. Whales migrating up the east coast of the South Island pass hundreds of lobster lines that present a serious entanglement threat. Wursig and Gailey (2002) stated that entanglements by larger whales in aquaculture facilities are relatively rare events.

Displacement of Hector's dolphin by new marine farms have been discussed in a report in Pegasus Bay (DuFresne *et al.*, 2010). The authors considered that there existed the "*possibility that mussel farms may not be optimal habitat for Hector's dolphin, and in that case, some level of displacement was possible.*" The authors reported that in Golden Bay, Hector's dolphins have been observed at least in the access lanes between blocks of lines in a mussel farm (Slooten *et al.*, 2001). In the same farm, there are anecdotal reports of dolphins regularly entering the farm area (Slooten *et al.*, 2001), however, a lack of before-after data, and in this case a general paucity of data, preclude making any statements about the impact or otherwise of this farm on Hector's dolphins. DuFresene *et al.* (2010) concluded that "*there are no easy answers to the question of whether Hector's dolphins will be displaced by a mussel*

farm", but they did state that "*Given the size of the proposed marine farm in Pegasus Bay (i.e. 2695 ha) relative to available Hector's dolphin habitat in the immediate vicinity, the presence of a mussel farm was unlikely to have a catastrophic impact on the dolphins*".

Port Underwood is known as a significant site for Hector's dolphin (Site 8.11 In: Davidson *et al.*, 2011) and part of the Cook Strait whale migratory corridor (Site 7.15 In: Davidson *et al.*, 2011). The latter area includes the greater Cook Strait, Cloudy and Clifford Bays, Tory Channel and Queen Charlotte Sound (Figure 1). The authors stated "*The Cook Strait is part of a migratory corridor along the NZ coast for humpbacks, as they move north from Antarctic feeding grounds to tropical waters for calving and breeding during the winter months (May - August). The Cook Strait is also utilised by other large whales including southern right whales (winter months), blue whales (possibly all year round but very little known about this species distribution) and sperm whales (probably all year round in the deeper waters of the Strait i.e., 300m and below). Humpback whales in New Zealand are part of the oceania subpopulation and in 2008 were recently reclassified by the international union for Conservation of nature (IUCN) as endangered. They were previously classed as Vulnerable but research on the oceania subpopulation has indicated this population is more threatened than previously thought. The Department of Conservation has conducted systematic annual surveys of humpbacks as they migrate through Cook Strait during the winters of 2004 to 2010, as well as collecting anecdotal sightings of humpbacks all year round to improve our understanding of the distribution and abundance of these species in New Zealand waters. Nationally endangered southern right whales are also seen in New Zealand coastal waters, including the Cook Strait, in winter months. The New Zealand subpopulation of southern right whales is thought to be very small, with potentially as few as four to eleven breeding females (Patenaude, 2003). Other marine mammal species that have been observed utilising the Cook Strait area include sperm, minke and blue (Endangered) whales as well as orca (Nationally Critical), common, dusky, bottlenose (Nationally Endangered) and Hector's (Nationally Endangered) dolphins.*"

Kingfisher Bay is included in both marine mammal sites. Hector's dolphins are occasionally seen in the Port, but most sightings have been recorded between the Wairau and Awatere River Mouths DuFresene and Matlin 2009). Other marine mammals may visit the area but their use is likely temporary and uncommon. Large whales occasionally enter the Port. Overall, there is a low risk of entanglement and displacement from the present marine farm in Kingfisher Bay.

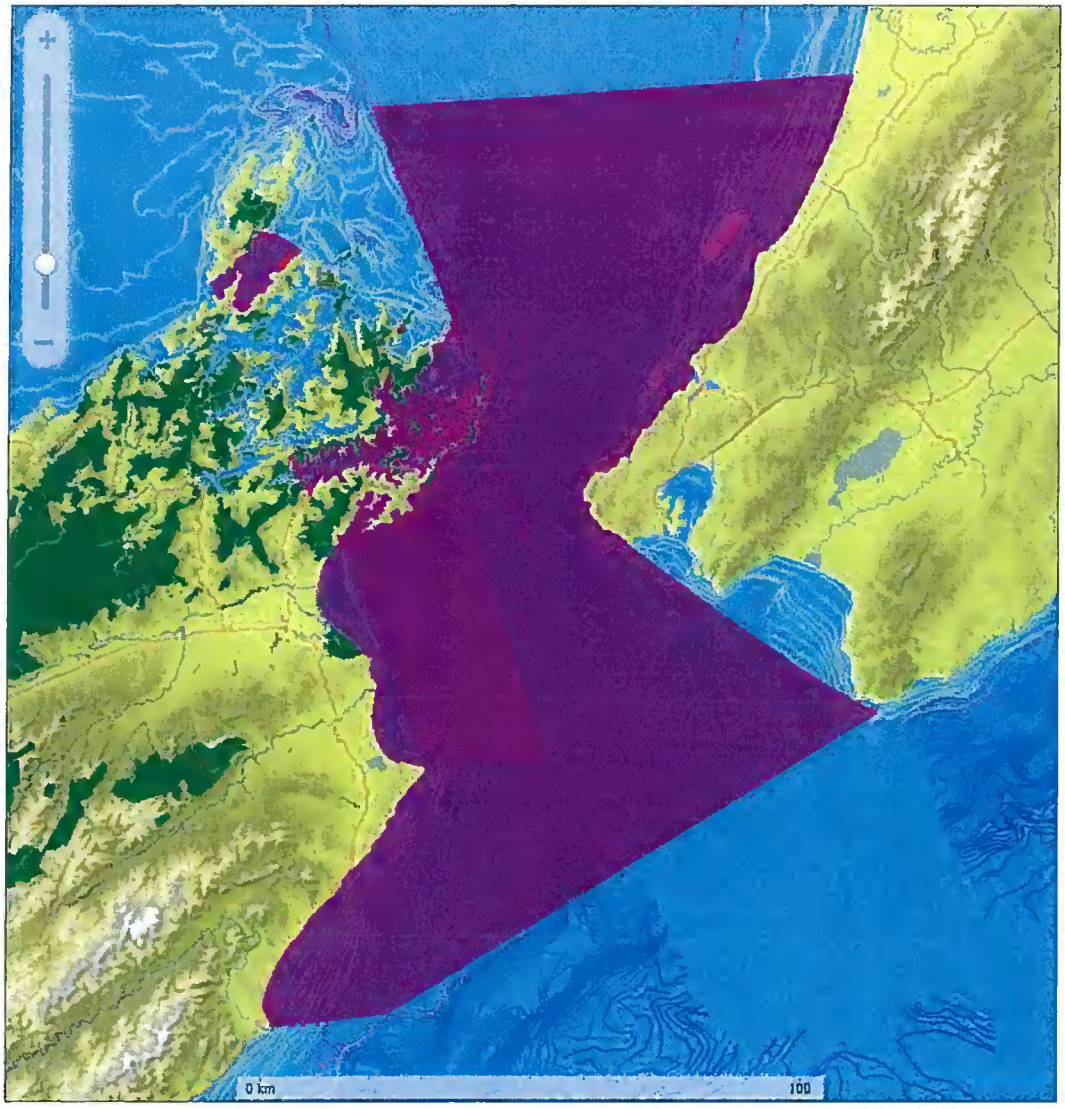

Figure 7. Marine mammal significant sites in the Marlborough Sounds (from Davidson *et al.*, 2011).

Seals are present in Port Underwood and often occupy areas of coast near the mussel farms. Seals are often observed swimming within mussel farm structures and resting on floats (Plate 8). There are no records of seals becoming tangled in mussel farm structures. It is possible seals feed on small fish attracted to mussel droppers.

Plate 8. Three seals at a mussel farm in Admiralty Bay (2016).

5.5 Seabirds

There are no known seabird significant sites located in Port Underwood. Site 7.14 located along the outer Cook Strait coast north of the Port. A variety of seabirds visit Port Underwood and can often been observed resting on floats (pers. obs.).

Based on the few studies that have investigated the interactions between mussel farms and birds, mussel aquaculture can potentially affect seabirds by altering their food resources, cause physical disturbances (e.g. noise) and/or introduce possible entanglement risks. The structures associated with aquaculture may also provide benefits including additional perching and feeding opportunities (Plate 8). For example, in the Marlborough Sounds, the Nationally endangered king shag has largely abandoned mainland roost sites presumably in

favour of mussel floats (Brown, 2001). Further, variable oyster catchers are regularly observed feeding on mussel backbones and floats (author pers. obs.).

Overall, New Zealand (Butler, 2003) and overseas studies (Ross *et al.*, 2001; Roycroft *et al.*, 2004; Kirk *et al.*, 2007) suggest that the general attraction of particular seabirds to mussel farms is likely due to increased foraging success on fish and biofouling, and even on the cultured stock itself. The consequences of this attraction will likely depend on the species' dietary preferences and response to both direct and indirect ecosystem changes induced by mussel cultivation.

Birds are potentially at risk from operational by-products of farms, including ties and plastics. The threat is considered greater after stormy weather (Page *et al.*, 2000) and at poorly operated farms. Butler (2003) found young and adult Australian gannets (*Sula serrator*) in the Marlborough Sounds entangled in discarded rope ties from mussel farms that had been incorporated into nests by parents. The closest gannet colony is 16.7 km from Onapua Bay, however, a variety of shags are present in the area and may potentially use ties as nesting material. It is therefore important that marine farmers minimize the introduction of ties into the marine environment.

The mussel industries Environmental Management System (EMS), formally known as the Environmental Code of Practice seeks to minimise such risks, and they are likely to be minimal on well-maintained farms (Keeley *et al.*, (2009).

King shag (*Leucocarbo carunculatus*) is a rare seabird, endemic to the Marlborough Sounds. Colonies are dotted throughout the Sounds, from the western coast of D' Urville Island through to Queen Charlotte Sound. Until recently, most colonies were located towards the outer edges of the Sounds. However, a new colony has recently been observed at Tawhitinui Bay towards inner Pelorus Sound. The most recent census in 2015 counted 839 individuals at eight colonies king shag breeding, roosting and feeding areas have been identified in the Marlborough Sounds (Schuckard and Melville, 2015). The closest breeding colony to Onapua Bay is at White Rocks located in outer Queen Charlotte Sound some 19.4 km distant.

Kings shag feeding has been recorded over many years by Rob Schuckard (Figure 8). No feeding records exist in Port Underwood, however, it is unclear whether the survey extended into this area.

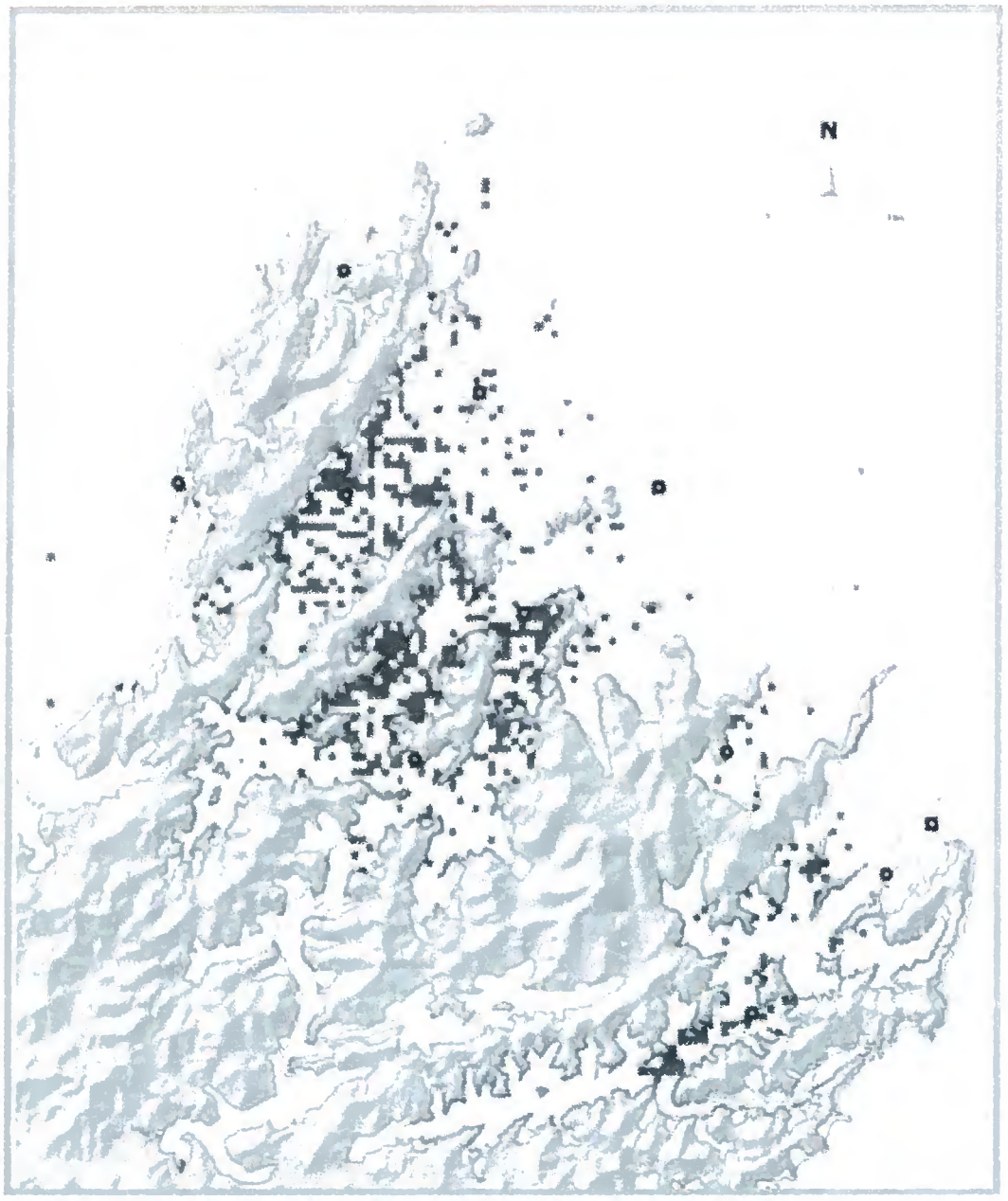

Figure 8. King shag foraging observations (n=~1,000). Taken from Schuckard 2015: Statement of Evidence dated 13 March 2015.

5.6 Boundary adjustments, recommendations and monitoring

The parchment worm, sponge and red algae zone observed from much of the proposed extension appears to represent one of the highest relative abundance densities for this species in the Marlborough Sounds. This parchment worm bed also supports red algae and sponges. Photographs collected within the parent farm suggest that this community type has been lost and it is therefore likely that the same would happen within the proposed extension if it was approved. The offshore area of the proposed extension is therefore unsuitable for development as a marine farm (Figure 9).

The northern side of the parent farm is also proposed as an extension, however, much of this area also supports parchment worms. This area is located under existing warps but does not appear to have been adversely impacted by the farm. Parchment worms are very tolerant of high turbidity. The presence of existing marine farm structures may act to ensure the area is not dredged or trawled. This part of the extension is therefore suitable for inclusion are part of the farm.

Based on the resilience of parchment worms to high turbidity and their presence directly adjacent to farm structures, no monitoring is suggested.

Figure 9. Suggested reduction area to proposed extension (red hatched).

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Appendix 1. Drop camera photographs

Photo site 1

Photo site 2

Photo site 3

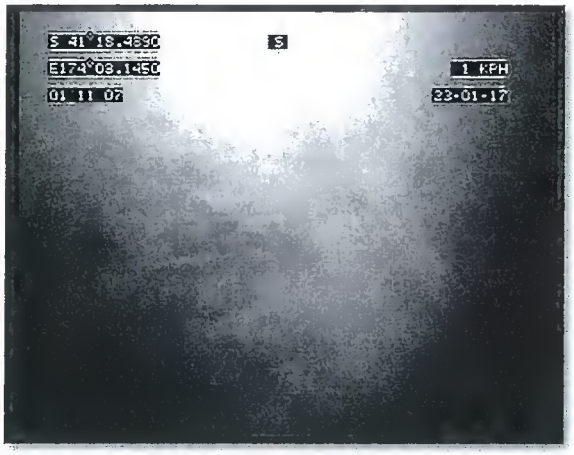
Photo site 4

Photo site 5

Photo site 6

Photo site 7

Photo site 8



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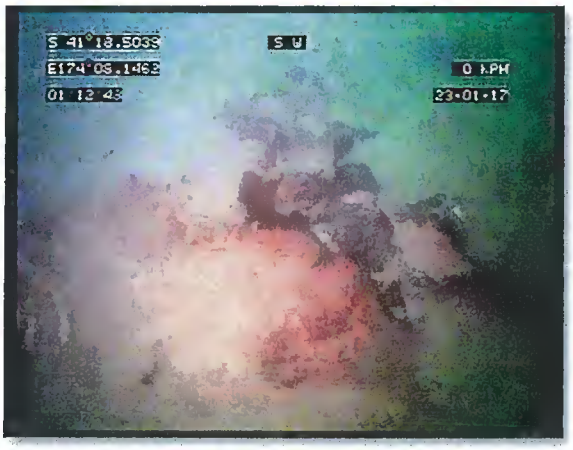

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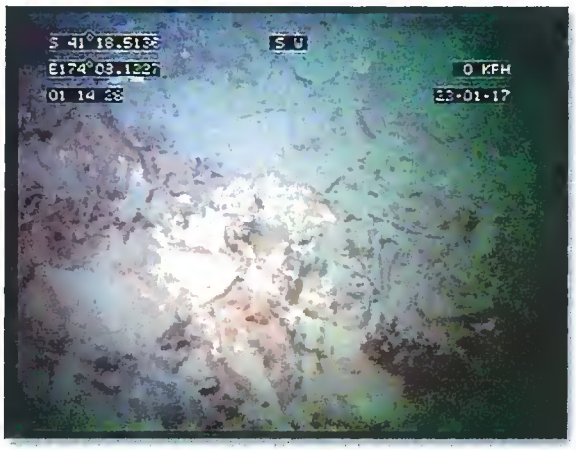
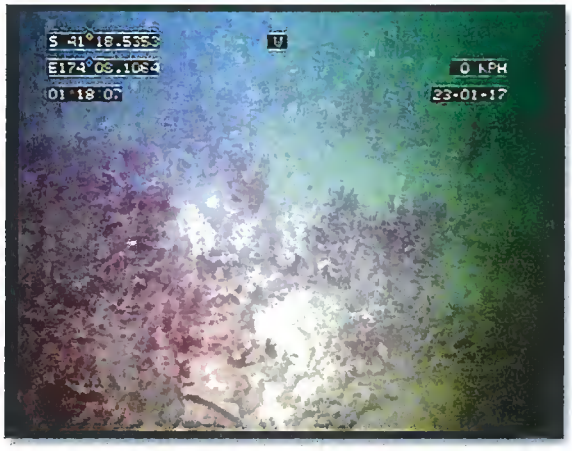


Photo site 11

Photo site 12



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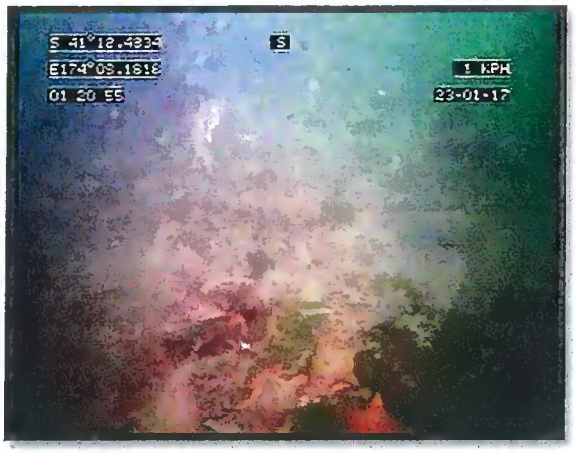

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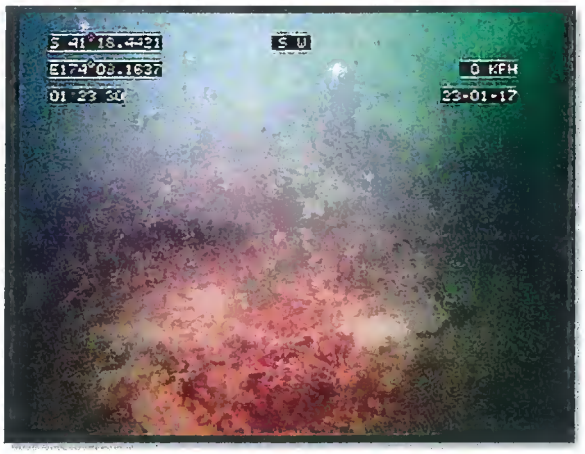

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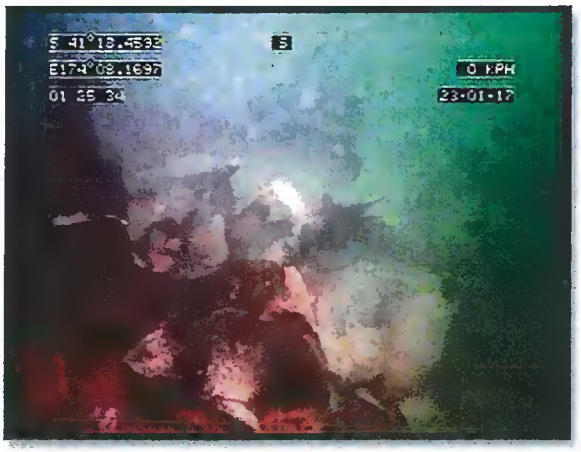

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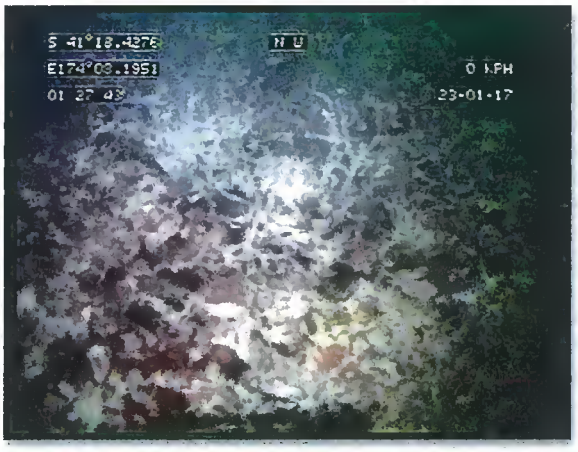

Photo site 17

Photo site 18

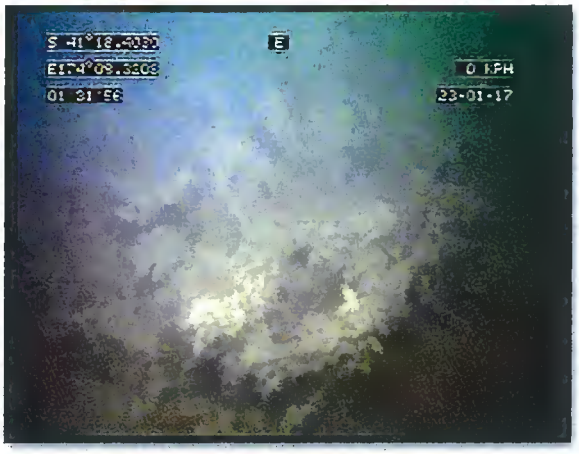

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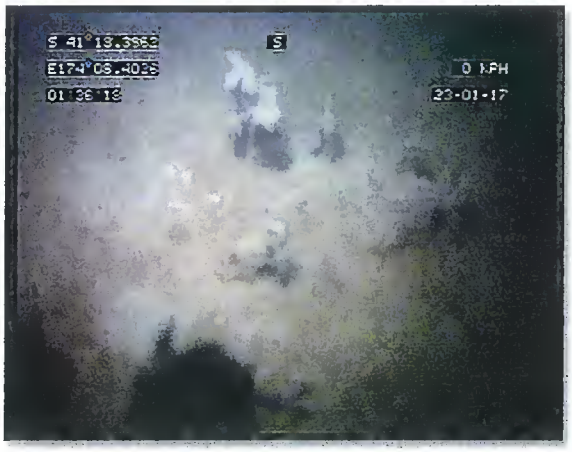
Photo 20



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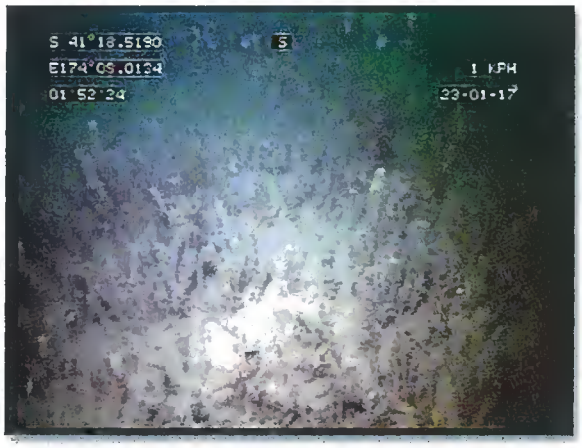

Photo 24