SANFORD LIMITED

PROJECT SOUTH OPEN OCEAN MARINE FARM

Resource Consent Applications and
Assessment of Environmental Effects

5 March 2020

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Form 9 Application

FORM 9

APPLICATION FOR RESOURCE CONSENT

Sections 88 and 145, Resource Management Act 1991

To Environment Southland

1. Sanford Limited (Sanford) applies for the following type(s) of resource consent:

A coastal permit to undertake marine farming at the south eastern end of Foveaux Strait, including the erection and placement of structures and associated disturbance of the seabed, occupation of the coastal marine area, discharge of contaminants to water and various other associated activities as outlined in section 4 of the attached assessment of environmental effects.

2. The activity to which the application relates (the proposed activity) is as follows:

The farming of King salmon at five discrete Farming Areas.

3. The site at which the proposed activity is to occur is as follows:

The proposed activity (known as Project South) will occur in the coastal marine area at the south eastern end of Foveaux Strait. It comprises Five Farming Areas as follows:

Farm Area	Location	Coordinates of the area bounded by the Farming Area	
Farm Area A	Approximately 14.2km southwest of Ruapuke Island	301936	4802411
		305636	4803401
		306376	4800638
		302676	4799648
Farm Area B	Approximately 19.2km south of Ruapuke Island	308558	4795429
		312258	4796419
		312997	4793657
		309297	4792666

Farm Area C	Approximately 14km south south east of Ruapuke Island.	312780	4802116
		316480	4803106
		317219	4800344
		313520	4799353
Farm Area D	Approximately 10.3km south east of Ruapuke Island.	316853	4809908
		320553	4810898
		321291	4808135
		317591	4807146
Farm Area E	Approximately 18.8km south east of Ruapuke Island	322910	4803760
		326613	4804738
		327343	4801973
		323641	4800995

4. The full name and address of each owner or occupier (other than the applicant) of the site to which the application relates are as follows:

The site is located within the common marine and coastal area and therefore is not owned by the Crown or any other person (see section 11(2) of the Marine and Coastal Area (Takutai Moana) Act 2011).

5. There are no other activities that are part of the proposal to which this application relates.

6. No additional resource consents are needed for the proposal to which this application relates.

7. I attach an assessment of the proposed activity's effect on the environment that—

(a) includes the information required by clause 6 of Schedule 4 of the Resource Management Act 1991; and

(b) addresses the matters specified in clause 7 of Schedule 4 of the Resource Management Act 1991; and

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

8. I attach an assessment of the proposed activity against the matters set out in Part 2 of the Resource Management Act 1991.

9. I attach an assessment of the proposed activity against any relevant provisions of a document referred to in section 104(1)(b) of the Resource Management Act 1991, including the information required by clause 2(2) of Schedule 4 of that Act. This includes an assessment against the New Zealand Coastal Policy Statement 2010, the Southland Regional Policy Statement and the Regional Coastal Plan for Southland 2013. For completeness the proposed activity has also been assessed against the relevant provisions of Te Tangi a Tauira – the Iwi Management Plan for Murihiku.

10. As the proposed activity is a new use of the common marine and coastal area it is not affected by section 124 or 165ZH(1)(c) of the Resource Management Act 1991.

11. The proposed activity is to occur in an area where applications have been made for customary marine title under the Marine and Coastal Area (Takutai Moana) Act 2011, but those applications have not been determined to date and there is no relevant planning document prepared by a customary marine title group under section 85 of the Marine and Coastal Area (Takutai Moana)Act 2011.

12. The application is not for a subdivision consent.

13. The application is not for a resource consent for reclamation.

14. I attach the following further information required to be included in this application by the Southland Regional Coastal Plan 2013, the Resource Management Act 1991, or any regulations made under that Act.

This includes an Assessment of Environmental Effects (AEE) and associated appendices. Appendix N to the AEE identifies where the relevant information is provided.

Date: 5 March 2020

Signature:

Alison Undorf-Lay, Industry Liaison Manager, Sanford Limited.

Address for Service: Sanford Limited
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B

PART B

Assessment of Environmental Effects

1. INTRODUCTION

1.1 PROJECT SOUTH

Project South will involve offshore farming of up to 25,000 green wight tonnes (GWT) of King salmon per year using five discrete farming areas at the south eastern end of Foveaux Strait, well to the south of Ruapuke Island (see Figure 1).

This Assessment of Environmental Effects (AEE) is in support of applications to obtain a coastal permit under the Resource Management Act 1991 (RMA) for Project South.

Meeting the ever-expanding demand here and overseas for its premium King salmon product by developing an offshore farm in Southland waters is a logical choice for Sanford, given it has more than 25 years' experience in operating salmon farms in the region and has recently made Bluff its 'Centre of Excellence for Salmon'. An offshore farm in this area will enable Sanford to make efficient use of, and grow, its already significant infrastructure in the region, including its fleet of support vessels, hatcheries and processing plant, and its existing local skill base.

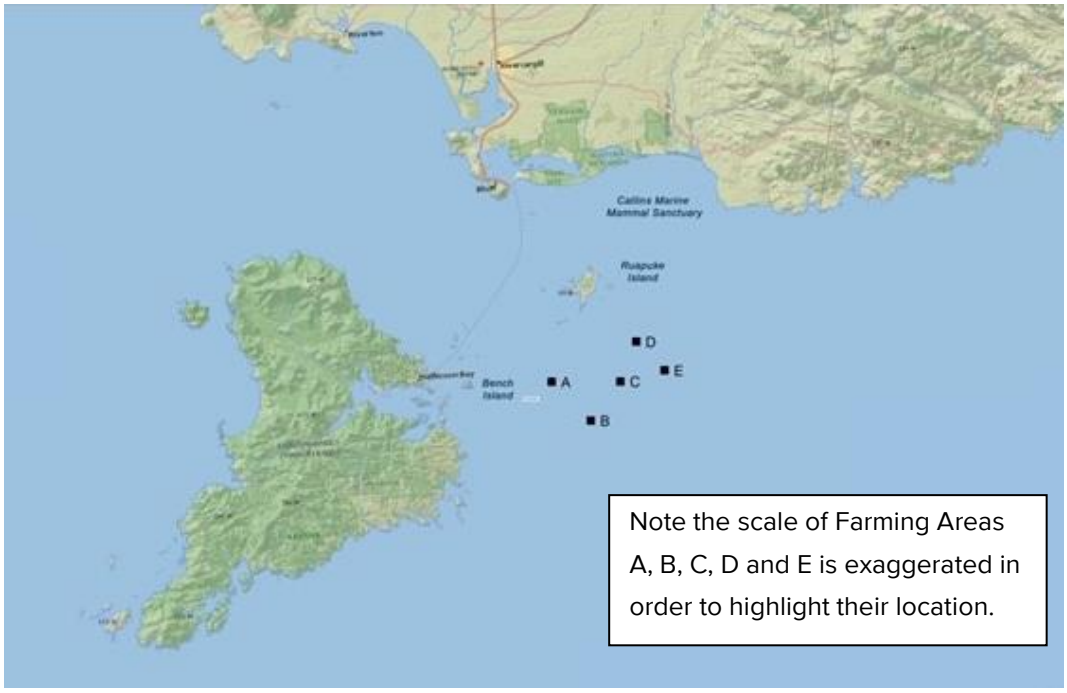

Figure 1: Project South and its Five Farming Areas (A – E).

The choice to have a number of discrete farming areas (but in relative proximity to each other) rather than one larger farm at a single location was made for operational reasons, largely related to fish health, following consultation with leading international salmon farming experts.

The location of the five farming areas, shown as A – E in Figure 1 (hereafter referred to as the "**Five Farming Areas**"), was chosen through a site selection exercise which considered the operational requirements of an offshore farming activity (suitable water depth, water quality, and coastal conditions etc.), environmental imperatives (avoiding significant landscapes, natural character areas, significant ecological areas etc.), and to provide a large buffer from land, in this case Ruapuke Island and the nearby Tītī Islands due to their significant value to tangata whenua.

Sanford has been working with leading global aquaculture technology and service partner AKVA Group to determine an appropriate pen technology for the Project South site. The result is each of the Five Farming Areas will contain a series of up to 10 individual floating pens. The individual pens will:

- Be circular structures.
- Be inter-connected by a grid of subsurface lines and moored to the ocean floor using conventional mooring lines and screw anchors.
- Be serviced by a single centralised barge, with feed being delivered to each pen via hoses/pipes.
- Have no walkways connecting the pens.
- Incorporate a flotation system which can be flooded or inflated to raise and lower the pen structures, as required. This will allow the pens to be submerged below the surface during storm events.

A range of measures are proposed to manage and monitor the effects of Project South on the environment. They have been informed by appropriate expert assessment, and an appreciation of the outcomes sought by the planning framework which applies in this area.

This includes staged development and adaptive management which is the appropriate means of implementing a "precautionary approach" for this activity. It will see the Farming Areas developed incrementally, with a broad range of monitoring undertaken to confirm that environmental effects are as predicted.

1.2 THE APPLICANT – SANFORD LIMITED

Sanford is a long-standing participant in the New Zealand seafood industry and is New Zealand's only publicly listed seafood company. Its operations include catching / farming marine species, contracting, farm services (e.g. float making), processing, packaging and exporting seafood products. Sanford has well established markets domestically and internationally and strives to develop and promote New Zealand seafood products at every opportunity.

Sanford has substantial interest in marine farming in New Zealand with its:

- Greenshell™ mussel hatchery in Nelson, mussel farms in Tasman Bay, Golden Bay, Marlborough Sounds, Canterbury, Rakiura / Stewart Island, Waikato, and Auckland, and mussel processing plants in Blenheim, Havelock and Tauranga.
- Salmon hatcheries in Kaitangata, Waitaki and North Canterbury, salmon farms in Big Glory Bay (Rakiura / Stewart Island) and a salmon processing plant in Buff.

Sanford's salmon farming business currently employs 107 Full Time Equivalent (FTE) people. The Bluff processing plant exclusively processes the King salmon harvest from Sanford's existing farms in Big Glory Bay. Approximately 85% of the salmon produced in Bluff is sold on the domestic market, and the remaining 15% is exported. The plant currently processes approximately 4,000 fish per day on average and sends out up to 20 tonnes of fresh product per day although this will increase by approximately 40 % due to the expansion of activities in Big Glory Bay that is currently underway.

Sanford strives to be a good neighbour in the Rakiura / Stewart Island community and is actively involved in participating in the Southland Marine Farmers' Association based in Rakiura / Stewart Island.

Between 2003 and 2018, Sanford managed the community mussel lines (on the EEC consent) in Big Glory Bay with the profits going to the Rakiura / Stewart Island community. During this time, several hundred thousand dollars has been given back. Since 2008, Sanford has also sponsored the Rakiura / Stewart Island KiwiCan project at the Halfmoon Bay School which has funded two relief teachers, working two days a month at the island school.

Sanford recently established its '10 cents a salmon' fund, from which the community will receive 10 cents for every salmon Sanford processes from its Big Glory Bay farm. The fund is for sport, art, culture and good health and will support projects in the local community where people work together to promote fun, happiness, pride, care and safety. It is a recognition and thank you to the Bluff and Rakiura / Stewart Island communities and for their support of Sanford's salmon farming and processing activities.

1.3 TECHNICAL REPORTS

Sanford is a responsible marine farmer with existing seafood assets and a long-standing presence in the Southland coastal marine area. Consistent with this Sanford has commissioned a full suite of detailed technical reports on Project South from recognised experts in their field. Those reports address:

- The existing environment in which Project South will be located;
- The potential effects of Project South on the environment; and
- Means for managing and monitoring the effects of Project South on the environment.

Full copies of those reports are provided in the Appendices of this AEE. They comprise:

Appendix A A comprehensive synthesis report by Dr Mark James of Aquatic Environmental Sciences of the ecological environment and effects.

Appendix B A report by ADS Environmental Services which describes the benthic environment for Project South.

Appendix C A hydrodynamic modelling report by ADS Environmental Services which addresses water movement in and around the proposed Farming Areas.

Appendix D A depositional modelling report by ADS Environmental Services which identifies the spatial extent and magnitude of feed and faeces deposition to the seabed at the proposed Project South Farming Areas.

Appendix E A nutrient modelling report by ADS Environmental Services which addresses effects of the proposed Farming Areas on nutrient-phytoplankton processes.

Appendix F A report by Dr Barrie Forrest of Salt Ecology which addresses biosecurity.

Appendix G A report by Dr David Middleton of Pisces Research which addresses wild harvest fisheries in Foveaux Strait.

Appendix H A report by Dr Deanna Clement of Cawthron Institute which addresses marine mammals.

Appendix I A report by Dr Rachel McClellan of Wildlands Consultants which addresses seabirds.

Appendix J A report by Frank Boffa which addresses visual amenity, landscape and natural character.

Appendix K A report prepared by experienced mariner Jason Eriksson, which addresses navigation matters.

Appendix L An assessment of Project South against the various planning documents which apply to this area.

Appendix M An assessment of the information provided in this AEE and the associated appendices against the requirements of the Fourth Schedule of the RMA and the information requirements of the Regional Coastal Plan for Southland.

Appendix N A preliminary pen and grid configuration report by AKVA, prepared by Mark Porter of Porters Primary Production & Consulting.

1.4 REPORT STRUCTURE

This AEE addresses all the matters Sanford is required to address in these consent applications by Schedule 4 of the RMA. It is set out in 11 sections as follows:

Section 1 Is this introduction.

Section 2 Provides background information on the demand for King salmon and additional growing space, and why Sanford has chosen the waters at the south eastern end of Foveaux Strait for Project South.

Section 3 Provides a description of the activities for which consent is sought.

Section 4 Sets out the activity status of the resource consents sought and the scope of the relevant matters when considering the applications

Section 5 Describes the existing environment for the proposed activities

Section 6 Assesses the effects of granting the consents sought.

Section 7 Provides a summary of the measures proposed by Sanford to avoid, remedy or mitigate any actual or potential effects on the environment, and proposed monitoring.

Section 8 Describes the consultation undertaken in respect of these resource consent applications and confirms Sanford's request that the applications be subject to a full public notification process.

Section 9 Is an assessment of the key directives in the relevant planning documents, and how the proposed activities sit in relation to them.

Section 10 Sets out the RMA statutory framework which applies to resource consent applications and assesses the proposal against those provisions.

Section 11 Is a concluding comment.

2. PROJECT RATIONALE AND SITE SELECTION

2.1 THE DEMAND FOR KING SALMON AND NEW FARM SPACE

The New Zealand Aquaculture Strategy (NZ Aquaculture Strategy) identifies that New Zealand's aquaculture industry is well placed to help meet growing international and domestic demand for sustainable and ethically produced seafood.

The NZ Aquaculture Strategy identifies the potential for aquaculture to move from a $600 million, to a $3 billion industry in New Zealand by 2035, and be a more significant part of a lower emissions economy. It notes there are three key drivers that make this goal achievable:

- Maximising the value of existing farms through innovation.
- Extending into high value land-based aquaculture.
- Extending aquaculture into the open ocean.

Sanford is proactively working in all three of these fields, and central to its work on the third one is Project South.

Sanford needs to grow its salmon farming operations and access new salmon farming space if it is to realise the ever-expanding demand here and overseas for its premium King salmon product. Project South would do this by enabling Sanford to farm its fish sustainably in several complementary offshore locations in the Southland Region.

2.2 INVESTING IN SOUTHLAND

As noted above, Sanford has more than 25 years' experience in operating salmon farms in Southland. In 2019 Sanford announced that Bluff is its 'Centre of Excellence for Salmon'. Sanford also farms mussels in Big Glory Bay and holds a significant stake in the local wild bluff oyster fishery.

Locating Project South in Southland is therefore a logical choice for Sanford, and will enable it to make efficient use of and grow its already significant infrastructure in the region, including:

- Its existing staffing capacity and salmon farming expertise in the region.
- Its onshore facilities in Southport.
- Its salmon hatchery capacity in the southern half of the South Island.
- Its salmon processing plant in Bluff.
- Its valued, long term relationships with existing suppliers and external contractors including shipyards, aquaculture equipment manufacturers and suppliers, fish feed suppliers and local contractors.

2.3 SITE SELECTION

2.3.1 Selecting the Project South Site

A site selection exercise was undertaken to identify an area off the coast of the southern part of the South Island suitable for the project.

Fundamental overarching criteria for site selection included:

- Suitable water depth, water quality, and coastal conditions (currents / wave heights etc) for farming King salmon; and
- Avoiding locating in, and providing a buffer from, coastal protection areas, marine reserves, other known areas of significant environmental and cultural value and outstanding natural features and landscapes.

A large area at the south eastern end of Foveaux Strait, well to the south of Ruapuke Island, meets these criteria.

2.3.2 Selecting Project South's Five Farming Areas

Sanford has identified that over the next 35 years it will require at least an additional 25,000 GWT of King salmon production to meet market demand.

A range of scenarios were considered for how this could be achieved within the area identified as being suitable for Project South.

With input from leading experts in offshore salmon farming, it was decided that having a number of discrete farm areas (but in relative proximity to each other) was preferable to having one larger farm at a single location. In that regard, Sanford has determined that five separate Farming Areas represent an optimum configuration, and that good farm management practices dictate that the individual farming areas under the same management should be located at least eight kilometres from each other.

The location of the Five Farming Areas which were subsequently selected for Project South is shown in Figure 2 below and is described in more detail in Section 3. Factors which contributed to the final choice of location for the Five Farming Areas included:

- Maintaining at least eight kilometres between the Five Farming Areas, primarily for fish health and biosecurity reasons.
- Providing a significant buffer between the Five Farming Areas and the commercial Bluff oyster beds.
- Locating the Five Farming Areas over areas of seabed with no important benthic diversity and / or valued benthic habitat.

- Providing a large buffer between the Five Farming Areas and Ruapuke Island and the nearby Tītī Islands due to their significant value to tangata whenua.

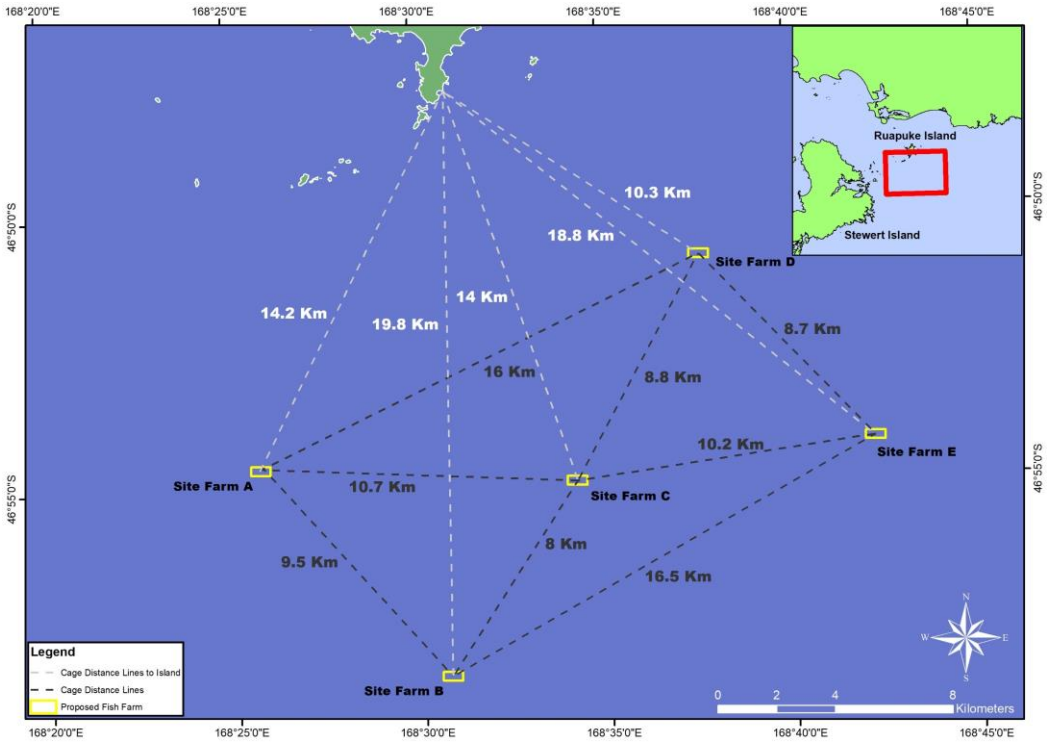

Figure 2: **The location of the Five Farming Areas relative to each other and Ruapuke Island.**

3. DESCRIPTION OF THE PROPOSED ACTIVITY

3.1 INTRODUCTION

Project South will involve farming up to 25,000 GWT of King salmon per year using Five Farming Areas at the south eastern end of Foveaux Strait.

Each of the Five Farming Areas will contain up to 10 individual pens. The individual pens will:

- Be circular structures.
- Be inter-connected by a grid of subsurface lines and moored to the ocean floor using conventional mooring lines and screw anchors.
- Be serviced by a single centralised barge, with feed being delivered to each pen via pipe/hose system.
- Have no walkways connecting the pens.
- Incorporate a flotation system which can be flooded or inflated to raise and lower the structure as required. This will allow the pens to be submerged below the surface during storm events.

The following sections provide a more detailed description of:

- The location of the Five Farming Areas.
- The extent of coastal marine area within each of the Five Farming Areas that would be occupied by structures.
- The various project elements at the Five Farming Areas, including the pens, mooring system and ancillary infrastructure.
- Project South farming operations.
- The proposed staged development approach for Project South.

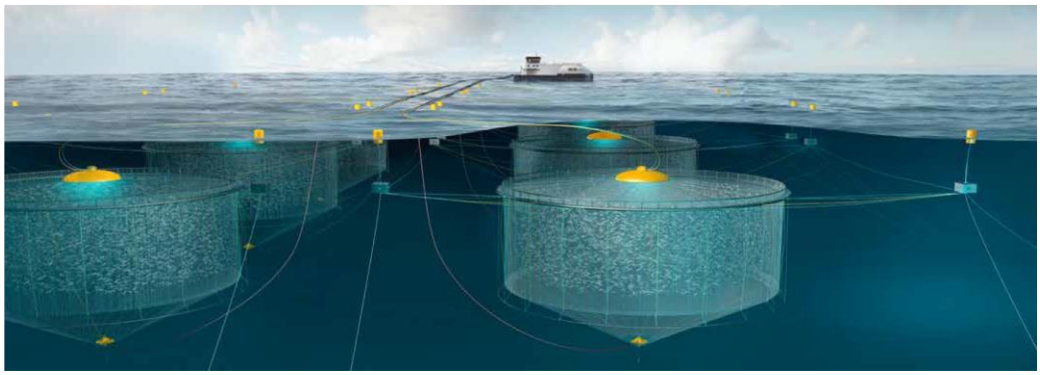

Figure 3: **Schematic diagram of the Project South pens, barge and associated mooring lines and feed pipes/hoses in subsurface positions.**

3.2 THE LOCATION OF PROJECT SOUTH AND THE FIVE FARMING AREAS

The precise location of Project South and its Five Farming Areas is shown in Figure 4. Coordinates are provided in Table 1.

It is proposed that the pens and the associated grid and mooring system at each Farming Area could be located anywhere within the area bounded by red rectangles in Figure 4 and the coordinates in Table 1, but, as set out in Section 3.3 below only a small part of each of the Five Farming Areas will be occupied by surface and subsurface structures.

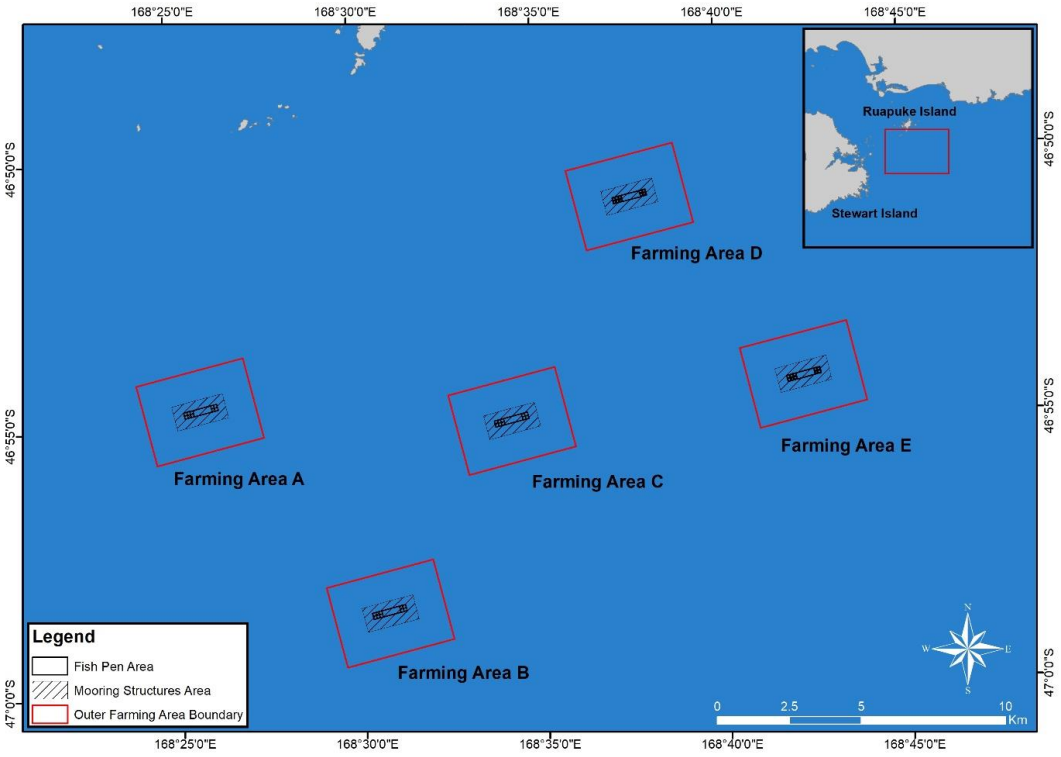

Figure 4: **Location of the Five Farming Areas.**

Table 1: Coordinates of the Five Farming Areas.[1]

Farm Area	Easting	Northing	x (Decimal Degree)	y (Decimal Degree)	x (DMS)	y (DMS)
Farm Area A	301936	4802411	168.399454	-46.902289	168° 23' 58.0344" E	46° 54' 8.2404" S
	305636	4803401	168.448404	-46.894479	168° 26' 54.2544" E	46° 53' 40.1244" S
	306376	4800638	168.456927	-46.919532	168° 27' 24.9372" E	46° 55' 10.3152" S
	302676	4799648	168.407955	-46.927345	168° 24' 28.638" E	46° 55' 38.442" S
Farm Area B	308558	4795429	168.483365	-46.966997	168° 29' 0.114" E	46° 58' 1.1892" S
	312258	4796419	168.532364	-46.959153	168° 31' 56.5104" E	46° 57' 32.9508" S
	312997	4793657	168.540935	-46.9842	168° 32' 27.366" E	46° 59' 3.12" S
	309297	4792666	168.491914	-46.992048	168° 29' 30.8904" E	46° 59' 31.3728" S
Farm Area C	312780	4802116	168.541574	-46.908084	168° 32' 29.6664" E	46° 54' 29.1024" S
	316480	4803106	168.590511	-46.900213	168° 35' 25.8396" E	46° 54' 0.7668" S
	317219	4800344	168.599101	-46.925256	168° 35' 56.7636" E	46° 55' 30.9216" S
	313520	4799353	168.550142	-46.933131	168° 33' 0.5112" E	46° 55' 59.2716" S
Farm Area D	316853	4809908	168.59813	-46.839158	168° 35' 53.268" E	46° 50' 20.9688" S
	320553	4810898	168.647	-46.83127	168° 38' 49.2" E	46° 49' 52.572" S

[1] Coordinate system: NZGD 2000 UTM Zone 59S.

Farm Area	Easting	Northing	x (Decimal Degree)	y (Decimal Degree)	x (DMS)	y (DMS)
	321291	4808135	168.655597	-46.856312	168° 39' 20.1492" E	46° 51' 22.7232" S
	317591	4807146	168.606705	-46.864203	168° 36' 24.138" E	46° 51' 51.1308" S
Farm Area E	322910	4803760	168.675112	-46.896083	168° 40' 30.4032" E	46° 53' 45.8988" S
	326613	4804738	168.724057	-46.888259	168° 43' 26.6052" E	46° 53' 17.7324" S
	327343	4801973	168.732594	-46.913312	168° 43' 57.3384" E	46° 54' 47.9232" S
	323641	4800995	168.683627	-46.921139	168° 41' 1.0572" E	46° 55' 16.1004" S

3.3 FARM LAYOUT AND AREA OCCUPIED

The proposed layout for structures at each of the Five Farming Areas is shown in Figure 5. Key points to note are:

1. Pen configuration will consist of a 3x2 and 2x2 design to optimise grid strength and will sit 10-15° off the prevailing wind and wave direction.

2. Pens will have a nominal 120m circumference (~38 metre diameter) and be located within a 110m x 110m square grid.

3. The mooring line ratio for the pens and grid will be no greater than 4:1 (an approximate 320m maximum length).

4. The barge at each of the Five Farming Areas will sit between the grids and parallel to the prevailing conditions. The barge moorings will utilise the width of two pen bays (and will require two mooring lengths in total). This will mean that all pens and the associated feeding systems will be within 650 metres of the barge.

5. The total surface area that the pens, the associated grid system and the barge would occupy within each of the Five Farming Areas, will be no more than 26.2 hectares, as depicted in dark blue in Figure 5 (hereafter referred to as the "**Farm Pen Area**")

6. When the necessary allowance is made for subsurface mooring lines the overall area occupied by structures at each of the Five Farming Areas will be no more than 157.4 hectares (as depicted in light blue in Figure 5) (hereafter referred to as the "**Mooring Structures Area**").

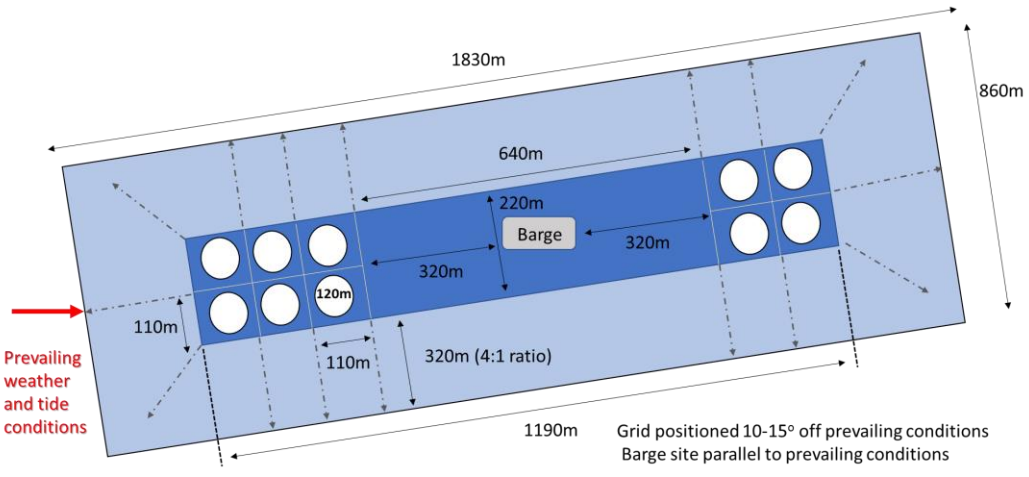

Figure 5: Example layout for a Project South farmed area using 120 m circumference pens.

3.4 FARM ELEMENTS

3.4.1 The Pens

Sanford has been working with leading global aquaculture technology and service partner AKVA Group to determine an appropriate pen technology for marine farming at the Project South site. In that regard, the conceptual design for the pens is based on the floating AKVA Atlantis pen system which is designed to be a fully submersible structure and operate in dynamic ocean environments. Moored to the seabed, its floatation system can be flooded or inflated to raise and lower the structure as required (see Figure 6).

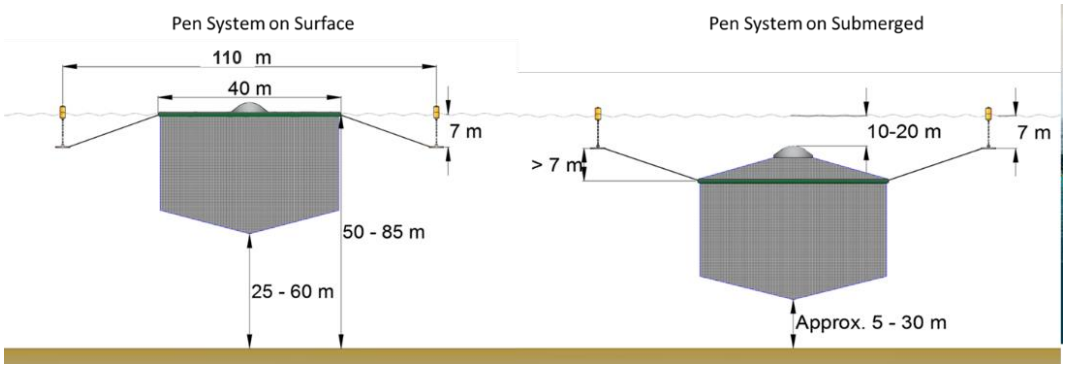

Figure 6: Schematic of the AKVA Atlantis pens (indicative measurements are shown for a 120m circumference pen option).

Such a system would allow the pens to be submerged during extreme weather conditions.

Each pen will include a high-density polyethylene (HDPE) (or similar) surface fish containment net having a spacing of no more than 50mm. This will prevent birds and other predators accessing the pen and avoids the need for the thinner bird netting and poles often associated with salmon farms (see Figure 7). Three metre jump poles will also be utilised in order to further inhibit predator ingress while the pens are on the ocean surface.

The design life of all the structures at the Farming Areas will extend beyond the 35 year term of consent sought.

Figure 7: Example of an Atlantis pen (with netting removed while fish are being received).

As is the case at Sanford's Big Glory Bay farms, specific predator nets are not expected to be necessary because a heavy sinker ring will be included to ensure that the nets are always kept taut.

All daily fish husbandry tasks will be conducted below the water's surface (see Figure 8). Feeding will be performed at a minimum depth of 3 metres using a centralised air dome. Underwater cameras and related sensors will allow constant monitoring of the pen environment including feeding behaviour. This assists to optimise feed release and minimise deposition of uneaten feed below the pens. It has the added advantage of not attracting seabirds.

Subsurface lighting of the pens will be utilised to suppress maturation of the fish. These lights will be focussed downwards in order to prevent light spill. No surface lighting will be required (aside from navigational lighting as discussed in Sections 6.4 and 7.3).

The control barge at each of the Five Farming Areas will be painted in an anti-reflective colour, likely 'Sanford Blue' (also known as Ocean Blue E992), as is the case for all existing Sanford aquaculture vessels.

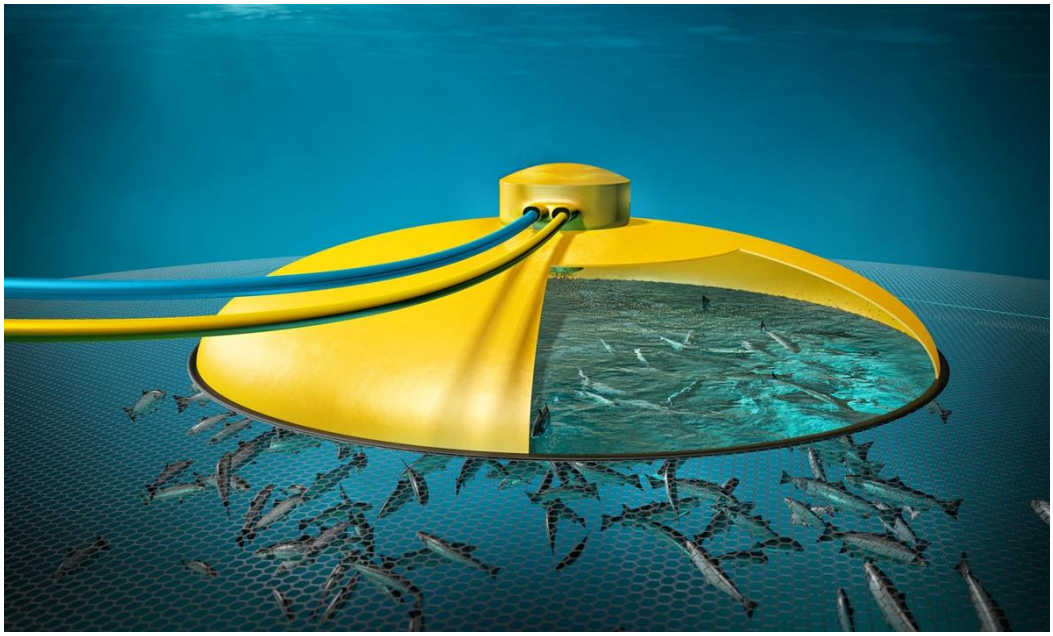

Figure 8: Subsurface fish feeding.

3.4.2 Mooring System

The pens would be inter-connected by a grid of subsurface lines and moored to the ocean floor using conventional mooring lines and screw anchors. An indicative mooring plan is shown in Figure 4 of the Porters Primary Production & Consulting Report included in **Appendix N**. This is proven technology and suitable for the dynamic environment in which the Five Farming Areas would be located.

Global positioning systems and strain gauges with telemetry back to the control barge (the control hub for each farm) and the land-based operation, will be used to continuously monitor any movement of the grids and strain on moorings. In-built electronic alerts will provide 24/7 monitoring and corrective actions.

3.4.3 Ancillary Infrastructure and Service Vessels

Each of the Five Farming Areas will have its own dedicated barge which will be the hub for all activity on individual Farming Areas. The barge will receive and store salmon feed, be the control centre (conduit) port for all pipes/hoses and will contain the compressors needed to quickly submerge and lift the farm to the surface. While the feeding of fish will be controlled remotely, the actual feed-out equipment including underwater cameras and spinners will be run from the barge hub. The barge will also be the central point on each farm where the shore-to-farm transfer boats drop off staff and equipment. The stationary farm barges will have an approximate 600 tonne feed storage capacity and will be no higher than 10 metres above the waterline. The farm barges will be manned during the day and on occasion staff will stay overnight. They will have a galley and staff room, and all grey and black water will be collected and transferred back to Bluff for disposal.

Various service vessels will periodically visit each of the Five Farming Areas, including:

- A wellboat, which is used to transport live fish to and from the pens.
- A net cleaning boat, which cleans slime and algae build up from the nets.
- A staff transport vessel, which moves people and gear on a daily basis.
- A bio-collection vessel to move around the pens collecting any mortalities.
- A work boat with heavy lifting capability, which is able to move nets, lift equipment in and out of the pen.
- A harvest vessel, for harvesting and transportation of fish to Bluff for processing.

These vessels (depending on their function) will either have Bluff or Rakiura / Stewart Island as their home port, and it is unlikely that they moor overnight at the Farming Areas.

3.5 FARMING OPERATIONS

3.5.1 Single Year Classes

Each of the Five Farming Areas will operate on an 'all in, all out' basis, where all the fish on the farm are from a single year class.

The fish will arrive on the farm in the manner described in Section 3.5.2 below. They will be juveniles ranging between 80 grams and 1 kilogram depending on where they originate and on the current input strategy. Fish at about 80 grams will be sourced directly from the Sanford hatchery as smolt. The 1 kilogram fish will arrive for on-growing after spending time in Sanford's Big Glory Bay smolt farm.

Once they have reached target weight, all the fish will be harvested in the manner described in Section 3.5.6.

Once all the fish in a particular Farming Area have been harvested, that area will be left to rest, typically for a period of at least 1 to 2 months before it is restocked with a new year class. During the resting period, farm maintenance will take place, including, for example, swapping out of nets and maintenance to feed equipment.

3.5.2 Delivery of Fish

Smolt will be transported from Sanford's land-based hatcheries to Bluff by truck.

Once in Bluff, the smolt will be shipped to the Farming Area. Once at the Farming Area, the fish will be piped into the pens.

Fish that are moved to the Five Farming Areas from the Big Glory Bay salmon farms will be moved by wellboat. They will be pumped onto the boat, transported to the new Farming Area and then pumped back into pens.

All fish transfers will be managed to strict biosecurity and animal welfare protocols and staff will be trained in Standard Operating 'Fish Transfer' Procedures.

3.5.3 On Farm Growing

Day to day operations at the Farming Areas will be based on achieving good growth and feed conversion efficiencies. The use of in-pen feeding cameras and pellet recognition software, will allow feeding staff to ensure optimal feed utilisation and minimise the potential benthic impact of feed wastage.

Feeding will be controlled from a remote station, probably in Bluff or on Rakiura / Stewart Island. The feed hoppers on the control barge at each Farming Area will be filled by a service vessel 2 to 3 times per week, depending on the requirements.

3.5.4 Farm Maintenance

Each Farming Area will be maintained in good effective working order at all times.

The timing of maintenance work will be weather dependant – during periods of good weather the farm will be visited daily to ensure that all systems are in good working condition and there are no integrity breaches.

3.5.5 Mortalities

All fish mortalities will be collected daily, either by divers or by an automatic airlift system, and ensiled on the barge. The ensiled mortalities will be removed regularly to Bluff where they will be processed into fertiliser or other value-added products.

3.5.6 Harvesting

During the harvesting process, fish will be pumped onto the harvest vessel where they will be humanely stunned, bled and then chilled to ensure quality. The harvest vessel will transport the fish back to the processing plant in Bluff.

3.5.7 Offloading

Sanford leases the No. One wharf at South Port, along with an associated warehouse and cold stores. These facilities will continue to be used to receive and store fish feed and other equipment, and to store processed, frozen fish prior to export.

3.5.8 Processing

Processing harvested salmon will occur at a Sanford processing factory in Bluff, initially in the existing factory and, as volumes increase, in a new purpose-built salmon plant.

3.6 CONSTRUCTION

Farm pens will be constructed in the Bluff area and towed to the mooring systems at the Five Farming Areas. Feed barges will likely be manufactured overseas.

The mooring systems will be installed from specialised boats according to the manufacturer's specifications. All parts of this work, installation and maintenance will be detailed and specified so that insurance cover is maintained.

Fish nets will be pulled out of the water on an annual basis and taken to Bluff (or further inland) to be thoroughly cleaned and endurance tested.

3.7 STAGED DEVELOPMENT

All new marine farming activities involve some degree of uncertainty in respect of their effects on the environment, irrespective of the extent of predevelopment assessment work undertaken. For larger scale projects in new areas, it is generally expected that development would occur in stages and an adaptive management approach adopted. This is a precautionary approach and will be followed by Sanford with Project South.

It is proposed that Project South will be implemented in five Stages, as follows:

Stage 1 The development and operation of between 4 and 6 pens at two individual Farming Areas.

Stage 2 The development and operation of between 8 and 10 pens at the two individual Farming Areas developed during Stage 1.

Stage 3 The development and operation of between 4 and 6 pens at two other individual Farming Areas.

Stage 4 The development and operation of between 8 and 10 pens at the two individual Farming Areas developed during Stage 3.

Stage 5 The development and operation of the fifth Farming Area.

The development of individual farming areas in Stages 1 and 2 may occur approximately 12 months apart to ensure a continuity in supply of fish to the market, given that each Farming Area will contain fish from a single year class. This may also occur in Stages 3 and 4.

Each of Stages 1 – 4 will take in the order of five years to complete and is expected to involve the following elements:

- The collection of at least 12 months' pre-development environmental monitoring data at and around each Farming Area.[2]
- Development and operation of each Farming Area.
- The collection and analysis of environmental monitoring data at and around the Farming Area.
- Once all the pens in the Farming Areas in a particular Stage have been fully developed and at least 12 months of environmental monitoring data has demonstrated that the environmental effects of that development are as expected, planning for the next stage of development will be undertaken.

Stage 5 will commence with the collection of at least 12 months' pre-development environmental monitoring data at and around the fifth Farming Area, but given the experience gained during Stages 1 – 4, it is anticipated that all 10 pens would be then be able to be developed and operated.

3.8 OTHER MATTERS

3.8.1 Accommodation

Currently Sanford provides accommodation for up to 20 staff members on Rakiura / Stewart Island. In addition, many staff and their families live permanently on the Island and own or rent their own homes. Notwithstanding that, it is well recognised that accommodation options on the Island are critically short, particularly with the increase in local tourism and increasing popularity of short-term rentals.

Staff working on the proposed Five Farming Areas will mostly come from Rakiura / Stewart Island, Bluff and possibly further afield. They will include a combination of shift workers and Monday to Friday crew. In the ordinary course of events it is not anticipated that staff will stay overnight on the Five Farming Area sites, however, they may choose to if weather conditions allow and when there are specific work requirements.

While the barge at each of the Five Farming Areas will have ablution facilities for use by staff onsite, all grey and black water from those barges will be collected and transferred back to Bluff for disposal as occurs currently at Big Glory Bay.

3.8.2 Discharges

The only potential discharges at the Five Farming Areas will be:

[2] Pre-development environmental monitoring for Stages 2 and 4, will likely be undertaken as part of the pre-development monitoring for Stages 1 and 3, respectively.

- The discharge of feed using a subsurface mechanism in the manner described in Section 3.4.1; and
- Any application of medical therapeutants, which, in the unlikely event of being needed, would occur under strict procedures and at the direction of a specialist veterinarian (not having been required in all of Sanford's 25 years of operating in Big Glory Bay).

3.8.3 Hazardous Substances

A range of hazardous substances are currently stored at Sanford's Big Glory Bay salmon farms, and it is expected these substances will also be stored at the Five Farming Areas. They include:

- Small quantities of various cleaning and hygiene products.
- Various lubricants.
- Various disinfectants and substances for biosecurity prevention (e.g. footbath formula).
- Various paints and sealants.
- Engine oil, hydraulic fluid, diesel fuel and petrol.

The specific substances and exact volumes of each that may be stored and used at each of the Five Farming Areas is not yet known. However, for the purposes of considering this consent application Sanford confirms that:

- The use and storage of these substances at sea will be in accordance with the strict controls in the various statutes administered by Maritime New Zealand, including the Health and Safety at Work (Hazardous Substances) Regulations 2017, and the maritime and marine protection rules, which are statutory instruments (or secondary legislation) made by the Minister of Transport under the Maritime Transport Act 1994. This includes the strict requirements relating to planning and response to spills.
- The use and storage of hazardous substances does not trigger a requirement for resource consent under the Southland Regional Coastal Plan – noting that none of the Five Farming Areas will include a structure being erected for the storage or containment of petroleum, petroleum products or liquid contaminants in quantities greater than 50,000 litres.

This is an appropriate response and adverse effects are not expected.

3.8.4 Noise Generating Activities

Compressors will be contained and operated on each farm barge, and the only other notable noise generating activity at the Five Farming Areas will be noise from the feeding system, the sinking and raising of pens, and the operation of service vessels.

3.8.5 Antifouling

No antifouling chemicals will be applied to the marine farming structures (including the ropes, nets and pens. No anti-fouling chemicals will be stored on the barge

The resident feed storage barge on each farm will be antifouled to the manufacturer's instructions. This work is overseen by marine engineers and is documented in the internal Sanford 'Work Mate' and asset management software programme. Whole of life work programmes are determined prior to acquiring any new asset (vessel or new nets etc) and scheduled in and audited for compliance. Vessel repair and maintenance will be outsourced and carried out by approved contractors.

4. RESOURCE CONSENT REQUIREMENTS

Sanford is seeking a single coastal permit which covers all the Project South activities across its Five Farmed Areas. Table 2 sets out Sanford's assessment of the rules in the Southland Regional Coastal Plan (Coastal Plan) which trigger the requirement for that coastal permit and their activity status.

Table 2: Resource consents required and activity status.

Activity	Rule and Activity Status	Comment
Marine Farming	Rule 15.1.7 – discretionary activity	Marine farming in this location is a discretionary activity
Introduction of exotic fauna into Southland waters.	5.4.3.1 Discretionary activity 5.4.3.2 Non-complying activity.	Young smolt will be transferred to the Five Farming Areas from Sanford's hatcheries, including its existing hatcheries in Otago and Canterbury, and its planned new hatchery in Southland. Rule 5.4.3.2 makes this transfer a non-complying activity when it is into waters within 12 nautical miles of the Rakiura / Stewart Island coast. As per Figure 5.4.3.1. Farm sites A and B are located within those waters. Farm Sites C, D and E are outside those waters, and the transfer of young smolt those farms is a discretionary activity under Rule 5.4.3.1.

Activity	Rule and Activity Status	Comment
Discharges of feed stock and therapeutants associated with the operation of Project South farms.	Rule 7.3.8.1.1 – discretionary activity	Feed stock will be discharged at the Five Farmed Areas. Medical therapeutants may also be administered under strict procedures and at the direction of veterinary instruction. These discharges are a discretionary activity under Rule 7.3.8.1.1.
	Rule 7.2.2.2 – restricted discretionary activity	Figure 7.2.2.1 of the Coastal Plan identifies that the Five Farming Areas are located in the marine area to which Rule 7.2.2.2 applies.
Occupation of the coastal marine area by marine farm structures.	Rule 9.1.1 – discretionary. Rule 9.1.2 - discretionary	The occupation of the coastal marine area by the Project South marine farming structures would be a discretionary activity under Rule 9.1.1 and 9.1.2
Mooring of the barge	Rule 9.2.1 - discretionary	The barge at each of the Five Farmed Areas will be used as a base for staff when onsite. These barges are captured by the definition of 'ship' in the Coastal Plan. The use of a ship as a base is a discretionary activity under Rule 9.2.1.
Disturbance of the coastal marine area	Rule 10.1.5 – discretionary Rule 10.1.6 - discretionary	The installation of the pens will require installation of screw anchors into the seabed. This is a discretionary activity under Rule 10.1.5. Other disturbance is a discretionary activity under Rule 10.1.6,
Deposition of material on the seabed	Rule 10.2.4 - discretionary	Salmon farming at the Five Farming Areas will cause some deposition of organic material on the seabed. This deposition is a discretionary activity under Rule 10.2.4.
Erection of farm structures in the CMA	Rule 11.2.6(2) - discretionary	The Five Farming Areas are not located within the area Rule 11.2.6(1) identifies the erection of new structures as being subject to non-complying activity status. The erection of farm structures is therefore a discretionary activity under Rule 11.2.6(2).
	Rule 11.7.6.1 – controlled	The construction of navigation aids under 2m in height and their occupation of the CMA is a controlled activity under Rule 11.7.6.1. Navigation

Activity	Rule and Activity Status	Comment
	Rule 11.7.6.2 - discretionary	aids over 2m in height are a discretionary activity. Both will be required at the Five Farming Areas.
Maintenance and repair of farm structures in the CMA	Rule 11.4.1(2) - discretionary	The maintenance and repair of Project South farm structures is a discretionary activity. It is not a permitted activity as the net structures will prevent fish from travelling through the structure and will not meet Rule 11.4.1(1)(v).
	Rule 7.3.8.2.2 controlled	While many biofouling organisms will be rendered unviable through the destructive nature of physical cleaning processes, it is not possible to guarantee that all organisms will be killed through the cleaning process. The high current speeds in the area also mean that it is not practical to capture all the waste material from cleaning. It has therefore been assessed the proposal cannot comply with condition (b) of permitted activity Rule 7.3.8.2.1 and is a controlled activity under Rule 7.3.8.2.2. The matters that Council will restrict its control to are: • methods used; • action taken to avoid, remedy or mitigate the effects of any discharges; • position or disposal of cleaning materials; • waste or marine growths; and • any monitoring requirements that may be appropriate.
Storage of fuel or other hazardous substances	No applicable rule	The erection of structures for the storage or containment of petroleum, petroleum products or liquid contaminants in quantities greater than 50,000 litres is a discretionary activity. This will not occur at any of the Five Farming Areas.
Drone monitoring	Rule 5.5.4(a)(iii) – Permitted Activity	As occurs at its Big Glory Bay salmon farms Sanford may use a drone for aerial monitoring of water quality. The take-off and landing of the drone in the area where the Five Farming Areas are located would be a permitted activity under Rule 5.5.4.

There is one non-complying activity rule which applies here. It covers the introduction of exotic fauna from outside the Southland region into the waters within 12 nautical miles of Rakiura / Stewart Island. It applies to the transfer of young salmon smolt (an exotic fauna) from Sanford's hatcheries in Otago and Canterbury but only to Farming Areas A and B (Farm Sites C, D and E are outside those waters, and the transfer of young smolt those farms is a discretionary activity under Rule 5.4.3.1). If all Sanford's hatcheries were located in the Southland region, the introduction of those smolt would be a permitted activity, and the overall activity status of the coastal permit required for Project South would be discretionary.

5. EXISTING ENVIRONMENT

5.1 ENVIRONMENTAL SETTING

The Five Farming Areas are located in an open sea setting, at the south eastern end of Foveaux Strait, between 10 and 20 kilometres south east of Ruapuke (see Figure 9).

Foveaux Strait is located between the bottom of the South Island and Rakiura / Stewart Island. The Strait is mainly flat bottomed with water depths generally 20 - 35 m deep. However, its south eastern corner where the Five Farming Areas would be located is between approximately 50 and 80 metres deep.

The location of the Five Farming Areas has little or no visible relationship to any land mass.

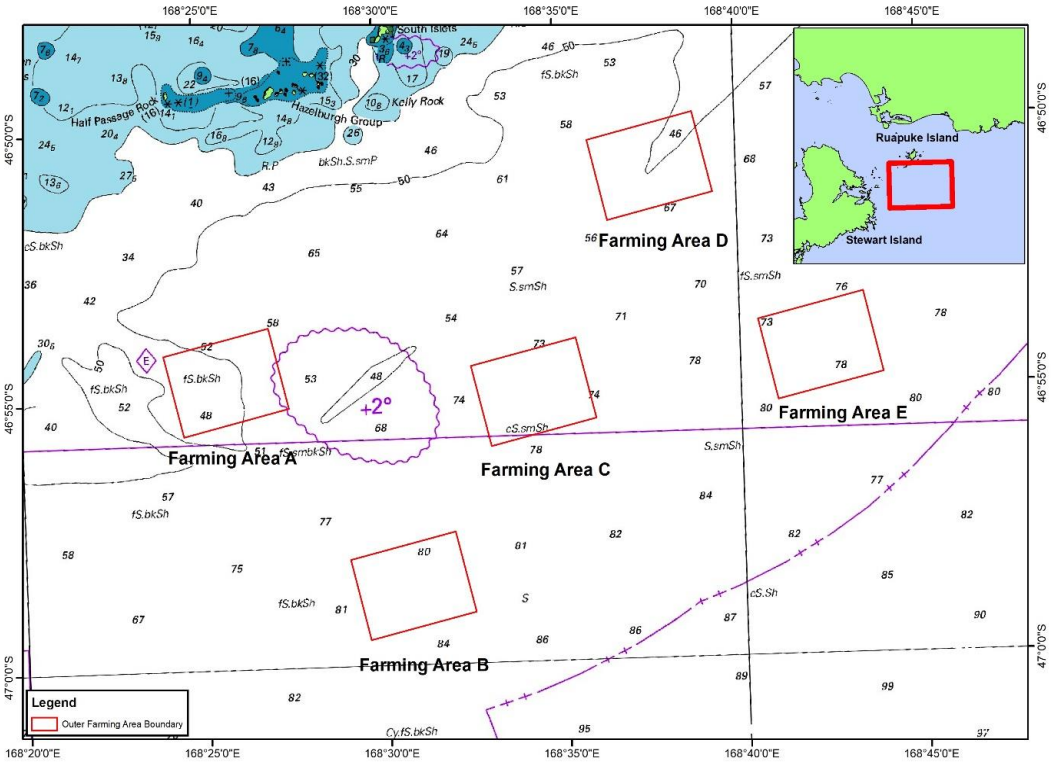

Figure 9 Environmental setting for Project South.

5.2 CULTURAL SETTING

Project South falls entirely within the takiwā of Ngāi Tahu. In its modern form Ngāi Tahu is an amalgamation of three main strands of whakapapa (ancestry) – Waitaha, Ngāti Mamoe and Ngāi Tahu. The iwi of Ngāi Tahu comprises 18 papatipu rūnanga and a tribal structure including a governing body called Te Rūnanga o Ngāi Tahu, as set up in the Te Rūnanga o Ngāi Tahu Act 1996. There are four papatipu rūnanga whose rohe includes the seascape in which Project South would be located. These are the Awarua, Hokonui, Ōraka Aparima and Waihopai rūnanga – the four papatipu rūnanga in the Murihiku area.

Details of Ngāi Tahu's cultural, spiritual, historic, and traditional association to this area is provided in Schedule 104 of the Ngāi Tahu Claims Settlement Act 1998, which contains the statutory acknowledgement for Rakiura/Te Ara a Kiwa (Rakiura/Foveaux Strait Coastal Marine Area).

The full text from Schedule 104 is set out below. It is readily apparent from this statement of association that the broader seascape in which Project South would be located is of substantial importance to Te Rūnanga o Ngāi Tahu and its papatipu rūnanga.

> *Generally, the formation of the coastline of Te Wai Pounamu relates to the tradition of Te Waka o Aoraki, which foundered on a submerged reef, leaving its occupants, Aoraki and his brother to turn to stone. They are manifested now in the highest peaks of the Kātītītiri of Te Moana (the Southern Alps). The bays, inlets, estuaries and fiords which stud the coast are all the creations of Tū Te Rakiwhānoa, who took on the job of making the island suitable for human habitation.*
>
> *The naming of various features along the coastline reflects the succession of explorers and iwi (tribes) who travelled around the coastline at various times. The first of these was Māui, who fished up the North Island, and is said to have circumnavigated Te Wai Pounamu. In some accounts the island is called Te Waka o Māui in recognition of his discovery of the new lands. A number of coastal place names are attributed to Māui, particularly on the southern coast. Māui is said to have sojourned at Ōmaui (at the mouth of the New River Estuary) for a year, during which time he claimed the South Island for himself. It is said that in order to keep his waka from drifting away he reached into the sea and pulled up a stone to be used as an anchor, which he named Te Puka o Te Waka o Māui (Rakiura or Stewart Island).*
>
> *The great explorer Rakaihautu travelled overland along the coast, identifying the key places and resources. He also left many place names on prominent coastal features. When Rakaihautu's southward exploration of the island reached Te Ara a Kiwa, he followed the coastline eastwards before heading for the east coast of Otago.*
>
> *Particular stretches of the coastline also have their own traditions. Foveaux Strait is known as Te Ara a Kiwa (the pathway of Kiwa), the name relating to the time when Kiwa became tired of having to cross the land isthmus which then joined Murihiku (Southland) with Rakiura (Stewart Island). Kiwa requested the obedient Kewa (whale) to chew through the isthmus and create a waterway so Kiwa could cross to and fro by waka. This Kewa did, and the crumbs that fell from his mouth are the islands in Foveaux Strait, Solander Island being Te Niho a Kewa, a loose tooth that fell from the mouth of Kewa.*
>
> *The waka Takitimu, captained by the northern rangatira (chief) Tamatea, travelled around much of Te Wai Pounamu coast, eventually breaking its back at the mouth of the Waiau River in Murihiku. Many place names on the coast can be traced back to this voyage, including Monkey Island near Ōrepuki which is known as Te-Punga (or Puka)-a-Takitimu. While sailing past the cliffs at Ōmaui it is said that Tamatea felt a desire to go ashore and inspect the inland, and so he turned to the helmsman and gave the order "Tārere ki whenua uta" ("swing towards the mainland"), but before they got to the shore he countermanded the order and sailed on. Subsequently the*

whole area from Ōmaui to Bluff was given the name of Te Takiwā o Tārere ki Whenua Uta. In olden days when people from the Bluff went visiting they were customarily welcomed on to the hosts' marae with the call, "haere mai koutou te iwi tārere ki whenua uta". One of the whare at Te Rau Aroha marae in Bluff if also named "Tārere ki Whenua uta" in memory of this event.

The Takitimu's voyage through the Strait came to an end and when the waka was overcome by three huge waves, named Ō-te-wao, Ō-roko and Ō-kaka, finally coming to rest on a reef near the mouth of the Waiau (Waimeha). According to this tradition, the three waves continued on across the low-lying lands of Murihiku, ending up as permanent features of the landscape.

For Ngāi Tahu, traditions such as these represent the links between the cosmological world of the gods and present generations. These histories reinforce tribal identity and solidarity, and continuity between generations, and document the events which shaped the environment of Te Wai Pounamu and Ngāi Tahu as an iwi.

Because of its attractiveness as a place to establish permanent settlements, including pā (fortified settlements), the coastal area was visited and occupied by Waitaha, Ngāti Mamoe and Ngāi Tahu in succession, who through conflict and alliance, have merged in the whakapapa (genealogy) of Ngāi Tahu Whānui. Battle sites, urupā and landscape features bearing the names of tūpuna (ancestors) record this history. Prominent headlands, in particular, were favoured for their defensive qualities and became the headquarters for a succession of rangatira and their followers.

The results of the struggles, alliances and marriages arising out of these migrations were the eventual emergence of a stable, organised and united series of hapū located at permanent or semi-permanent settlements along the coast, with an intricate network of mahinga kai (food gathering) rights and networks that relied to a large extent on coastal resources.

Mokamoka (Mokomoko or Mokemoke) was one such settlement, in a shallow inlet off the Invercargill estuary. It was here that Waitai was killed, the first Ngāi Tahu to venture this far south, well out of the range of his own people, then resident at Taumutu. This settlement was sustained by mahinga kai taken from the estuary and adjoining coastline, including shellfish and pātiki (flounder).

Ōue, at the mouth of the Ōreti River (New River Estuary), opposite Ōmaui, was one of the principal settlements in Murihiku. Honekai who was a principal chief of Murihiku in his time was resident at this settlement in the early 1820s, at the time of the sealers. In 1850 there were said to still be 40 people living at the kaik at Ōmaui under the chief Mauhe. Honekai's brother, Pukarehu, was a man who led a very quiet life, and so was little known. He is remembered, however, in the small knob in the hills above Ōmaui which bears his name. When he passed away, he was interred in the sandhills at the south end of the Ōreti Beach opposite Ōmaui. Ōue is said to have got its name from a man Māui left to look after his interests there until his return. It was also here that the coastal track to Riverton began. From Ōue to the beach the track was called Te Ara Pakipaki, then, when it reached the beach, it was called Mā Te Aweawe, finally, at the Riverton end, it was known as Mate a Waewae.

After the death of Honekai, and as a consequence of inter-hapū and inter-tribal hostilities in the Canterbury region, many inhabitants of Ōue and other coastal villages on Foveaux Strait relocated to Ruapuke Island, which became the Ngāi

Tahu stronghold in the south. The rangatira Pahi and Tupai were among the first to settle on the island. Pahi had previously had one of the larger and oldest pā in Murihiku at Pahi (Pahia), where 40 to 50 whare (houses) were reported in 1828. The Treaty of Waitangi was signed at Ruapuke Island by Tuhawaiki and others. No battles however occurred here, the pā Pā-raki-ao was never fully completed, due to the realisation that Te Rauparaha could not reach this far south.

Other important villages along the coast included: Te Wae Wae (Waiau), Taunoa (Ōrepuki), Kawakaputaputa (Wakaputa), Ōraka (Colac Bay), Aparima (Riverton—named Aparima after the daughter of the noted southern rangatira Hekeia, to whom he bequeathed all of the land which his eye could see as he stood on a spot at Ōtaitai, just north of Riverton), Turangiteuaru, Awarua (Bluff), Te Whera, Toe Toe (mouth of the Mataura River) and Waikawa.

Rarotoka (Centre Island) was a safe haven at times of strife for the villages on the mainland opposite (Pahi, Ōraka and Aparima). Numerous artefacts and historical accounts attest to Rarotoka as having a significant place in the Ngāi Tahu history associated with Murihiku.

Rakiura also plays a prominent part in southern history, the "Neck" being a particularly favoured spot. Names associated with the area include: Kōrako-wahine (on the western side of the peninsula), Whare-tātara (a rock), Hupokeka (Bullers Point) and Pukuheke (the point on which the lighthouse stands). Te Wera had two pā built in the area called Kaiarohaki, the one on the mainland was called Tounoa, and across the tidal strip was Kā-Turi-o-Whako.

A permanent settlement was located at Port Pegasus, at the south-eastern end of Rakiura, where numerous middens and cave dwellings remain. Permanent settlement also occurred on the eastern side of Rakiura, from the Kaik near the Neck, south to Tikotaitahi (or Tikotatahi) Bay. A pā was also established at Port Adventure.

Mahinga kai was available through access from the coastal settlements to Te Whaka-a-te-Wera (Paterson Inlet), Lords River and, particularly for waterfowl, to Toi Toi wetland. In addition, the tītī islands off the northeastern coast of the island, and at the mouth of Kōpeka River and the sea fishery ensured a sound base for permanent and semi-permanent settlement, from which nohoanga operated.

Te Ara a Kiwa, the estuaries, beaches and reefs off the mainland and islands all offered a bounty of mahinga kai, with Rakiura and the tītī islands being renowned for their rich resources of bird life, shellfish and wet fish. The area offered a wide range of kaimoana (sea food), including tuaki (cockles), paua, mussels, toheroa, tio (oysters), pūpū (mudsnails), cod, groper, barracuda, octopus, pātiki (flounders), seaweed, kina, kōura (crayfish) and conger eel. Estuarine areas provided freshwater fisheries, including tuna (eels), inaka (whitebait), waikōura (freshwater crayfish), kōkopu and kanakana (lamprey). Marine mammals were harvested for whale meat and seal pups. Many reefs along the coast are known by name and are customary fishing grounds, many sand banks, channels, currents and depths are also known for their kaimoana.

A range of bird life in the coastal area also contributed to the diversity of mahinga kai resources available, including tītī, seabirds such as shags and gulls, sea bird eggs, waterfowl, and forest birds such as kiwi, kākā, kākāpō, weka, kukupa and tieke. A variety of plant resources were also taken in the coastal area, including

raupō, fern root, tī kōūka (cabbage tree), tutu juice and kōrari juice. Harakeke (flax) was an important resource, required for the everyday tasks of carrying and cooking kai. Black mud (paru) was gathered at Ocean Beach for use as dye. Tōtara bark was important for wrapping pōhā in, to allow safe transport of the tītī harvest. Pōhā were made from bull kelp gathered around the rocky coast.

The numerous tītī islands are an important part of the Ngāi Tahu southern economy, with Taukihepa (Te Kanawera) being the largest. Tītī were and are traded as far north as the North Island. The "Hakuai" is a bird with a fearsome reputation associated with the islands. No one has ever seen this bird, which appears at night, but it once regularly signalled the end to a birding season by its appearance at night. Known for its distinctive spine-chilling call, the hakuai was a kaitiaki that could not be ignored. At the far western edge of Foveaux Strait is Solander Island (Hautere), an impressive rock pinnacle rising hundreds of feet out of the sea, on which fishing and tītī gathering occurred.

The coast was also a major highway and trade route, particularly in areas where travel by land was difficult. Foveaux Strait was a principal thoroughfare, with travel to and from Rakiura a regular activity. There was also regular travel between the islands Ruapuke, Rarotoka and other points.

The tītī season still involves a large movement across the Strait to the islands, in addition large flotillas of Ngāi Tahu once came south from as far afield as Kaikōura to exercise their mutton-birding rights. Whenua Hou (Codfish Island) and the Ruggedy Islands were important staging posts for the movement of birders to the tītī islands off the south-west coast of Rakiura. Whenua Hou had everything that the birders required: shelter, proximity to the tītī islands, kai moana, manu (birds) and ngahere (bush). From Whenua Hou, the birders would camp at Miniti (Ernest Island), at the end of Mason Bay, where the waka-hunua (double-hulled canoes, or canoes with outriggers) were able to moor safely, ready for the final movement to the various tītī islands. Waka-hunua were an important means of transport on the dangerous and treacherous waters of Foveaux Strait and the Rakiura coast. After dropping birders and stores on the tītī islands the waka hunua generally returned immediately to Aparima and other tauranga waka along the mainland of Foveaux Strait, due to the paucity of safe anchorages among the tītī islands.

Travel by sea between settlements and hapū was common, with a variety of different forms of waka, including the southern waka hunua (double-hulled canoe) and, post-contact, whale boats plying the waters continuously. Hence tauranga waka occur up and down the coast, including spots at Pahi, Ōraka and Aparima, and wherever a tauranga waka is located there is also likely to be a nohoanga (settlement), fishing ground, kaimoana resource, rimurapa (bull kelp - used to make the pōhā, in which tītī were and still are preserved) and the sea trail linked to a land trail or mahinga kai resource. Knowledge of these areas continues to be held by whānau and hapū and is regarded as a taonga. The traditional mobile lifestyle of the people led to their dependence on the resources of the coast.

The New River Estuary contains wāhi tapu, as do many of the coastal dunes and estuarine complexes for the length of the Foveaux Strait. Many urupā are located on islands and prominent headlands overlooking the Strait and the surrounding lands and mountains. The rangatira Te Wera, of Huriawa fame, is buried at Taramea (Howells Point), near Riverton. There are two particularly important urupā in Colac Bay, as well as an old quarry site (Tīhaka). From Colac Bay to Wakapatu, the coastal

sandhills are full of middens and ovens, considered to be linked to the significant mahinga kai gathering undertaken in Lake George (Urewera). Urupā are the resting places of Ngāi Tahu tūpuna and, as such, are the focus for whānau traditions. These are places holding the memories, traditions, victories and defeats of Ngāi Tahu tūpuna, and are frequently protected in secret locations.

The mauri of the coastal area represent the essence that binds the physical and spirtual elements of all things together, generating and upholding all life. All elements of the natural environment possess a life force, and all forms of life are related. Mauri is a critical element of the spiritual relationship of Ngāi Tahu Whānui with the coastal area.

5.3 CUSTOMARY MARINE TITLE

The Marine and Coastal Area (Takutai Moana) Act 2011 provides a legal framework for iwi, hapu and whanau interests to be recognised in the marine and coastal areas around New Zealand. It gives groups the opportunity to seek Customary Marine Title, which recognises that the group has an interest in a specific area of the coast and gives them certain rights.

Sanford understands that Project South would have Farming Areas in or immediately adjacent to areas subject to applications for Customary Marine Title by the following groups:

- Te Whanau o Topi.
- Landowners of Ruapuke Island Group.
- Te Runanga o Ngāi Tahu.
- Cletus Maanu Paul.
- Jane Mihingarangi Ruka Te Korako on behalf of Waitaha ki Hokianga and Waitaha ki Te Waipounamu (Cletus Maanu Paul has filed a memorandum specifying these claimants be joined to the national application. Jane Mihingarangi Ruka Te Korako, on behalf of Waitaha ki Hokianga and Waitaha ki Te Waipounamu, claims customary marine title over the entire South Island. At the time of preparing this AEE this matter is still being resolved in the Courts. However, out of caution Sanford will treat Ms Te Korako as a representative of a claimant group for the purposes of this application).

Figure 10 shows the indicative location of the Five Farming Areas relative to the application areas.

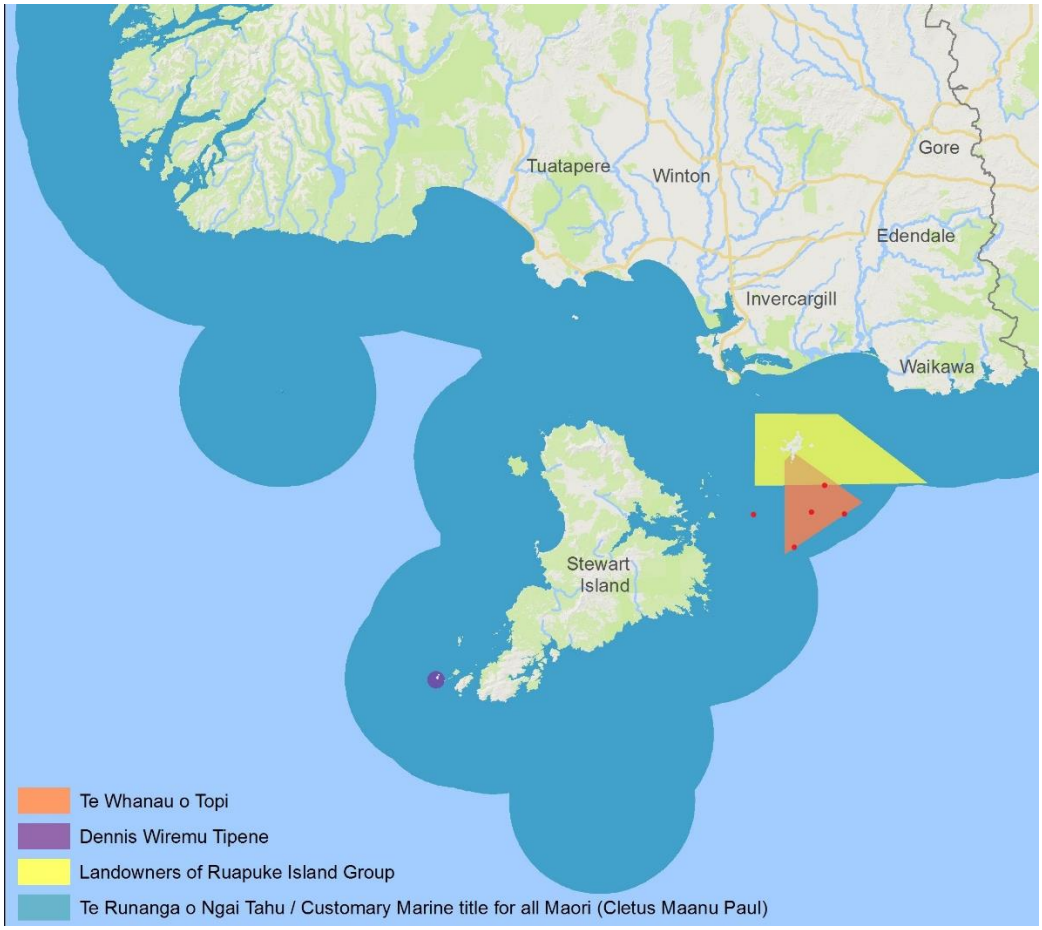

Figure 10: Indicative location of the five Project South farmed areas (shown in red dots) relative to areas subject to applications for Customary Marine Title.

5.4 PHYSICAL COASTAL ENVIRONMENT

A comprehensive description of the physical coastal environment (including hydrodynamics, water quality and plankton) is provided in the AES Synthesis Report included as **Appendix A**, and in the ADS Environmental Reports included as **Appendices B - E**.

5.4.1 Currents

The main flow directions at the site are to the east, north-east, south-west and west. Flow is generally between 0.2-0.4 metres per second (m/s) at the site with maximums of approximately 0.7 m/s. Much stronger flows were observed to the west particularly near Ruapuke Island and match those observed by previous studies. An example of typical flow directions and current speeds during summer is provided in Figure 11.

Tide only (tidal component) flows were found to be weaker, between 0.1-0.2 m/s and are indicative of the flows during calm conditions.

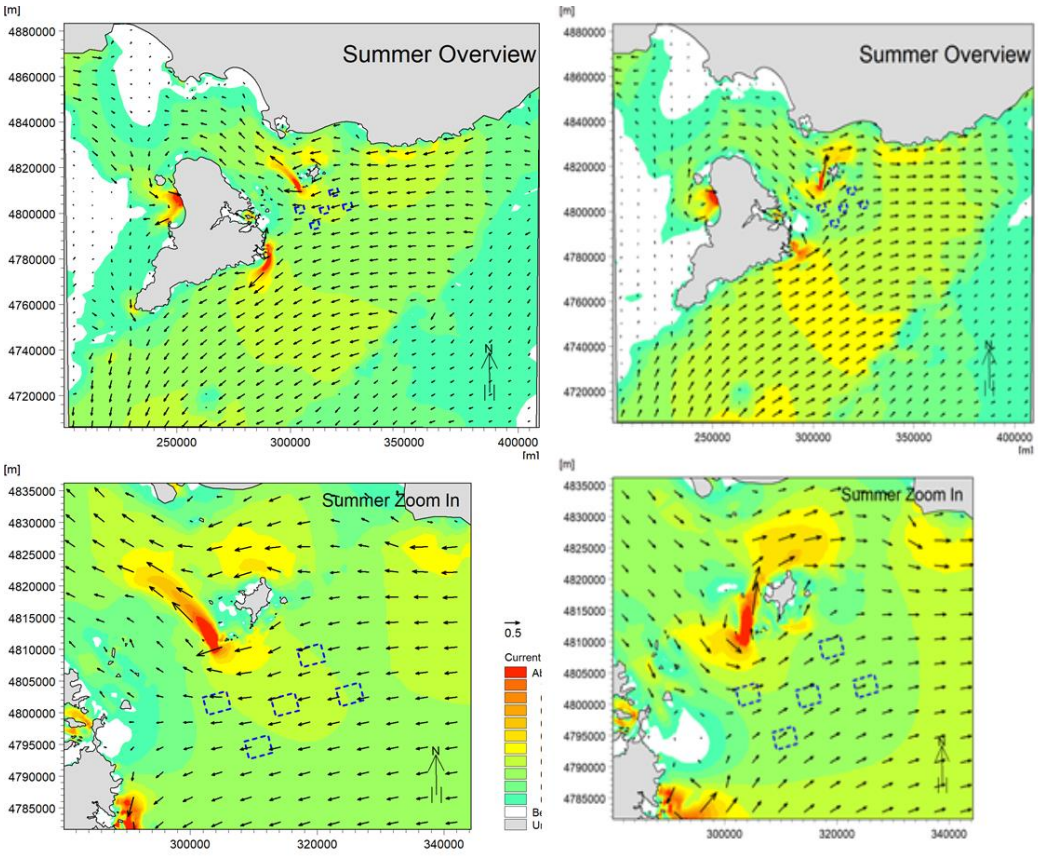

Figure 11: **Ebb driven current flow (left) and Flood driven current flow (right) through the Project South area during summer.**

5.4.2 Waves

The wave environment in the interior of Foveaux Strait is dynamic and subject to variations in wave energy and direction.

ADS has provided a wave model specifically for the south-east waters of Rakiura / Stewart Island the domain of which includes Big Glory Bay, Patterson Inlet and much of the area south-west of the application site. Six scenarios (with various wave heights, periods, speeds, and direction) were simulated to model the wave conditions in waters to the south-east of Rakiura / Stewart Island. During the 1 in 10-year wave simulation, waves were observed to be greater than 10 meters close to the application site while even larger waves were predicted during a 1 in 100-year event.

5.4.3 Stratification

Stratification occurs when light, buoyant water overlies heavy dense water and is caused either by temperature differences (warm water is lighter than cold water), or by differences in salinity (freshwater is lighter than seawater). However, data collected from Foveaux Strait, including within the Project South area indicates the water column here is well mixed vertically and not stratified.

5.4.4 Water Quality

Water quality data collected in the Project South Area indicates:

- Low total ammonia nitrogen (TAN) concentrations (<10 mg/m^3).
- Moderate nitrate-N concentrations of 45-70 mg/m^3 but with low levels in January 2020 (4 mg/m^3).
- Relatively low dissolved reactive phosphorus (DRP) and total phosphorus (TP) concentrations.

Chlorophyll *a* concentrations (an indicator of phytoplankton biomass) measured over late spring 2019 / summer 2020 were between 0.2 to 1.8 mg/m^3.

The relatively high nitrate-N concentrations are likely due to upwelled water entrained into Foveaux Strait and the higher chl-*a* concentrations in early November may be due to a spring peak. Chl-*a* concentrations are likely to be higher in late winter/spring and lower in summer and late autumn/early winter, based on data from outer Paterson Inlet. The reverse would occur for dissolved inorganic nitrogen (DIN - TAN, nitrate- and nitrite-N), with levels increasing at the end of summer then decreasing in late winter/spring largely in response to phytoplankton growth.

5.5 BENTHIC ENVIRONMENT

As was described in Section 2, the locations of the Five Farming Areas were chosen to avoid areas containing important benthic diversity and / or valued benthic habitat, including areas important for bryozoan species.

A comprehensive description of the benthic environment for Project South is provided in the AES Synthesis Report included as **Appendix A** and in the ADS Environmental Report included as **Appendix B**.

In summary, the benthic environment where the Five Farming Areas would be located is well scoured, with a substrate dominated by coarse and fine sand, occasionally mixed with mud or shell hash. No acute changes in topography, biogenic reefs or patches have been observed. The benthic environment has a sparse epifauna and infauna with low diversity.

5.6 FISH

A comprehensive description of the fish which inhabit the marine waters in and around Project South is provided in the AES Synthesis Report included as **Appendix A** and in the Pisces Research Report included as **Appendix H**.

The fish community in the region of the Five Farming Areas consists of a range of pelagic and demersal species, including blue cod, flatfish, moki, butterfish, tarakihi, trumpeter, wrass and rig.

5.7 MARINE MAMMALS

A comprehensive description of the marine mammals which inhabit the waters in and around Project South is provided in the AES Synthesis Report included as **Appendix A**, and the Cawthron Institute Report included as **Appendix H**.

The Foveaux Strait region is an important area for a number of New Zealand's cetacean and pinniped species (see Table 3). At least seven marine mammal species are considered to be year-round residents and / or seasonal visitors to these waters, with several baleen whale species migrating to and through Foveaux Strait each winter/spring, and more offshore species wandering into shallow regions over warmer months.

The more common species occurring within the area include New Zealand fur seal (*Arctocephalus forsteri*), New Zealand sea lion (*Phocarctos hookeri*), bottlenose dolphin (*Tursiops truncatus*), southern right (*Eubalaena australis*) and humpback whales (*Megaptera novaeangliae*) and occasionally, orca (*Orcinus orca*).

Table 3: Marine mammals known to frequent the area in which Project South would be located.

Common name	NZ threat classification		UNCN red listing	Residency category in AOI	Subject to Policy 11(a) of the NZCPS[3]
RESIDENTS					
NZ fur seal	NZ native & resident, evaluated	Not Threatened	Least Concern	Year-Round Resident	No
NZ sea lion	NZ native & resident, evaluated	Nationally Vulnerable	Endangered	Year-Round Resident. Foveaux Strait waters support local increasing colonies	Yes
Hector's dolphin	NZ native & resident, evaluated	Nationally Vulnerable	Endangered	Year-Round Resident. Foveaux Strait waters support subpopulation of individuals.	Yes

[3] See Section 9.2.4 of this AEE.

Common name	NZ threat classification		UNCN red listing	Residency category in AOI	Subject to Policy 11(a) of the NZCPS[3]
Bottlenose dolphin	NZ native & resident, evaluated	Nationally Endangered	Data Deficient	Seasonal to Semi-Resident. Foveaux Strait waters support subpopulation of individuals.	Yes
POTENTIAL OFFSHORE SPECIES					
Long-finned pilot whale	NZ native & resident, evaluated	Not Threatened	Data Deficient	Potential Offshore Semi-Resident	No
Sperm whale	NZ native	Data Deficient	Vulnerable	Potential Offshore Visitor	Yes
Beaked whales	NZ native & resident, not evaluated	Data Deficient	Data Deficient to Least Concern	Potential Rare Offshore Visitors	No
MIGRANTS					
Southern right whale	NZ native & resident, threatened	At Risk-Recovering	Least Concern	Seasonal Migrant. Foveaux Strait area is potentially important winter mating habitat.	Yes
Humpback whale	NZ native, evaluated	Migrant	Endangered	Seasonal Migrant	Yes
VISITORS					
Dusky dolphins	NZ native & resident, evaluated	Not Threatened	Data Deficient	Seasonal Visitor	No
Common dolphin	NZ native & resident, evaluated	Not Threatened	Least Concern	Seasonal Visitor	No

Common name	NZ threat classification		UNCN red listing	Residency category in AOI	Subject to Policy 11(a) of the NZCPS[3]
Orca (killer whale)	NZ native & resident, threatened	Nationally Critical	Data Deficient	Seasonal to Infrequent Visitor. Foveaux Strait waters support subpopulation of individuals.	Yes
Sei whale	NZ native & non-resident, evaluated	Not Threatened	Not Threatened to Data Deficient	Seasonal to Infrequent Visitor	No
Blue whale	NZ native	Data Deficient	Critically Endangered to Data Deficient	Seasonal to Infrequent Visitor. Foveaux Strait may be on migration corridor	Yes

5.8 SEABIRDS

A comprehensive description of the seabirds which inhabit the waters in and around Project South is provided in the AES Synthesis Report included as **Appendix A**, and the Wildlands Consultants Report included as **Appendix I**.

The area around the Five Farming Areas, Ruapuke and nearby islands provide foraging grounds and support breeding populations of yellow-eyed penguins, Foveaux shags, blue penguins, Fiordland crested penguin pied shags, spotted shags, little shags, southern black-backed gulls, red-billed gulls and white-fronted terns and foraging grounds for a range of other species. Other foraging groups include various petrels, shearwaters, mollymawks and albatross. A significant proportion of the New Zealand yellow-eyed penguin population along with the majority of the Foveaux shag (Threatened-Nationally Vulnerable) population are supported in the Southland region.

A list of the at risk and threatened bird species in the Foveaux Strait to which Policy 11(a) of the New Zealand Coastal Policy Statement ("NZCPS") applies (refer to Section 9.2.4) is provided in Table 4.

Table 4 At risk and threatened bird species in the Foveaux Strait area.

Species	Use of the Foveaux Strait Area
PENGUINS	
• **Southern blue penguin** (At risk - declining).	• Has extensive breeding distributions in the region. • Feed on variety of biota including ahuru and arrow squid at or near the seabed.
• **Yellow-eyed penguin** (Nationally vulnerable).	• Has extensive breeding distributions in the region. • They are benthic foragers feeding mainly at depths of 25 and 80 m on likes of sprat, red and blue cod but some will feed closer inshore
• **Fiordland crested penguin** (Threatened – nationally vulnerable).	• Has extensive breeding distributions in the region. • The main prey species are squid and cod
SHAGS	
• **Foveaux shag** (also known as Stewart Island shag) (Threatened – nationally vulnerable).	• Endemic to Foveaux Strait. • Breeding colonies on nearby islands. • Farming areas likely within foraging distance of nearby colonies. • Mainly demersal feeders thought to be mostly on small fish such as cockabullies and flatfish.
• **Pied shag** (At risk - recovering).	• Breeding colonies on nearby islands. • Farming areas likely within foraging distance of nearby colonies. • Feed mainly on small fish.
• **Little black shag** (At risk – naturally uncommon).	• Reported as a vagrant on Rakiura / Stewart Island. • These species are more common in inshore waters, where they tend to dive in shallow water of only a few metres in depth.
• **Black shag** (At risk – naturally uncommon).	• Reported as a vagrant on Rakiura / Stewart Island. • These species are more common in inshore waters, where they tend to dive in shallow water of only a few metres in depth.

Species	Use of the Foveaux Strait Area
ALBATROSS AND MOLLYHAWK	
• **Royal albatross** (southern and northern) (At risk – nationally uncommon).	• No breeding colonies in the immediate area • Feeds on fish, squid, krill and salps from the surface
• **Shy mollymawk** (At risk - declining).	• No breeding colonies in the immediate area • Feeds on fish, squid, krill and salps from the surface
• **Salvin's mollymawk** (Threatened – nationally critical).	• No breeding colonies in the immediate area • Feeds on fish, squid, krill and salps from the surface
SHEARWATER, PETROL AND PRION	
• **Sooty shearwater** (At risk – declining).	• One of the most widely distributed and abundant seabirds in New Zealand, with at least 180 breeding sites • Large colonies are around Rakiura / Stewart Island or on The Snares. • Farming areas likely within foraging distance of nearby colonies. • Forages widely offshore where they dive to depths of over 40 m. They feed mainly on small fish, squid, krill and other crustaceans
• **Cape petrel** (At risk – naturally uncommon)	• No colonies in the area. • Five Farming Areas likely used for foraging. • Feeds on krill, amphipods, small fish and squid, mostly at the surface
• **Cook's petrel** (At risk – relict)	• Has colonies on Whenua Hou/Codfish Island. • Not clear if the foraging range of Cook's petrels overlaps with the Five Farming Areas. It is possible that the species may be relatively rare at the location, given its preference for deep water habitats.
• **Common diving petrel** (At risk – relict)	• Has colonies around Rakiura / Stewart Island. • Five Farming Areas likely used for foraging. • Can dive up to 10-22 m, feeding on krill and amphipods.

Species	Use of the Foveaux Strait Area
• **Northern giant petrel** (At risk – recovering)	• No colonies in the area. • Five Farming Areas likely used for foraging. • At sea, giant petrels mostly surface-seize their prey, but have been observed diving to shallow depths of a couple of metres.
• **Fairy prion** (At risk – relict)	• Has colonies around Rakiura. • Five Farming Areas likely used for foraging. • Surface feeder on krill, small fish and squid
SKUAS, GULLS AND TERNS	
• **Brown skua** (at risk – natural uncommon)	• Has colonies around Rakiura. • Five Farming Areas may be used for foraging. • Feeds on mixed diet of zooplankton, squid and fish
• **Black-billed gull** (nationally critical).	• No colonies in the area. • Feed mainly on land but can also feed in coastal areas on fish and krill
• **Red billed gull** (at risk – declining).	• Has colonies around Rakiura. • Five Farming Areas may be used for foraging. • Scavenge for a wide range of food including small fish and shellfish.
• **White-fronted tern** (at risk – declining)	• Has colonies around Rakiura. • Five Farming Areas may be used for foraging. • Feed on larval and small fish in coastal areas
• **Black-fronted tern** (threatened – nationally endangered)	• No colonies in the area. • Five Farming Areas may be used for foraging.

5.9 LANDSCAPE AND NATURAL CHARACTER

A description of the landscape and natural character values of the marine environment in and around Project South is provided in the report by Frank Boffa included as **Appendix J**.

The Five Farming Areas are not located within any outstanding natural feature or landscape. Nor are they located within any outstanding natural character area.

While there have been no natural character assessments of the wider Southland coastal marine area, based on studies carried out at Rakiura / Stewart Island and its inshore marine area, it is considered the natural character of the Project South area would be described as being high to very high.

In terms of its seascape context, the Five Farming Areas will be located in a relatively remote location within the outer open waters of the coastal marine area, with little or no visual relationship to any adjacent land mass

5.10 NAVIGATION

A description of vessel use and navigation routes in and around the Project South area is provided in the report by Jason Eriksson included as **Appendix K**.

There are no defined shipping channels or traffic separation schemes in the vicinity of Project South. There are no formalised anchorages.

However, it is located in the general area of natural uncharted vessel transit routes for:

- Vessels travelling to and from offshore destinations; and
- Inshore traffic travelling within New Zealand

AIS data showing vessel movements in the vicinity of the Five Farming Areas is provided in Figure 12.

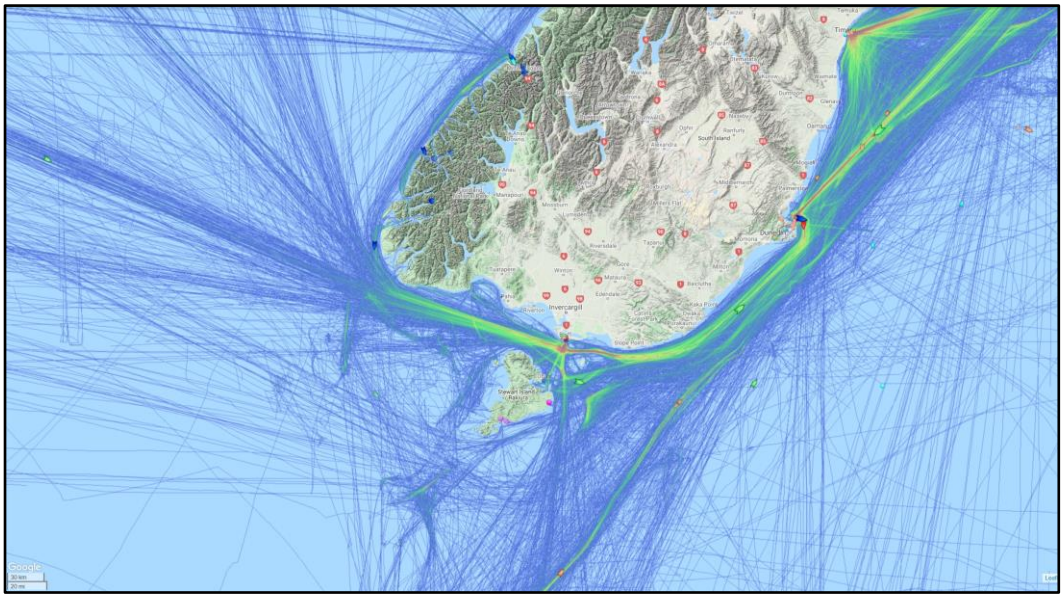

Figure 12: AIS data on vessel movements in the vicinity of the Five Farming Areas.

Offshore traffic which frequents the area includes large commercial shipping vessels, cruise ships, and offshore fishing boats, all of which would have draughts deeper than 5m. As shown in Figure 12 these vessels will include those travelling between Bluff and the

Southern Ocean or South America. Vessels travelling between international waters to the south west of New Zealand and Timaru or Lyttleton also pass through this area, athough depending on the personal preference of the skipper and weather, vessels in the latter category can often pass north of Ruapuke Island.

Inshore marine traffic in the Project South area includes smaller fishing boats, freighters, tugs and recreational pleasure craft departing or returning to Bluff or Dunedin from Rakiura / Stewart Island. However, as shown on Figure 12 the Project South area is not in the main navigation route between Bluff and Rakiura / Stewart Island. That route is west of Ruapuke Island.

Other points of relevance include:

- There are no existing navigation aids in the Project South area.
- Apart from rock outcrops around Ruapuke Island some 10 km distant from the closest of the Five Farming Areas, there are no reefs, rock outcrops or other navigational hazards in the area.
- Project South is located in open ocean and there are no navigational choke points where vessels are likely to congest.
- This are also no areas close to the farm site where vessels would anchor or seek shelter.

5.11 COMMERCIAL FISHERIES

A comprehensive description of commercial fishing in and around the Project South area is provided in the report by Pisces Research included as **Appendix G**.

The Foveaux Strait region and the Project Sough area supports commercial inshore fisheries for cod potting; bottom trawling for barracouta, flatfish and several other species; set-netting for spiny dogfish, school shark and rig. These fisheries are worked by small trawlers based in Bluff. All these boats would have a draught of four metres or less and an overall length of 24 meters or less.

Foveaux Strait also supports a nationally important dredge oyster fishery. The location of the Five Farming Areas has been selected to provide a large buffer (at least 8 kilometres) between each Farming Area and that fishery.

5.12 MARINE FARMING

The closest operational marine farming in the vicinity of the Five Farming Areas is the inshore salmon and mussel farms in Big Glory Bay, Rakiura / Stewart Island, some 25 kilometres west of Farming Area A (see Figure 13).

An application has been lodged by Ngāi Tahu Seafood Resources with Environment Southland for a salmon farm between Saddle Point and West Point on the north coast of

Rakiura / Stewart Island (see Figure 13). This site is approximately 30 kilometres west of Farming Area A.

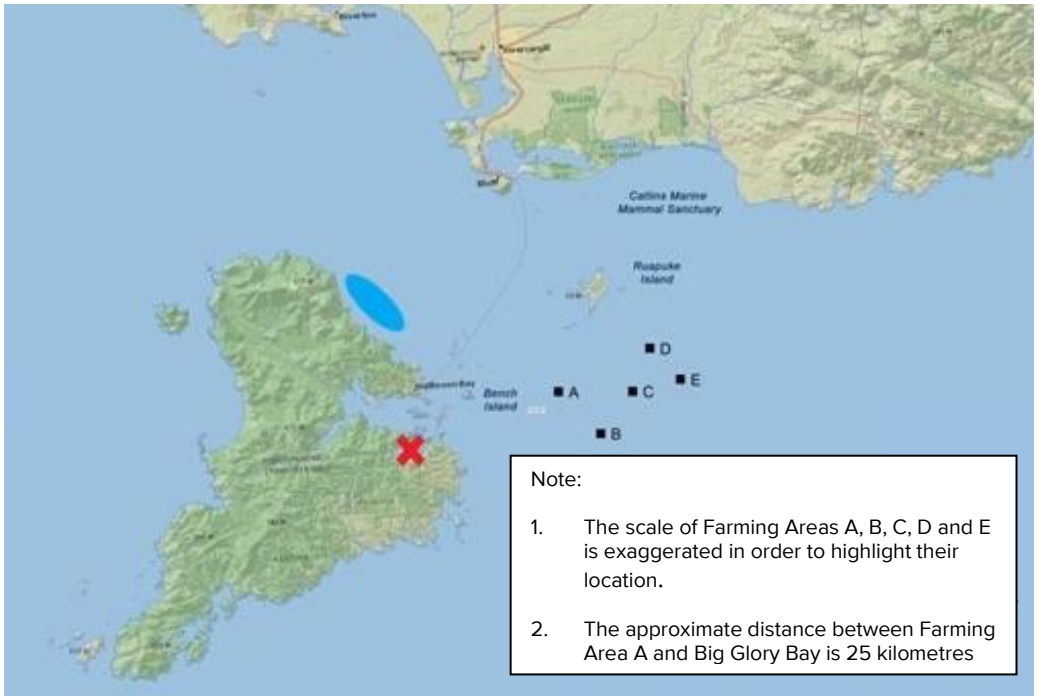

Figure 13: Indicative location of the Five Farming Areas relative to the existing Big Glory Bay marine farming area (red cross) and the proposed Ngāi Tahu Seafood Resources Te Awa Kiwa salmon farming development (blue ellipse).

5.13 RECREATIONAL USE

Existing recreational use of the Five Farming Areas is limited to infrequent visitation by:

- Private recreation and charter fishing boats.
- Private yachts.

These vessels would more than likely be transiting through the area, as the Five Farming Areas are in the open ocean a long way from shore. They contain no reefs or other benthic structures of interest for fishing, and they are not on the pathway to Rakiura / Stewart Island.

6. ASSESSMENT OF EFFECTS

6.1 INTRODUCTION

This section addresses the actual and potential effects of Project South on the environment.

It includes the following sections:

Section 6.2 Positive Effects

Section 6.3 Ecological matters

Section 6.4 Navigation

Section 6.5 Commercial Fishing

Section 6.6 Visual amenity, Landscape and Natural Character

Section 6.7 Recreation

Section 6.8 Cultural Values

As noted in Section 1, a number of technical reports have been prepared which address these matters. These technical reports are appended to this AEE and are referred to, as relevant, below.

A number of measures to avoid, remedy or mitigate the potential effects of Project South are identified in this section of the AEE. These measures are also summarised in Section 7 and it is expected they will form the basis of resource consent conditions for the activity.

6.2 POSITIVE EFFECTS

Project South will make a significant contribution to the social and economic wellbeing of people and communities through its provision of a sustainable food resource, export revenue, and the employment and wages it will inject into the economy by both permanent staff and the wide use of local contractors. This includes skilled jobs associated with the farming itself, harvesting, processing, and its hatchery facilities, and the employment of people in supporting services.

Project South will also contribute positively to the broader development of New Zealand's aquaculture industry.

6.3 ECOLOGICAL MATTERS

6.3.1 Overview

Salmon farming can have a variety of ecological effects due to the presence of the farm structures and operational activities in the water column, the discharge of nutrients, and

the deposition of surplus feed, faecal material and chemicals on the seafloor. The potential effects of these activities are conceptually illustrated in Figure 14.

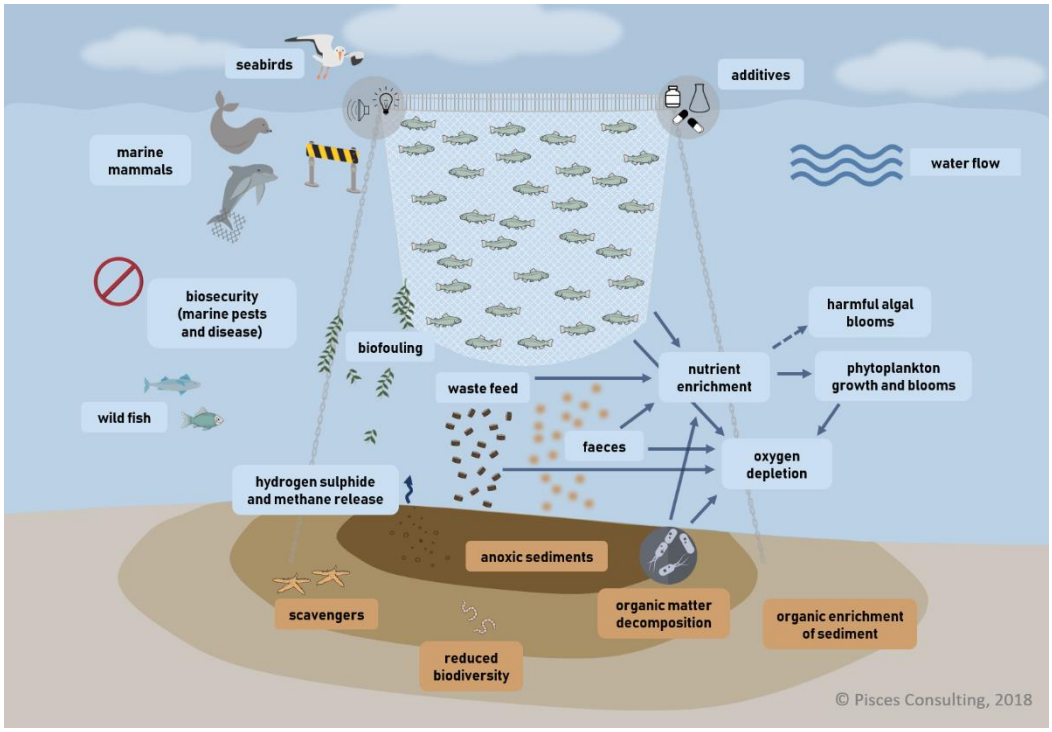

Figure 14: Diagram of the potential environmental effects of salmon farming.

6.3.2 Effects on Hydrodynamics and Physical Features

There are three potential effects for finfish farming on hydrodynamics:

- Reduction in currents and redirection of flow.
- Effects on stratification.
- Wave dampening.

These issues are important because the physical hydrodynamic effects will interact strongly with pelagic and benthic processes. This is because hydrodynamic conditions influence dispersal of dissolved substances, such as nitrogen, as well as faecal material and any residual feed.

The AES Synthesis Report contained in **Appendix A**, and ADS Environmental Services hydrodynamic modelling report contained in **Appendix C** address these matters.

Overall, the effects of Project South on hydrodynamics are expected to be very small and localised. Furthermore, in the open ocean environment of, and around, the Five Farming Areas, the ecological consequences of potential alterations to the hydrodynamic regime as a result of the proposal are expected to be negligible.

6.3.3 Effects on Water Quality and Plankton

Potential effects on the water column from offshore farming of salmon will primarily be associated with:

- Any reduction in dissolved oxygen (DO) through fish and benthic respiration.
- Potential nutrient enrichment through excretion (primarily as total ammonia nitrogen (TAN)) and breakdown of faecal material and any residual feed which can stimulate phytoplankton growth.

The AES Synthesis Report contained in **Appendix A**, and ADS Environmental Services nutrient modelling report contained in **Appendix E** address these matters.

With respect to the first matter, modelling shows that the reduction in DO would be less than 0.1 milligram per litre. Any reductions in DO caused by the Five Farming Areas will therefore be insignificant, will not be ecologically meaningful, and will not result in any effects on the farmed fish or natural biota.

With respect to potential nutrient enrichment, the key outputs of the detailed nutrient modelling exercise undertaken for Project South are:

- Increases in TAN will be detectable some distance from the proposed farming areas (Farming Areas A-E) but at very low concentrations (average increases 2-3 mg/m^3). Concentrations could exceed 4 mg/m^3 within the pen areas, and there could be occasional very short increases (<10 mins) of up to 10-12 mg/m^3 but these would be rapidly dispersed and mixed.
- Potential chl-*a* increases will follow a similar pattern to TAN. The average increases in chl-*a* concentration are predicted to be less than 0.3 mg/m^3 outside the pen areas. Increases up to 0.2 to 0.6 mg/m^3 could occur within or close to the pens with short term peaks of up to 1.4 mg/m^3.
- The predicted increases in TAN concentrations and the corresponding potential increases in chl-*a* are small when compared to those predicted at other farming sites both within New Zealand and around the world (e.g. Big Glory Bay, the Marlborough Sounds and Storm Bay in Australia). Such small increases are to be expected, due to the stronger flows found at this site that act to dilute and rapidly mix TAN released into the water column.
- The increase in available dissolved inorganic nitrogen (DIN), due to release of TAN is small and is unlikely to be detectable, hence not being ecologically meaningful in terms of increased phytoplankton biomass or risk of phytoplankton blooms.
- The total release of nitrogen as TAN from all Five fully developed Farming Areas is estimated to be 2,150 tonnes per year which is only 0.5% of the estimated total nitrogen passing through Foveaux Strait each year.

As is described further in Sections 3.8 and 7, development of the Five Farming Areas will be staged and include a robust suite of water quality monitoring. This will confirm the absence of effects on water quality.

6.3.4 Effects on the Seabed

Effects on the seabed from offshore farming of salmon are primarily caused by the deposition of faecal material and any residual feed on the seabed and the impact of this deposition on the biochemistry and faunal and floral communities below the farms.

The AES Synthesis Report contained in **Appendix A**, and ADS Environmental Services depositional modelling report contained in **Appendix D** address these matters.

The deposition modelling showed that:

- Faecal material and any residual feed from the Five Farming Areas will generally be deposited in the direction of the predominant residual current. The current fields at each site differ slightly, although most have a predominately WSW and NNE flow direction.
- At Farming Areas A, B, and D, the modelled depositional footprint is predicted to be detectable up to 5 km from the pens. However, because the discharged material is scattered at such distances, the concentrations of deposited material accumulating at any one given location are relatively low.
- Thresholds that would be expected to result in ecologically significant changes to the benthic environment (defined here as carbon and solids thresholds of 0.73 kg m^{-2} yr^{-1} and 5.2kg m^{-2} yr^{-1} respectively) are predicted to only occur within the pen areas and small patches up to a few hundred meters outside the pen areas.

In summary, the effects of this deposition from Project South will not be of any ecological significance due to:

- The localised nature of deposition.
- The absence of sensitive biogenic reef communities in and around the Five Farming Areas.
- The generally low abundance and richness of infauna in and around the Five Farming Areas.
- The small geographical area affected by deposition.
- The disturbance of the seabed in these locations from strong currents and previous dredging and fishing.
- The distance of the Five Farming Areas from any reefs or biogenic communities.

This also means that any effects on the benthic community would not have any measurable effect on higher levels in the food web such as birds and fish or inshore areas.

As is described further in Section 3.8 and Section 7, development of the Farming Areas will be staged and include a robust suite of benthic monitoring. This will confirm effects on the seabed are as expected and acceptable.

6.3.5 Effects on Biosecurity

Marine biosecurity refers to the management of risks posed by marine organisms that are potentially harmful to environmental, economic, social and cultural values.

The AES Synthesis Report contained in **Appendix A**, and the Salt Ecology report contained in **Appendix F** address these matters.

The main matters to be addressed for Project South are vessel movements and pest transfer via hull biofouling, especially from outside Southland, and installation of new infrastructure.

Seven species are listed as marine pests in the Southland Regional Pest Management Plan (SRPMP). However, the only pest species listed as being already established in Southland is the Asian kelp *Undaria pinnatifida*, and there are established objectives and associated rules to prevent further Undaria infestations.

The role of the proposed farmed areas as pest habitats and reservoirs for spread will be in part limited by the need to maintain on-farm biofouling to low levels for operational reasons. In addition, pest spread and establishment in the natural environment will be restricted or negated by the relatively isolated location of the farmed areas, in a location with inhospitable environmental conditions that will limit pest establishment or proliferation. These conditions include water depths beyond the reported habitat range of most recognised pests, as well as a high energy wave/current environment and a relatively featureless sandy seabed in the farm environs.

These risks will be effectively managed by staged development of the Five Farming Areas, on-farm monitoring for pest incursions, and the use of a comprehensive Biosecurity Management Plan. This is discussed further in Section 7.

6.3.6 Disease Risk

The diseases that the international literature cites as potentially affecting King salmon are set out in Table 5. None of the listed diseases transfer to wild marine fish or require additional risk management measures.

Table 5: Notifiable or current diseases in cultured salmonids in New Zealand

Disease	Under official control	Occurs in cultured salmon in NZ	Possible transfer to wild marine fish
VIRUSES			
Aquatic Birnavirus (IPNV Genogroup 5)	Yes	No	No
BACTERIA			
Flexibacter spp./ Tenacibaculum spp.	No	Yes	No
Bacterial gill disease	No	Yes	No
Mycobacterium spp.	No	Yes	No
Nocardia spp. (Nocardiosis)	No	Yes	No
Piscirickettsia-like bacteria (NZ-RLO)	Yes	Yes	No
Vibrio spp.	No	Yes	No
Yersinia ruckeri (Yersinosis)	No	Yes	No
FUNGI			
Saprolegnia spp.	No	Yes	No
PROTOZOA			
Chilodonella spp., Trichodina spp.	No	Yes	No
Ichthyophthirius multifiliis	No	Yes	No
Microsporidians	No	Yes	No
Neoparamoeba perurans / Cochliopodida sp.	No	Yes	No
METAZOA			
Hysterothylacium sp.	No	Yes	No

Disease	Under official control	Occurs in cultured salmon in NZ	Possible transfer to wild marine fish
Caligus spp.	No	Yes	No
Cirolana sp.	No	Yes	No
Myxobolus cerebralis	Yes	Yes	No

As set out in Table 6, there are two diseases of potential concern for Bluff oyster fishery in Foveaux Strait:

- Spread of infection by *Bonamia ostreae* via biofouling on sea pens, moorings and service boats and barges.
- Infection with *Bucephalus longicornutus*.

A comprehensive biofouling control programme will be undertaken as part of the proposed Project South Biosecurity Management Plan to manage biofouling risks associated with all service shipping to the Five Farming Areas from Big Glory Bay and other parts of New Zealand. This, along with adherence to the Controlled Area Notice (CAN) for *Bonamia ostreae*, are intended to protect the bluff oyster populations in Foveaux Strait from introduction of *Bonamia ostreae*. This is discussed further in Section 7.2.3 below.

There is no evidence that King salmon can or do provide an intermediary host for *Bucephalus longocornutus*. To confirm this, experimental exposure trials will be undertaken in an appropriate laboratory-based research facility prior to placing any structures at the Farming Areas.

Table 6: Disease agents that could potentially affect cultured salmonids and wild oysters in Foveaux Strait

Disease	Under official control	Occurs in NZ salmon	Occurs Bluff oysters	Risk Rating
Aquatic Birnavirus	Yes	No	No	Negligible
Piscirickettsia-like bacteria (NZ-RLO)	Yes	Yes	No	Very Low
Whirling Disease (Myxobolus cerebralis)	Yes	Yes	No	Negligible

Disease	Under official control	Occurs in NZ salmon	Occurs Bluff oysters	Risk Rating
Bonamia exitiosa	Yes	No	Yes	Very Low
Bonamia ostreae	Yes	No	Yes	Moderate
Bucephalus longicornutus	No	No	Yes	Low

6.3.7 Effects on Wild Fisheries

The AES Synthesis Report contained in **Appendix A** and Pisces Research Report contained in **Appendix H** address wild fisheries.

Because the effects on the benthic community and food resources from the proposed farm will be very localised and decrease away from the Five Farming Areas, any flow-on effects on wild fish populations are not expected. The location in deep water and away from shallow water reefs and habitats reduces any risk of fish aggregations compared with inshore farms, although the attraction of larger predatory pelagic fish would be expected.

No additional management measures or monitoring are considered necessary.

6.3.8 Effects on Marine Mammals

The potential effects on marine mammals are addressed in the AES Synthesis Report contained in **Appendix A**, and the marine mammal report by Dr Deanna Clement of Cawthron Institute contained in **Appendix H**.

The species most likely to potentially be affected by the proposal are New Zealand fur seals, New Zealand sea lions, bottlenose dolphins, southern right and humpback whales, and orca. While the proposed farmed areas represent similar habitats for these species to those available across the wider Foveaux Strait region, the area also potentially constitutes important winter mating habitat for southern right whales and forms part of humpback whales' northern migration corridor. Southland and Rakiura / Stewart Island waters also support sub-populations of nationally endangered bottlenose and Hector's dolphins, as well as a new breeding colony of nationally vulnerable sea lions.

The main matters requiring consideration relate to possible habitat displacement and potential entanglement. Other matters to be considered include underwater noise, artificial submerged lighting and trophic flow-on effects.

To deal with these issues and ensure that marine mammals are protected Sanford proposes:

- Staged development and adaptive management of the Five Farming Areas.

- That a Marine Mammal Management Plan be developed by an experienced marine mammal expert after consultation with the Department of Conservation and tangata whenua prior to commencing operations to ensure the most appropriate protection measures are in place.
- That monitoring be undertaken to improve knowledge of how marine mammals will perceive offshore farm structures visually and acoustically, and importantly, to confirm their reactions to farms and whether they use the application site. This includes acoustic surveys to characterise species occurrence in the region.

This is discussed further in Section 7 below.

6.3.9 Effects on Seabirds

The potential effects on seabird species are addressed in the AES Synthesis Report contained in **Appendix A** and the Wildlands Consultants Ltd report contained in **Appendix I**.

The main matters requiring consideration are habitat exclusion, changes to food resources, and entanglement, particularly for Foveaux shag and yellow-eyed penguin.

Habitat exclusion is not considered to be an issue for bottom feeding birds such as blue penguin or for pelagic feeding groups such as shearwaters (including tītī or muttonbird), petrels and albatross because of the lack of effects on the benthic food resources, the depth at which these species feed, and the small area occupied by structures relative to their wide foraging areas. The wide foraging areas and small area occupied by structures also means habitat exclusion will not be an issue for gulls, terns, shags, penguins and gannets.

Sanford proposes to prevent entanglement by:

- Implementing best available management practices for net design (including avoiding the use of traditional bird netting).
- Subsurface feeding in accordance with Section 3.4.1.
- Developing a Seabird Management Plan, prepared by an experienced marine seabird expert after consultation with the Department of Conservation and tangata whenua prior to commencing operations to ensure the most appropriate protection measures are in place.
- Staging development of the Five Farming Areas and incorporating monitoring, and adaptive management.

Vessel traffic past breeding or roosting locations is not an issue due to the offshore location of the Five Farming Areas. Service vessels may disturb birds that are on the water resting or foraging, but this is likely to be only over short periods and will be insignificant.

6.4 NAVIGATION

Effects on the safe and efficient navigation of vessels are addressed in the report by Jason Eriksson included as **Appendix K**.

While there are no formal navigation routes passing through the Project South area, it is located in the vicinity of natural uncharted vessel routes used by international and domestic shipping, and fishing vessels. It is also subject to some low intensity recreational use for fishing and yachting.

Vessels navigating through the Project South area in which the Five Farming Areas would be located would need to take account of the presence of the marine farm structures, which will take some additional effort. However, by implementing best practice measures to identify the Project South area to these mariners, Project South can be established without having an adverse effect on the safe and efficient navigation through the area.

The final design of those measures will be of a type, design, functionality, and placement which accords with IALA Guidelines, and will be to the approval of the Harbourmaster under his or her Maritime Delegation from the Director of Maritime New Zealand pursuant to sections 200, 444(2) and 444(4) of the Maritime Transport Act 1994. However, it is envisaged that conditions may include measures along the following lines:

- A 500 metre exclusion zone around the Mooring Structures Area (see Section 3.3) for all commercial boats with a draught of more than 5 metres.
- A 300 metre exclusion zone around the Mooring Structures Area (see Section 3.3) for all active commercial fishing boats.
- A 200 metre exclusion zone around the Farm Pen Area (see Section 3.3) for all other vessels.
- Installation of an Automatic Identification System (AIS) transmitter on each barge that is permanently moored onsite at each farm.
- Installation of Radar reflectors on each of the fish pens and the barge.
- Geofencing each Mooring Structures Area with radar alerts.
- Erection of warning signs on the structures, pens and barges advising other vessels to stay at least 200m clear of the fish pen and grid system, and also that the vessel is under video surveillance.
- Identification by marking and lighting which is in accordance with IALA Guidelines and approved by the Harbour Master under his or her Maritime Delegation from the Director of Maritime New Zealand pursuant to sections 200, 444(2) and 444(4) of the Maritime Transport Act 1994.
- Marking each Mooring Structures Area on maritime charts before any structures are installed.

- Releasing an advisory to mariners before any structures are installed.

Implementing these measures will also ensure the potential effects on navigation are managed in a manner which aligns with statutory obligations and international best practice insofar as it applies to an activity of this type in this location.

Because these Farming Areas will not be relocated once established, the navigational risk for local and recreational vessels would reduce over time.

6.5 COMMERCIAL FISHING

The Pisces Research report contained in **Appendix G** describes commercial fishery activities in this area.

As a major quota owner in this area, and very experienced fishing vessel operator, Sanford is satisfied that Project South will have minimal effect on fishing activities in this area.

6.6 VISUAL AMENITY, LANDSCAPE AND NATURAL CHARACTER

Visual amenity, landscape and natural character matters are addressed in the report by Frank Boffa included as **Appendix J**.

Overall, the effects on visual amenity are assessed as being relatively insignificant, because:

- The Five Farming Areas will be in excess of 10km from the nearest land masses, namely Ruapuke and Bench Islands, and in excess of 20km from Rakiura / Stewart Island and the lower part of the South Island. At this distance, the marine farm structures at the Five Farmed Areas would be unlikely to be visible.
- Views from passing commercial or cruise vessels will be transient, intermittent, influenced by weather conditions, and hence minor. In the case of cruise ships, views of the Five Farming Areas may in fact be a point of interest.
- Views from aircraft would also be limited given the farm locations relative to flight paths.

Based on distance and visibility considerations noted above, seascape effects in terms of views are also likely to be low to very low and transient in nature.

While natural character has not been defined in the RMA or NZCPS, it has been widely interpreted as describing the expression and perception of “naturalness” in terms of elements, patterns and processes, and as containing physical, ecological and experiential elements.

Overall, the combined natural character effects of Project South are assessed as being moderate to low.

No additional management of monitoring actions have been identified as being necessary.

6.7 RECREATION

The area in which Project South would be located is very lightly used for recreational fishing and yachting due to its exposed offshore location, and the Project South activities are not incompatible with the continued use of the area for those purposes. While it is envisaged that a 200 metre exclusion zone around the Farm Pen Area will be needed for recreational users, exclusion areas do not contain any unique recreational value relative to that of the broad expanse of surrounding ocean to which unimpeded access will be maintained.

6.8 CULTURAL VALUES

For reasons relating to the commercial sensitivity of this project, and the manner in which coastal space is allocated, Sanford regrets it has not been able to seek input from Te Rūnanga o Ngāi Tahu, or the four Rūnanga Papatipu o Murihiku – Awarua, Hokonui, Ōraka Aparima and Waihōpai on the Project South activities before lodging resource consent applications. Sanford also acknowledges that it has not engaged with Rākiura whānau, Rākiura Tītī Islands Committee, the Rakiura Tītī Islands Administration Body, Te Whaka a Te Wera Mātaitai Committee and Rakiura Māori Lands Trustees all of whom have a close connection to the environment in which Project South would be located.

Sanford will commence a full, thorough and open dialogue as soon as possible following lodgement of this application. Beginning in March 2020 Sanford intends on undertaking a comprehensive engagement and consultation programme in respect of Project South with tangata whenua including Te Rūnanga o Ngāi Tahu, Te Rūnanga o Awarua, Te Rūnanga o Ōraka Aparima, Te Rūnanga o Hokonui, Te Rūnaka o Waihōpai, Ngāi Tahu kaitiaki on Rakiura / Stewart Island and whanau from the outer islands. Sanford will ensure there is full and sufficient time for this to occur and will take guidance on how best to complete this engagement process.

To the extent it can, and without the active input of tangata whenua, Sanford has considered the cultural, spiritual, historic, and traditional associations of tangata whenua to this area when planning and assessing the effects of Project South. This first step included reviewing the various information related to the Ngāi Tahu Claims Settlement Act 1998 and Te Tangi a Tauira – the relevant iwi management plan for this area. Sanford has also reviewed the application documents for Ngāi Tahu's own proposed marine farm development - the Te Ara a Kiwa aquaculture project. Based on that work, Sanford understands at least the following are likely to be important when considering effects on cultural values:

- Effects on mahinga kai and kaimoana.
- Acknowledgement of the site as a part of a cultural landscape, with associated values.

- Protection of the mauri of coastal waters.
- Protection of Ngāi Tahu's own proposed marine farm development - the Te Ara a Kiwa aquaculture project.
- Impacts on customary fishing and practices, and fish stocks more generally.
- Protection of the indigenous biodiversity.
- Continued access to mahinga kai and customary use sites.
- Protection of threatened species including seabirds and marine mammals.
- Protection of the seafloor and ocean waters.
- Protection from biosecurity risk.
- Protection of tītī.
- Protection of oyster beds.
- Recognition and acknowledgement of the rights of tangata whenua.

Of note when considering these matters:

- Project South will be undertaken in a manner which protects tītī, including the nesting and feeding of those birds on nearby islands and in the surrounding marine area.
- Project South will be undertaken in a manner which protects other taonga marine bird species which are known to inhabit this area.[4]
- Project South will be undertaken in a manner which protects taonga marine mammal species which are known to inhabit this area.[5]
- The location and design of the Project South farmed areas means they will not have an adverse effect on taonga shellfish species, nor will this application adversely affect any habitat which is of biological significance for any fish species.
- Project South will not have any impacts on water quality which will impact upon the ability of tangata whenua to exercise their rights and interests in the coastal marine area.
- A decision on a coastal permit is still subject to the aquaculture decision process made by MPI under Part 9A, subpart 1 Fisheries Act 1996 which examines the effect that the permit will have on recreational, customary or commercial fishing. However,

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[4] These include: Hoiho (Yellow-eyed penguin), Karoro (Black backed gull), Koau (Black shag, Pied shag, Little shag), Korora (Blue penguin), Tara (Terns), Tawaki (Fiordland crested penguin) and Toroa (Albatrosses and Mollymawks).

[5] These include: Kekeno (New Zealand fur seals), Paikea (Humpback whales), Paraoa (Sperm whale), Rapoka/Whakahao (New Zealand sea lion/Hooker's sea lion), Tohora Southern right whale.

for completeness it is noted that Project South will not have any adverse effects on any scheduled Taiāpure or Mātaitai area or on the exercise of any other customary fishing rights. Nor will Project South have any adverse effects on commercial fisheries which may be utilised by Ngāi Tahu Seafood in realisation of fisheries settlement assets or other commercial fisheries assets.

- The benthic environment and water column at the Project South farmed areas shows no distinguishing physical features which suggest it would be a Tauranga Ika, or valued for customary fishing in the past, present or future.
- Even under optimum viewing conditions, that the main elements of the farmed areas would not be visible from Ruapuke or Bench Islands.

7. ENVIRONMENTAL MANAGEMENT AND MONITORING

7.1 INTRODUCTION

Sections 2 and 3 describe how the location and design of Project South and its Five Farming Areas were selected to minimise the effects of the salmon farming activity on the environment.

As described in Section 6, various management measures are proposed by Sanford to avoid, remedy or mitigate the potential adverse effects of Project South on ecological values and navigation. The need for monitoring has also been identified.

In respect of matters relating to visual amenity, landscape and natural character, recreation or commercial fisheries no additional management measures or monitoring are considered necessary

The potential management and monitoring of matters relating to cultural values will be determined in consultation with tangata whenua through the process described in Section 6.8.

Specific details of what Sanford proposes are set out below.

7.2 ECOLOGICAL EFFECTS

7.2.1 Staged Development and Adaptive Management

The staged development of Project South and its Five Farming Areas and utilising an adaptive management in response to monitoring results, will be an important means of managing the potential effects of Project South. It is described in Section 3.8.

Adaptive management and staged development will enable the effects of Project South to be confirmed as acceptable and in line with expectations while Project South and its Five Farming Areas are developed incrementally. It will also allow environmental management measures to be optimised over time.

7.2.2 Benthic and Water Column Environmental Monitoring Plan

Introduction

A comprehensive Benthic and Water Column Environmental Monitoring Plan (EMP) will be developed prior to any development of the Five Farming Areas which:

- Specifies the detail of the pre-development surveys to be carried out prior to any development occurring.
- Sets out how environmental standards specified in the consent conditions will be achieved to ensure the effects of the proposed development are no more than predicted and are appropriate for the area.

- Identifies details of the monitoring that will be undertaken to ensures standards are met.
- Sets out actions to be implemented if thresholds or limits specified in consent conditions are exceeded.

Benthic Monitoring and Management

Benthic monitoring will be carried out prior to any development commencing to provide a robust and defensible database. Further benthic monitoring will then occur during each of the development stages described in Section 3.8.

Benthic samples will be taken at the edge of pens and at various distances away from the pens in each Farming Area in the direction of the residual current to delineate the extent of effects, and at reference sites.

To inform the adaptive management of the Farming Areas, responses to triggers and standards contained in resource consent conditions will be set out in the EMP and submitted to Environment Southland prior to any development occurring. These measures will be aimed at retaining a functional benthos around salmon pens. Potential indicators will likely include benthic community diversity and number of taxa, observations on outgassing, presence of bacterial mats, and levels of copper and zinc.

Water Column Monitoring and Management

Water quality monitoring will also be carried out prior to any development commencing and on an ongoing basis.

The monitoring programme will set out the sites to be monitored, including sites near the pens, far-field sites and reference sites. It is expected sampling will include:

- Integrated surface samples for nutrients: TAN, nitrate-N, nitrite-N, TN, DRP, TP, TSS.
- Profiles of temperature, salinity, DO.
- Chl-a, as an indicator of phytoplankton biomass.
- Phytoplankton species composition with a focus on potential harmful species.

To inform the adaptive management of the Farming Areas, responses to triggers and standards contained in resource consent conditions will be set out in the EMP and submitted to Environment Southland prior to any development occurring. They will likely include limits on increases in TAN and chl-a above those recorded in pre-development surveys or compared with reference sites, and reductions in dissolved oxygen at a set distance from the pens (e.g. 250 m).

7.2.3 Biosecurity Management Plan

A full Biosecurity Management plan (BMP) for pests and disease will be developed prior to any development occurring.

It will include the following management measures:

- Effective management of external vessels and other pathways, especially of biofouling. Measures will be based on antifouling requirements and a “clean hull” standard.
- Hull biofouling management measures for vessels operating outside the Southland region and within the Southland region.
- Maintaining a low level of fouling on farm structures. This includes ensuring:
    - New infrastructure or infrastructure is treated to ensure it is pest-free;
    - All marine gear used is free of fouling and clean; and
    - There is no long stay anchoring of vessels other than the barges within Farming Areas.
- On-farm surveillance for early detection and elimination / containment of any incursions. This will include maintaining farms to be free of unwanted organisms and proper disposal of any unwanted organisms that are found.

7.2.4 Marine Mammal Management Plan

A Marine Mammal Management Plan will be developed prior to commencing operations.

It will be developed by an experienced marine mammal expert after consultation with the Department of Conservation and tangata whenua to ensure that the most appropriate protection measures are in place.

Key management goals for the Marine Mammal Management Plan will be to:

- Maintain marine mammal habitats.
- Minimise the attraction of marine wildlife to farms.
- Prevent entanglement.

Associated with these management measures will be a suite of monitoring to improve knowledge of how marine mammals will perceive offshore farm structures visually and acoustically, and importantly, to confirm their reactions to farms and whether / how they use the application site. It will include the collection of pre-development data on species’ use of the proposal area and associated Foveaux Strait waters and commencement of a database of marine mammal sightings.

7.2.5 Seabird Management Plan

A Seabird Management Plan will be developed prior to commencing operations.

It will be prepared by an experienced seabird expert after consultation with the Department of Conservation and tangata whenua to ensure that the most appropriate protection measures are in place.

Key management goals for the Seabird Management Plan will be to:

- Maintain seabird habitats.
- Minimise the attraction of marine wildlife to farms.
- Prevent entanglement.

7.3 NAVIGATION

Best practice measures will be implemented to identify the farm to mariners and ensure the safe and efficient navigation of vessels through the area. These are set out in Section 6.4.

7.4 SUMMARY

The range of management and monitoring measures proposed to be implemented are summarised in Table 7 below

Table 7: Summary of recommended management and monitoring of effects.

Issue	Proposed Management Approach	Proposed Monitoring Action
Hydrodynamics		
Changes to current speed and direction	None required. This matter has already been addressed by the location and design of the Five Farming Areas.	None
Water quality and plankton		
Potential for increased concentrations of TAN and chl-*a*	None required. This matter has already been addressed by the location and design of the Five Farming Areas. If monitoring during the staged development of the Farming Areas identifies unexpected adverse effects an adaptive management action may be required. This could include measures such as reducing stocking density or changing location/configuration of pens if required.	Monitoring at edge of pens, far-field and reference sites before development and at the end of each stage in accordance with the EMP (see Section 7.2.2).
Reduction in dissolved oxygen concentrations	None required. This matter has already been addressed by the location and design of the Five Farming Areas.	Routine daily monitoring at edge of pens and as part of water quality monitoring in accordance with the EMP (see Section 7.2.2).
Benthic environment		
Deposition of waste feed and faecal material	None required. This matter has already been addressed by the location and design of the Five Farming Areas. If monitoring during the staged development of the Farming Areas identifies unexpected adverse effects resting of sites may need to be considered	Monitoring at edge of pens, various distances from pens and at reference sites before development and at the end of each stage in accordance with the EMP (see Section 7.2.2).

Issue	Proposed Management Approach	Proposed Monitoring Action
Changes to benthic biota	As above	As above
Biosecurity		
Increased risk of introduced pest species on structures	Preparation and implementation of a Biosecurity Management Plan (see Section 7.2.3).	Monitoring for early detection of potential pests in accordance with the Biosecurity Management Plan (see Section 7.2.3).
Increased risk of disease in farmed salmon	Biosecurity Management Plan to include actions to eliminate or contain new incursions (see Section 7.2.3). Sanford also plan to conduct exposure trials to assess potential for salmon to act as intermediary for *Bucephalus longcornutus*.	Monitoring for early detection of disease in accordance with the Biosecurity Management Plan (see Section 7.2.3).
Increased risk of structures acting as hub for spread of disease to natural biota and oyster beds nearby	A comprehensive biofouling control programme will be undertaken as part of the Biosecurity Management Plan to manage biofouling risks associated with all service shipping to the Five Farming Areas from Big Glory Bay and other parts of New Zealand (including the Marlborough Sounds). This will protect the bluff oyster populations in Foveaux Strait from introduction of *B. ostreae*. Sanford also plan to conduct exposure trials to assess potential for salmon to act as intermediary for *Bucephalus longcornutus,* which can castrate oysters	Surveillance for introduced pests and disease as part of monitoring programme required by the BMP (see Section 7.2.3).
Wild Fisheries		
Exclusion in farmed areas	None required. This matter has already been addressed by the location and design of the Five Farming Areas.	None

Issue	Proposed Management Approach	Proposed Monitoring Action
Mammals		
Exclusion	Staged development and adaptive management of the Five Farming Areas. A Marine Mammal Management Plan will be developed by an experienced marine mammal expert after consultation with the Department of Conservation and tangata whenua to ensure that the most appropriate protection measures are in place. A key management goal for the MMMP will be to maintain marine mammal habitats (see Section 7.2.4)	Passive acoustic monitoring, or similar will be undertaken prior to development and after full development during the main whale migration period (see Section 7.2.4). Interactions with the farm will be monitored by local sightings recording
Entanglement	See above. Key management goals for the MMMP (see Section 7.2.4) will be to: • Minimise the attraction of marine wildlife to farms. • Prevent entanglement.	Recording of any entanglement incident regardless of outcome (see Section 7.2.4)
Birds		
Entanglement	Sanford proposes to prevent entanglement by: • Implementing best available management practices for net design (including avoiding the use of traditional bird netting). • Subsurface feeding in accordance with Section 3.4.1. • That a Seabird Management Plan be developed by an experienced marine seabird expert after consultation with the Department of Conservation and tangata whenua prior	Monitoring of any bird entanglement during the staged development of the Farming Areas and throughout the life of the farm.

Issue	Proposed Management Approach	Proposed Monitoring Action
	to commencing operations to ensure the most appropriate protection measures are in place. • Staging development of the Five Farming Areas and incorporating monitoring, and adaptive management.	
Navigation		
Effects on the safe and efficient navigation of vessels through the Project South area.	Implement best practice measures to identify the Five Farming Areas to mariners, the final design of which will be of a type, design, functionality, and placement which accords with IALA Guidelines, and is to the approval of the Harbourmaster under his or her Maritime Delegation from the Director of Maritime New Zealand pursuant to sections 200, 444(2) and 444(4) of the Maritime Transport Act 1994.	None
Commercial Fishing		
Effects on commercial fishing in the Project South area.	Implement best practice navigational marking to enable skippers to safely and efficiently operate in the area.	None
Visual Amenity, Landscape and Natural Character		
Effects on visual Amenity, landscape and natural character	None. These effects have already been managed by: • Locating the Farming Areas offshore and in locations where they cannot be seen from land; and • Locating the Farming Areas outside areas of outstanding natural landscape and natural character.	None.

Issue	Proposed Management Approach	Proposed Monitoring Action
Recreation		
Effects on the recreational fishing and yachting	Implement best practice navigational marking to enable skippers to safely and efficiently operate in the area.	
Cultural Values		
Effects on cultural values.	The potential management of matters relating to cultural values will be determined in consultation with tangata whenua through the process described in Section 6.8.	The potential monitoring of matters relating to cultural values will be determined in consultation with tangata whenua through the process described in Section 6.8.

8. CONSULTATION AND NOTIFICATION

For reasons relating to the commercial sensitivity of this project, and the manner in which coastal space is allocated, Sanford regrets it has not been able to undertake any consultation on the Project South activities before lodging resource consent applications.

Sanford will commence a full, thorough and open dialogue with the public as soon as possible following lodgement of this application.

This includes undertaking a comprehensive engagement and consultation programme in respect of Project South with tangata whenua including Te Rūnanga o Ngāi Tahu, Te Rūnanga o Awarua, Te Rūnanga o Ōraka Aparima, Te Rūnanga o Hokonui, Te Rūnaka o Waihōpai, Ngāi Tahu kaitiaki on Rakiura / Stewart Island and whanau from the outer islands. Sanford will ensure there is full and sufficient time for this to occur and will take guidance on how best to complete this engagement process.

To allow fulsome public input into this consent process Sanford has also requested full public notification of the applications.

In accordance with s62(3)(b) of the Marine and Coastal Area (Takutai Moana) Act 2011, prior to lodging these applications Sanford has notified the groups which have applied for recognition of Customary Marine Title of these applications. At the time of lodgement, no further dialogue with those parties has occurred.

9. PROVISIONS OF THE RELEVANT PLANNING DOCUMENTS

9.1 INTRODUCTION

When considering these applications for resource consents, the consent authority must, subject to Part 2, have regard to any relevant provisions of the following planning documents:

- The New Zealand Coastal Policy Statement 2010 ("**NZCPS**").
- The Southland Regional Policy Statement ("**RPS**").
- The Regional Coastal Plan or Southland ("**Coastal Plan Plan**").

The relevant provisions of these planning documents were considered when identifying the proposed location for Project South, when assessing the effects of Project South, and in determining how the effects of the activities should be avoided, remedied or mitigated.

An assessment of those provisions, and how the proposed activities sit in relation to them is provided below.

An analysis of the Ngāi Tahu ki Murihiku Natural Resource and Environmental Iwi Management Plan 2008: *Te Tangi a Tauira - The Cry of The People* ("**Te Tangi a Tauira**") has also been undertaken given the importance of the coastal marine area in and around Foveaux Strait to iwi, and the plan's provisions touch directly on the issues under consideration.

9.2 THE NEW ZEALAND COASTAL POLICY STATEMENT

The NZCPS sets out the planning framework for achieving the purpose of the RMA in the coastal environment of New Zealand. The 'second generation' operative version of the NZCPS was formally gazetted in December 2010.

The NZCPS contains provisions which address the following matters of relevance to the Project South:

- Aquaculture and provision for social and economic wellbeing.
- The efficient use of public space.
- The precautionary approach.
- Indigenous biodiversity.
- Harmful aquatic organisms.
- Discharges of contaminants.
- Natural character and landscape values.

- Tangata whenua values.
- Amenity and access.

A comprehensive assessment of the provisions which address the above matters and apply to Project South is provided in **Appendix L**. A summary of the key matters to which regard should be had when considering Project South is provided below.

9.2.1 Provision for Aquaculture and Social and Economic Wellbeing

A key theme of the NZCPS is enabling people and communities to provide for their social and economic wellbeing through use and development of the coastal environment, and it includes provisions which direct how this is to occur.

Key matters when considering Project South include:

- The NZCPS seeks to enable people and communities to provide for their social, economic, and cultural wellbeing through use and development of the coastal environment recognising, among other things, that:
    - Functionally some use and development which is important to the social, economic and cultural wellbeing of people and communities, can only locate in the coastal marine area; and
    - The protection of the values of the coastal environment does not preclude use and development of the coast where it locates in an appropriate place and form, and within appropriate limits.[6]
- Policy direction to recognise there are activities that have a functional need to locate in the coastal marine area, and to provide for those activities in appropriate places;[7]
- Policy direction to recognise the significant existing and potential contribution of aquaculture to the social, economic and cultural well-being of people and communities, by:
    - Regional planning documents making provision for aquaculture activities in appropriate places in the coastal environment, recognising that relevant considerations may include: the need for high water quality for aquaculture activities; and the need for land-based facilities associated with marine farming; and
    - Ensuring that development in the coastal environment does not make water quality unfit for aquaculture activities in areas approved for that purpose.[8]

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6 Objective 6, Policy 6(2)(c).
7 Policy 6(2)(c).
8 Policy 8.

Establishing and operating Project South and its Five Farming Areas will assist in achieving these objectives and implementing this policy direction.

As outlined in Section 6.2, Project South will make a significant contribution to the social and economic wellbeing of people and communities through its provision of a sustainable food resource, export revenue, and the employment and wages it will inject into the economy. It will also do this without having any significant adverse effect on the ability of other coastal activities to do the same. Its remote location means the only other existing activity that could potentially be impacted is commercial fishing and as a major quota owner in this area, Sanford is satisfied that the Project South proposal will have minimal effect on commercial fishing activities.

The Regional Coastal Plan pre-dates the NZCPS and cannot automatically be seen to give effect to its direction to provide for aquaculture in appropriate places. However, it does provide a framework for managing aquaculture in the region and, for the reasons outlined in Section 9.4 below, Project South sits comfortably with that framework.

It is also considered that the proposed salmon farming at the Five Farming Areas constitutes development in an 'appropriate place and form, and within appropriate limits' in the context of the NZCPS provisions for the following reasons:

- The Five Farming Areas have a functional need to be located in the coastal marine area.
- Water quality at the Five Farming Areas is well suited to effective and efficient farming of King salmon.
- The Five Farming Areas are well located relative to the land-based infrastructure required to support the activity.
- Salmon farming at the Five Farming Areas will avoid, remedy or mitigate its adverse effect on the environment in a manner which is consistent with the expectations of the NZCPS, including the directive provisions which address protection of landscape, natural character and biodiversity.[9]

9.2.2 Public Open Space

The NZCPS also seeks to maintain and enhance the public open space qualities and recreation opportunities in the coastal environment, recognising that the coastal marine area is an extensive area of public space for the public to use and enjoy.[10]

This is supported by policy direction promoting the efficient use of occupied space by activities, and to consider whether consent conditions should be applied to ensure that

[9] These are addressed in the AEE Sections which follow.

[10] Objective 4.

space occupied for an activity is used for that purpose effectively and without unreasonable delay.[11]

This policy direction informed the design of Project South and its Five Farming Areas. The design and clustered layout of the structures at each the Five Farming Areas minimises the area where free public movement would be excluded, while acknowledging the functional requirements of offshore salmon farming and the dynamic coastal environment in which the structures would be located.

9.2.3 The Precautionary Approach

The NZCPS directs that a precautionary approach should be adopted towards proposed activities whose effects on the coastal environment are uncertain, unknown, or little understood, but potentially significantly adverse.[12]

All new marine farming activities involve some degree of uncertainty in respect of their effects on the environment, irrespective of the extent of predevelopment assessment work undertaken. For larger scale projects in new areas, it is generally expected that development would occur in stages and an adaptive management approach adopted. This is a precautionary approach and will be followed by Sanford with Project South. Details of this approach are proposed in Section 3.8 and Section 7.2.1 of the AEE.

9.2.4 Indigenous Biodiversity

The key objective of the NZCPS in respect of biodiversity is to safeguard the integrity, form, functioning and resilience of the coastal environment and sustain its ecosystems by:

- Maintaining or enhancing natural biological and physical processes in the coastal environment and recognising their dynamic, complex and interdependent nature;
- Maintaining coastal water quality; and
- Protecting representative or significant natural ecosystems and sites of biological importance and maintaining the diversity of New Zealand's indigenous coastal flora and fauna.[13]

The first two matters are comfortably promoted by Project South. Water quality in this location is in its natural state and the ecological assessment has identified that Project South will not have any adverse effect of biological significance on the water column or coastal processes.

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[11] Policy 6(e).
[12] Policy 3.
[13] Objective 1.

With respect to the third matter, Section 2 describes the site selection process for Project South, a key aspect of which was to reduce its potential effects on biodiversity values. The area chosen for Project South avoids, and provides a buffer from, coastal protection areas, marine reserves, and other known areas of significant value. This includes the Catlins Coast Marine Mammal Sanctuary and the Northern Tītī Islands. The Five Farming Areas have also been selected in order to avoid areas having important benthic diversity and / or valued benthic habitat.

As described in Section 5, several important marine mammal and seabird species visit the area in which the Five Farming Areas would be located. Policy 11(a) contains explicit direction on the protection of those values, namely to avoid adverse effects on species which are:

- Indigenous taxa that are listed as threatened or at risk in the New Zealand Threat Classification System lists; and
- Taxa that are listed by the International Union for Conservation of Nature and Natural Resources as threatened.

Also, Policies 11(b)(iv) and (v) direct, in respect of:

- Habitats of indigenous species in the coastal environment that are important for recreational, commercial, traditional or cultural purposes; and
- Habitats, including areas and routes, important to migratory species;

that significant adverse effects are to be avoided and other adverse effects are avoided, remedied or mitigated. Each is addressed below.

Avoiding Adverse Effects on Seabird Species

A list of the seabird species which meet the Policy 11(a) criteria, and which are known to inhabit the waters in which Project South would be located is provided in Table 4 (see Section 5.8 above). Several measures have or will be taken to address potential effects on these species, including:

- Locating the Five Farming Areas many kilometres offshore and away from significant roosting sites.
- Minimising the area occupied by farm structures at each of the Five Farming Areas and in turn effects on habitat exclusion.
- Implementing best available management practices for net design (including avoiding the use of traditional bird netting).
- Developing a Seabird Management Plan prepared by an experienced marine seabird expert after consultation with the Department of Conservation and tangata whenua

prior to commencing operations to ensure the most appropriate protection measures are in place.

- Staging development of the Five Farming Areas and incorporating monitoring and adaptive management as described in Section 8.

The combination of these measures will mean the Policy 11(a) test is achieved.

Avoiding Adverse Effects on Marine Mammal Species

A list of the marine mammal species which meet the Policy 11(a) criterion of avoiding adverse effects, and which are known to inhabit and / or transit the waters in which Project South would be located, is provided in Table 3 (see Section 5.7).

A number of measures have or will be taken to address potential effects on these species, including:

- Minimising potential habitat exclusion by minimising the area occupied by farm structures at each of the Five Farming Areas.
- Staging development of the Five Farming Areas and incorporating monitoring and adaptive management.
- A Marine Mammal Management Plan will be developed by an experienced marine mammal expert after consultation with the Department of Conservation and tangata whenua prior to commencing operations to ensure the most appropriate protection measures are in place.
- Monitoring to improve knowledge of how marine mammals will perceive offshore farm structures visually and acoustically, and importantly, to confirm their reactions to farms and whether they use the application site.

The combination of these measures will mean the Policy 11(a) and Policy 11(b)(v) test is achieved.

Habitats of indigenous species in the coastal environment that are important for recreational, commercial, traditional or cultural purposes

In addition to the matters addressed above, Policy 11(b)(iv) also seeks to avoid significant adverse effects and to avoid, remedy or mitigate other adverse effects of activities on habitats of indigenous species in the coastal environment that are important for recreational, commercial, traditional or cultural purposes.

Project South has been located and designed to sit comfortably with this policy direction, with key matters being:

- The Five Farming Areas are not within an important or unique fishing area.

- A large buffer distance between the Five Farming Areas and the Foveaux Strait oyster beds has been provided.
- Project South will be undertaken in a manner which protects tītī, including the nesting and feeding of those birds on nearby islands and in the surrounding marine area.
- Project South will be undertaken in a manner which protects other taonga marine bird species which are known to inhabit this area.[14]
- Project South will be undertaken in a manner which protects taonga marine mammal species which are known to inhabit this area.[15]
- The location and design of the Project South farmed areas means they will not have an adverse effect on taonga shellfish species, nor will it adversely affect any habitat which is of biological significance for any fish species.

9.2.5 Harmful Aquatic Organisms

Policy 12 addresses harmful aquatic organisms. The key direction in Policy 12 for resource consent applications like this is to include conditions on resource consents to assist with managing the risk harmful aquatic organisms being released or otherwise spread. Several management measures are proposed for Project South and they are described in Section 7 of the AEE. It is expected they will form the basis of consent conditions. This is consistent with Policy 12.

9.2.6 Discharges

The only discharges required for Project South are:

- The discharge of feed using a subsurface mechanism in the manner described in Section 3.4.1; and
- Any application of medical therapeutants, which, in the unlikely event of being needed, would occur under strict procedures and at the direction of a specialist veterinarian (not having been required in all of Sanford's 25 years of operating in Big Glory Bay).

In managing these discharges, the NZCPS directs that particular regard be had to:[16]

- The sensitivity of the receiving environment;

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[14] These include: Hoiho (Yellow-eyed penguin), Karoro (Black backed gull), Koau (Black shag, Pied shag, Little shag), Korora (Blue penguin), Tara (Terns), Tawaki (Fiordland crested penguin) and Toroa (Albatrosses and Mollymawks).

[15] These include: Kekeno (New Zealand fur seals), Paikea (Humpback whales), Paraoa (Sperm whale), Rapoka/Whakahao (New Zealand sea lion/Hooker's sea lion), Tohora Southern right whale.

[16] Policy 23.

- The nature of the contaminants to be discharged, the particular concentration of contaminants needed to achieve the required water quality in the receiving environment, and the risks if that concentration of contaminants is exceeded;
- The capacity of the receiving environment to assimilate the contaminants;
- Avoiding significant adverse effects on ecosystems and habitats after reasonable mixing;
- Using the smallest mixing zone necessary to achieve the required water quality in the receiving environment; and
- Minimising adverse effects on the life-supporting capacity of water within a mixing zone.

Section 3.6.3 describes how both the discharge of feed and medical therapeutants will be carefully controlled to minimise any adverse effects on the environment. This is an appropriate response to the above matters.

9.2.7 Landscape and Natural Character

The key planning direction for Project South in respect of effects on landscape and natural character are:

- To avoid adverse effects of activities on outstanding natural features, outstanding natural landscapes and outstanding natural character areas in the coastal environment;
- To avoid significant adverse effects and avoid, remedy, or mitigate other adverse effects of activities on natural features and natural landscapes in the coastal environment; and
- To avoid significant adverse effects, and avoid, remedy or mitigate other adverse effects on the natural character of other areas of the coastal environment.[17]

In accordance with the NZCPS, Project South has avoided adverse effects on any outstanding natural feature or landscape or area of outstanding natural character by not locating the Five Farming Areas in these high value locations.

With respect to the landscape and natural character values that are present in this environment, the activity sits comfortably with the above policy direction on the basis that the location and design of the Five Farming Areas means that:

- Seascape effects are likely to be low to very low;

[17] Policy 13 and Policy 15.

- Natural character effects are likely to be in the moderate to low category; and
- Cumulative effects are likely to be very low to relatively insignificant.

9.2.8 Tangata Whenua

The NZCPS directs that the principles of the Treaty of Waitangi are taken into account and that the role of tangata whenua as kaitiaki is recognised and tangata whenua involvement in management of the coastal environment is provided for by:

- Recognising the ongoing and enduring relationship of tangata whenua over their lands, rohe and resources;
- Promoting meaningful relationships and interactions between tangata whenua and persons exercising functions and powers under the Act;
- Incorporating mātauranga Māori into sustainable management practices; and
- Recognising and protecting characteristics of the coastal environment that are of special value to tangata whenua.[18]

The associated policy direction seeks to:

- Recognise that tangata whenua have traditional and continuing cultural relationships with areas of the coastal environment, including places where they have lived and fished for generations;
- With the consent of tangata whenua and as far as practicable in accordance with tikanga Māori, incorporate mātauranga Māori in the consideration of applications for resource consents;
- Take into account any relevant iwi resource management plan and any other relevant planning document recognised by the appropriate iwi authority or hapū and lodged with the council;
- Provide for opportunities for tangata whenua to exercise kaitiakitanga over waters, forests, lands, and fisheries in the coastal environment through such measures as:
    - Bringing cultural understanding to monitoring of natural resources;
    - Providing appropriate methods for the management, maintenance and protection of the taonga of tangata whenua;
    - Having regard to regulations, rules or bylaws relating to ensuring sustainability of fisheries resources such as taiāpure, mahinga mātaitai or other non-commercial Māori customary fishing;

[18] Objective 3.

- In consultation and collaboration with tangata whenua, working as far as practicable in accordance with tikanga Māori, and recognising that tangata whenua have the right to choose not to identify places or values of historic, cultural or spiritual significance or special value.[19]

Section 6.8 sets out how Sanford intends to address these matters. It includes undertaking comprehensive engagement and consultation with tangata whenua. In this way, Sanford anticipates that the outcomes set out in the above provisions will be achieved.

9.2.9 Conclusion

The NZCPS directs that aquaculture activities in the coastal environment occur in appropriate places and within appropriate limits.

The proposed farming of salmon at the Five Farming Areas constitutes appropriate development in this context. Water quality at the Five Farming Areas is well suited to effective and efficient farming of King salmon, and the Farming Areas are well located relative to required land-based infrastructure. The activity will also be undertaken in a manner which will avoid, remedy or mitigate its adverse effect on the environment in a manner which is consistent with the expectations of the NZCPS for the protection of environmental values, including its directive provisions which address protection of landscape, natural character and biodiversity, and its directive that a precautionary approach be taken.

9.3 SOUTHLAND REGIONAL POLICY STATEMENT

The RPS became operative in 2016. It postdates the NZCPS and therefore sets out how its national direction is to be given effect to in Southland's coastal environment.

Relevant provisions are contained in the following chapters of the RPS:

- Chapter 3 Tangata Whenua;
- Chapter 6 Biodiversity;
- Chapter 7 Coast; and
- Chapter 10 Natural Features and Landscapes.

A comprehensive assessment of the provisions in the above chapters which apply to Project South is provided in **Appendix L**. A summary of the key matters to which regard is to be had when considering the application for Project South's coastal permit is provided below.

[19] Policy 2.

9.3.1 Tangata Whenua

Chapter 3 addresses resource management issues of significance to tangata whenua in Southland. Key outcomes sought include:

- All local authority resource management processes and decisions take into account iwi management plans.[20]
- Mauri and wairua are sustained or improved where degraded, and mahinga kai and customary resources are healthy, abundant and accessible to tangata whenua;[21]
- Wāhi tapu, wāhi taonga and sites of significance are appropriately managed and protected;[22] and
- Māori are able to develop and use their land and resources and provide for their social, economic and cultural wellbeing, in a manner that is sustainable.[23]

Section 6.8 sets out how Sanford intends to address these matters. It includes undertaking a comprehensive engagement and consultation programme with tangata whenua. In this way, Sanford anticipates that the outcomes set out in the above provisions will be achieved.

9.3.2 Biodiversity

Policy BIO.3 contains the key direction for managing effects of Project South on biodiversity, requiring that it be protected from adverse effects in the manner set out in Policy 11 of the NZCPS.

For the reasons set out in Section 9.2.4, this is achieved here.

9.3.3 Coast

The RPS directs 'appropriate' aquaculture be provided for in Southland's coastal environment.[24]

Of prime importance when determining whether Project South is 'appropriate aquaculture' in this context is achieving the definitive bottom lines in Objective COAST.5, Policy BIO.3 and Policy COAST.3 for how biodiversity, landscape and natural character values are to be protected. Collectively they require Project South to be located and managed to achieve the directive policies contained in the NZCPS for those matters. For the reasons set out in Section 9.2, those directives will be achieved by Project South.

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[20] Objective TW.2.
[21] Objective TW.3.
[22] Objective TW.4.
[23] Objective TW.5.
[24] Objective COAST.2, Objective COAST.5 and Policy COAST.4.

Other important aspects of Project South which confirm that it is "appropriate" aquaculture in terms of the RPS provisions are:

- Effects of Project South on water quality will be avoided remedied or mitigated such that coastal water quality and ecosystems are maintained;[25]
- The offshore location of Project South and the design of its structures means it will not have adverse effects on historic heritage, coastal dune systems or natural hazards, and its adverse impacts on public access, amenity and social values will be minimal;[26] and
- A comprehensive suite of measures is proposed for avoiding, remedying or mitigating the effects of the activity.[27]

Policy COAST.2 directs that landscapes of cultural significance to tangata whenua be maintained or enhanced. This will be addressed via the comprehensive engagement and consultation programme with tangata whenua discussed in Section 6.8.

9.3.4 Natural Features and Landscapes

Chapter 10 contains provisions which address:

- Outstanding natural features and landscapes;
- Locally distinctive and valued features and landscapes; and
- Natural features and landscapes of cultural significance to tangata whenua.

As outlined in Section 5.9, Project South is not located within any outstanding natural feature or landscape.

Likewise, no locally distinctive or valued natural features or landscapes have been identified in the Project South area. However, even if these values were adjudged to be present, the effects of Project South on this seascape have been assessed as being low to very low, and would meet the relevant policy test that adverse effects, and in particular significant adverse effects, are to be managed in a manner consistent with the values identified.[28]

Policy LNF.3 seeks to identify, assess and manage natural features and landscapes of cultural significance to tangata whenua as either outstanding natural features and landscapes or locally distinctive and valued natural features and landscapes, depending on the values associated with them. Sanford is not aware that any such natural feature or

[25] As sought by Objective COAST.3 and Policy COAST.5.
[26] As sought by Policy COAST.2.
[27] As sought by Objective COAST.2 and Objective COAST.5.
[28] Policy LNF.2.

landscape of cultural significance has been identified by tangata whenua for the Project South area. However, this will be discussed during the comprehensive engagement programme Sanford proposes with tangata whenua.

9.3.5 Conclusion

The RPS postdates the NZCPS and sets out how its national direction will be given effect to in Southland's coastal environment. It directs that appropriate aquaculture be provided for in Southland's coastal environment and sets out a framework of objectives and policies which provide guidance on what 'appropriate' aquaculture is in the Southland region. Project South constitutes appropriate aquaculture in that context for the following reasons:

- The area is well suited to offshore aquaculture, considering the water quality and hydrodynamic conditions present, and its proximity to the land-based infrastructure required to support the activity;
- It will achieve the definitive bottom lines in the RPS for how biodiversity, landscape and natural character values are to be protected; and
- It will manage effects on other values in accordance with the relevant RPS objective and policy direction.

9.4 REGIONAL COASTAL PLAN FOR SOUTHLAND

A comprehensive assessment of the Coastal Plan provisions which apply to Project South is provided in **Appendix L**.

Of relevance to Project South are the Coastal Plan provisions which address:

- Marine farming.
- Protecting important values.
- Vegetation and fauna.
- Exotic fauna introduction.
- Water quality.
- Benthic deposition.
- Structures.
- Coastal processes.
- Navigational safety.
- Justifying exclusive occupation of public space.
- Landscape and Natural Character.
- Amenity Values.

- The importance of consultation.
- Tangata Whenua O Murihiku.

A summary of the key matters to which regard should had when considering the application for Project South's coastal permit is provided below.

9.4.1 Marine Farming Specific Provisions

The key planning direction in the specific marine farming provisions is to:

- Avoid the adverse effects from the establishment of marine farms in Marine Reserves, Fiordland's internal waters, Lords River, Port Pegasus, Paterson Inlet (except Big Glory Bay and the Salmon Farming Refuge Zone), and Port William on Rakiura / Stewart Island, and that part of Awarua Bay that lies to the east of the Tiwai Causeway;[29]
- Avoid, remedy or mitigate any adverse effects of marine farming operations;[30]
- Require monitoring of individual marine farm sites;[31]
- Encourage the efficient application of nutrients discharged to the coastal marine area as a food source;[32] and
- Encourage the efficient application of fauna health products (such as antibiotics and vitamins), for the target farmed species in the coastal marine area.[33]

In accordance with this direction:

- The location of the Five Farming Areas for Project South will avoid adverse effects on the areas listed above;
- A range of measures have been identified for avoiding, remedying or mitigating the effects of Project South on the environment, and for monitoring effects. These are summarised in Section 2, 3, 6 and 7; and
- Project South will utilise state of the art underwater feeding technology to ensure the efficient application of feed (and the associated nutrients) and fauna health products. The offshore location of Project South also means nutrification of the water body is not an effect of concern here, and modelling has shown any effects of that nature will be of no biological significance.

[29] Policy 15.1.3.
[30] Objective 15.1.1.
[31] Policy 15.1.4.
[32] Policy 7.3.8.1.1.
[33] Policy 7.3.8.1.2.

9.4.2 Protection of Values

Section 4.1 of the Coastal Plan sets out its overarching direction for the protection of values in Southland's coastal marine area.[34] Key themes are that:

- The values of the coastal marine area to be identified;
- Adverse effects on those values will be avoided, wherever practicable, remedied or mitigated; and
- The degree of protection that is afforded each value should be commensurate with the significance of the value.

Project South conforms with this approach.

9.4.3 Vegetation and Fauna

Key themes in the Coastal Plan in respect of vegetation and fauna are:

- To protect, and avoid significant adverse effects of disturbance to, areas of significant indigenous vegetation or significant habitats of indigenous fauna;[35] and
- To protect the habitats of species in the coastal marine area which are important for commercial, recreational, traditional or cultural purposes.[36]

With respect to the first matter, Section 6 and 7 describe how adverse effects on the habitat of endangered seabird species, including yellow eyed penguin and Foveaux shag, and on the habitat of marine mammal species will be addressed. This is also discussed in detail in Section 9.2.4 which addresses Policy 11 of the NZCPS.

Key points to relevance in respect of the second matter are:

- The Five Farming Areas are not of significant importance for commercial or recreational fishing.
- A significant buffer has been provided between the Five Farming Ares and the nationally important Bluff oyster fishery.
- The Project South area is known habitat of several species of marine mammals and seabirds which are important to tangata whenua. Section 6 describes the potential effects on these species and how they will be protected.

[34] Objective 4.1.1, Objective 4.1.2, Policy 4.1.1 and Policy 4.1.2.
[35] Objective 5.4.1.1, Policy 5.4.1.1.
[36] Policy 5.4.1.2.

9.4.4 Exotic Fauna Introduction

The Coastal Plan directs that the introduction of exotic fauna be prevented where information relating to that species indicates that its introduction is likely to:

- Adversely affect indigenous vegetation or indigenous fauna; or
- Alter coastal processes, natural character, or the life-supporting capacity of ecosystems.[37]

As described in Section 6, a range of assessments have been completed on the potential effects of Project South on the various matters listed above. The main potential effects of Project South in this regard relate to impacts of the fish on the water column, benthic deposition and disease risk. For the reasons outlined in Section 6, effects on the water column and benthic environment are not expected to be of any biological significance. Likewise, Project South has been designed with suitable separation distances between its Five Farming Areas, and between the Five Farming Areas and natural habitats of significance, in order to manage disease risk.

9.4.5 Water Quality

The Coastal Plan identifies the that the 'natural state' of coastal waters should be protected wherever it is considered that water can be fairly described as being in a natural state. In the receiving environment of the Five Farming Areas the water is considered to be classified in this manner.[38]

The protection of waters in their natural state will be achieved by Project South, which for reasons described in Section 6.3.3 will not have any effect of biological significance on water quality.

9.4.6 Deposition

The key theme in the Coastal Plan is that the adverse effects of deposition be avoided wherever practicable, remedied or mitigated.[39]

Project South does this by:

- Locating the Five Farming Areas in dynamic offshore locations with strong currents; and
- Using best practice technology to minimise uneaten feed and associated deposition. This includes underwater feeding and use of underwater cameras and related sensors allow constant monitoring of the fish's environment including feeding behaviour.

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[37] Objective 5.4.3.1, Policy 5.4.3.1.

[38] Objective 7.2.2.1, Objective 7.2.2.2, Policy 7.2.2.2.

[39] Policy 10.2.1, Policy 10.2.3.

The Coastal Plan also directs that adverse effect of deposition on areas with Natural State waters (such as the five farmed sites) be avoided.[40] The associated explanation for this policy notes that deposition on the bed of these natural state waters could have consequences for the biota that it supports, without having any effect on water quality itself. However, that outcome of concern is not expected here. The absence of sensitive reefs or biogenic communities around the farm sites, generally low abundance and richness of infauna, the small area actually occupied, the disturbance from strong currents and previous dredging and fishing, and localised nature of deposition mean that effects on the seabed from the Project South proposal will not be ecologically significant. This also means any effects on the benthic community would not have any measurable effect on higher levels in the food web such as birds and fish or inshore areas.

9.4.7 Coastal Processes

The Coastal Plan seeks to avoid, remedy or mitigate the interference of coastal processes by coastal use and development where such interference could cause adverse effects.[41]

This is achieved through the location of Project South and the design of the farm structures, which together will avoid, remedy or mitigate effects on coastal processes such that:

- Effects on hydrodynamics are expected to be very small and localised; and
- The ecological consequences of potential alterations to the hydrodynamic regime as a result of the proposal are expected to be negligible.

9.4.8 Structures

The Coastal Plan recognises the benefits of structures in the coastal marine area.[42]

However, it also seeks to ensure that:

- Structures are located in the most appropriate site so as to avoid, remedy or mitigate adverse effects of their presence;[43]
- Where appropriate, any permanent structure/building is of a form and is finished in materials and of colours which blend into the natural character of the area;[44] and
- Lighting and glare do not adversely affect the natural character, amenity and navigation safety of the coastal marine area.[45]

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40 Policy 10.2.9.
41 Objective 12.1.2, Policy 12.1.5.
42 Objective 11.2.2.
43 Objective 11.2.1.
44 Objective 11.2.3.
45 Objective 11.2.4.

In accordance with these provisions, the Five Farming Areas are considered to be suitable and appropriate, given the operational requirements for offshore marine farming of King salmon (including the aquatic habitat, sea conditions and proximity to shore based infrastructure), the potential effects of the activity on the environment, and the need to avoid, remedy or mitigate those adverse effects. This is discussed further in Section 2.

With respect to effects on landscape, natural character and visual amenity:

- Overall the visual effects of the proposed farmed areas and their associated servicing will be very low and relatively insignificant;
- Seascape effects are likely to be low to very low;
- Natural character effects are likely to be in the moderate to low category; and
- Cumulative effects are likely to be very low to relatively insignificant.

9.4.9 Navigational Safety

A key theme in the Coastal Plan is to ensure safe and efficient navigation in the coastal marine area,[46] and to preserve existing navigation routes around the coast of the region, and to and from launching places, ports and anchorages.[47]

Sections 6 and 7 describe how this is achieved by Project South, key contributors being the offshore location and restricted size of the Five Farming Areas, and the various measures that will be implemented to inform mariners.

9.4.10 Justifying Occupation

The Coastal Plan recognises that some activities require exclusive occupation, notwithstanding the fact that the public have a right to use the coastal marine area.[48] However, it contains a number of provisions which direct how this should occur. Those provisions seek to ensure that any exclusive or preferential occupation of the coastal marine area is necessary and justified (both in a spatial and temporal context), and that the availability of the coastal marine area for public recreation and other uses not requiring any form of preferential occupation be maintained.[49]

This planning direction was an important consideration when shaping Project South, and accordingly, the design of the activity sits comfortably with it. Key points to note include:

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[46] To come.

[47] To come.

[48] Policy 4.1.1.

[49] Objective 4.4.1, Policy 4.2.1, Objective 4.4.1, Policy 4.4.1, Policy 4.4.2, Objective 9.1.1, Objective 9.1.2, Policy 9.1.1, Policy 9.1.2, Policy 9.1.3, Policy 9.1.4, Policy 9.1.5, Policy 9.1.6.

- For reasons described in Sections 2 and 3, occupation of the Five Farming Areas over the life of the consent will be required to enable the farming of King salmon in these locations.
- As described in Section 3, a staged approach is proposed for implementation of Project South. It contemplates allocated space being developed in a methodical way within reasonable time periods.
- The proposed staged development approach means the amount of space from which other users will be excluded will be limited to that required for the Project South activities at that point in time. In turn, this means that during the initial years of development free unimpeded access will be maintained over the farm areas which are not yet in use.
- The area in which Project South would be located is very lightly used for recreational fishing and yachting, and the Project South activities are not incompatible with the continued use of the area for those purposes. Recreational users will only be excluded from the minimum area necessary for operational purposes, and the area that would be occupied by those farmed structures does not contain any unique recreational value relative to that of the surrounding ocean to which unimpeded access will be maintained.
- With the establishment of the navigational aids outlined in Section 7, commercial vessels (including shipping, cruise liners and fishing vessels) will continue to be able to navigate through this area in a safe and efficient manner.
- As a major quota owner in this area, Sanford is satisfied that Project South will have minimal effect on fishing activities in this area.

9.4.11 Natural Character

The key planning direction for natural character is to adopt the provisions in the NZCPS.[50] Those provisions are achieved by Project South for the reasons set out in Section 9.2.7.

9.4.12 Landscape

The key planning themes in the landscape provisions are to:

- Identify and protect outstanding natural features and landscapes within the coastal marine area; and
- Consult with the tangata whenua and take into account tangata whenua cultural, traditional and spiritual values in relation to issues affecting landscapes and natural features.

[50] Objective 5.1.1, Policy 5.1.1.

No outstanding natural features or landscapes are affected by Project South.

The second matter will be a key point of discussion during Sanford's engagement with tangata whenua.

9.4.13 Amenity Values

The Coastal Plan seeks to:

- Ensure that the use and development of the coastal marine area will not have significant adverse effects on amenity values;[51]
- Recognise, maintain and enhance the contribution that open space makes to the amenity values in the coastal environment;[52] and
- Ensure that the effects of noise in the coastal marine area do not adversely affect people's health and well-being, natural character and amenity values.[53]

Because of the remote offshore location of the Five Farming Areas, public use of those areas will be limited to infrequent visits by recreational fishers, yachts and working commercial vessels. Other than the noise of service vessels, the only other notable noise source at the Five Farming Areas will be compressors. They will not cause an adverse effect given the location. The marine farming structures are also all relatively low in height, which will maintain the broader sense of open space that dominates offshore areas like this. Vessels will also continue to be able to pass through this area safely for the reasons outlined in Section 6.4.

9.4.14 Tangata Whenua

Section 5.6 of the Coastal Plan contains a range of provisions which seek:

- To recognise and provide for cultural, spiritual and traditional values and uses of Ngai Tahu in the coastal marine area; and
- To ensure that consultation takes place with tangata whenua in appropriate circumstances.

Section 6.8 sets out how Sanford intends that Project South addresses these matters. This includes undertaking a comprehensive engagement and consultation programme with tangata whenua.

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[51] Objective 5.3.1, Policy 5.3.1.

[52] Objective 5.3.3, Policy 5.3.2.

[53] Objective 5.3.7, Policy 5.3.15, Policy 5.3.16, Policy 5.3.18, Policy 5.3.20.

9.4.15 Consultation

The Coastal Plan recognises the importance of consultation to enable an informed decision to be made on the proposed activity.[54]

For reasons relating to the commercial sensitivity of this project, and the manner in which coastal space is allocated, Sanford regrets it has not been able to undertake any consultation on the Project South activities before lodging resource consent applications.

Sanford will commence a full, thorough and open dialogue as soon as possible following lodgement of this application.

Section 6.8 sets out how Sanford intends to address these matters. It includes undertaking a comprehensive engagement and consultation programme with tangata whenua. In this way, Sanford anticipates that the outcomes set out in the above provisions will be achieved.

This will ensure decisions on these applications are informed in the manner sought by these provisions.

9.4.16 Cumulative Effects

As directed by the Coastal Plan, South will avoid, remedy or mitigate cumulative adverse effects[55] and it reflects a level of use which is appropriate in this coastal marine area.[56]

9.4.17 Conclusion

The Coastal Plan provisions informed the site selection process for Project South and its approach to managing effects. Accordingly, Project South sits comfortably with its objective and policy provisions, including those which directly address marine farming.

9.5 TE TANGI A TAUIRA

Te Tangi a Tauira is the Iwi Management Plan which applies to the Project South area. The purpose of Te Tangi a Tauira is to:

- Describe the values underpinning the relationship between Ngāi Tahu ki Murihiku and the natural environment;
- Identify the primary issues associated with natural resource and environmental management in the takiwā, from the perspective of Ngāi Tahu ki Murihiku; and

[54] Objective 4.9.1, Objective 4.9.2, Policy 4.9.1, Policy 4.9.2.
[55] Objective 4.7.1, Policy 4.7.1.
[56] Objective 4.7.2.

- Articulate Ngāi Tahu ki Murihiku policies and management guidelines for natural resource and environmental management, wāhi tapu and wāhi taonga.

An assessment of Project South against the provisions of Te Tangi a Tauira which Sanford understands are relevant to the activity is provided in **Appendix L**. They include the Ngā Kaupapa which address:

- The general policy for Southland's coastal environment;
- Coastal water quality;
- Management areas;
- Aquaculture and marine farms;
- Coastal ecosystems;
- Marine birds; and
- Protection of significant coastal sites.

First and foremost, Sanford acknowledges that Te Tangi a Tauira is an important planning document designed to assist tangata whenua in carrying out kaitiaki roles and responsibilities, and that tangata whenua are best placed to assess Project South against its provisions.

Sanford expects this to occur as part of the engagement and consultation it proposes.

9.6 CONCLUSION

The planning framework recognises that aquaculture makes a significant contribution to the social, economic and cultural well-being of people and communities and has a functional need to be located in the coastal environment.

It directs that aquaculture be provided for in appropriate places and within appropriate limits.

The planning framework is not prescriptive as to where those appropriate places are in this region. However, it does provide clear guidance on the areas in Southland where aquaculture should not be located. It also provides clear guidance on the effects-based outcomes that any aquaculture development should achieve. Both matters informed the site selection process for Project South and its approach to managing effects.

As a result, Project South and its proposed marine farming at the Five Farming Areas constitutes development in an appropriate place and form, and within appropriate limits in the context of the planning framework which applies here.

Consistent with the expectations of the planning framework, a precautionary approach will also be followed by Sanford with Project South. Details of this approach are proposed in Section 3.8 and Section 7 of the AEE.

10. RESOURCE MANAGEMENT ACT MATTERS

10.1 REQUIREMENTS OF A CONSENT APPLICATION

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

The resource consent application for Project South accompanying this AEE is in the prescribed form, as set out in Form 9 of the Resource Management (Forms, Fees, and Procedure) Regulations 2003.

An assessment of the contents of this AEE and its associated appendices against the requirements of Schedule 4 and the information requirements of the Coastal Plan, is provided in **Appendix M** of this AEE. It shows that in accordance with Section 1 of Schedule 4, the information is specified in sufficient detail to satisfy the purpose for which it is required.

10.2 SECTION 104D

As outlined in Section 4, the proposed activity is classified as non-complying under the Coastal Plan.

Section 104D of the RMA establishes restrictions on the ability of a consent authority to grant resource consents for non-complying activities. It states:

> *(1) Despite any decision made for the purpose of notification in relation to adverse effects, a consent authority may grant a resource consent for a non-complying activity only if it is satisfied that either—*
>
> *(a) the adverse effects of the activity on the environment (other than any effect to which section 104(3)(a)(ii) applies) will be minor; or*
>
> *(b) the application is for an activity that will not be contrary to the objectives and policies of—*
>
> *(i) the relevant plan, if there is a plan but no proposed plan in respect of the activity; or*
>
> *(ii) the relevant proposed plan, if there is a proposed plan but no relevant plan in respect of the activity; or*
>
> *(iii) both the relevant plan and the relevant proposed plan, if there is both a plan and a proposed plan in respect of the activity.*

The objectives and policies of the Coastal Plan (the relevant plan here) are identified and assessed in Section 9.4. As is noted in that assessment, the proposed activity will not be contrary to those objectives and policies when viewed in an overall way.

Additionally, the location of Project South and the manner in which it would be operated and monitored will combine to mean that adverse effects will be minor.

As such, the requirements of section 104D(1) of the RMA are met. The resource consent applications can, therefore, be considered in the broader context in accordance with section 104 of the RMA.

10.3 SECTION 104

10.3.1 Introduction

Section 104 of the RMA identifies the matters that a consent authority must have regard to, subject to Part 2, when considering an application for resource consent. It states:

> *(1) When considering an application for a resource consent and any submissions received, the consent authority must, subject to Part 2, have regard to–*
>
> *(a) any actual and potential effects on the environment of allowing the activity; and*
>
> *(ab) any measure proposed or agreed to by the applicant for the purpose of ensuring positive effects on the environment to offset or compensate for any adverse effects on the environment that will or may result from allowing the activity; and*
>
> *(b) any relevant provisions of—*
>
> *(i) a national environmental standard:*
>
> *(ii) other regulations:*
>
> *(iii) a national policy statement:*
>
> *(iv) a New Zealand coastal policy statement:*
>
> *(v) a regional policy statement or proposed regional policy statement:*
>
> *(vi) a plan or proposed plan; and*
>
> *(c) any other matter the consent authority considers relevant and reasonably necessary to determine the application.*

Section 104 of the RMA does not give primacy to any of the matters to which a consent authority is required to have regard. All of the relevant matters are to be given such weight as the consent authority deems appropriate in the circumstances, and all matters listed in section 104(1) are subject to Part 2 of the RMA.

An assessment of the proposed activity against the relevant matters set out in section 104 of the RMA is provided in the sections below.

10.3.2 Actual and Potential Effects

The actual and potential effects of the proposed activity are set out in Section 6 and 7.

10.3.3 Relevant Provisions of the Planning Documents

The provisions of the relevant planning documents, and an assessment of how the proposed activities sit in relation to them is provided in Section 9.

10.4 PART 2

Because the Coastal Plan predates the NZCPS, Sanford has, out of an abundance of caution, assessed Project South against Part 2 of the RMA, as set out below.

10.4.1 Section 5

The purpose of the RMA (section 5) is to promote the sustainable management of natural and physical resources. The Act defines "sustainable management" as:

> *"managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural wellbeing and for their health and safety while:*
>
> *(a) Sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and*
>
> *(b) Safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and*
>
> *(c) Avoiding, remedying, or mitigating any adverse effects of activities on the environment."*

Project South has been designed to embody sustainable management of natural and physical resources and in turn is consistent with section 5.

As outlined in Section 6.2, Project South will make a significant contribution to the social and economic wellbeing of people and communities through its provision of a sustainable food resource, export revenue, and the employment and wages it will inject into the economy. This includes skilled jobs associated with the farming itself, harvesting, processing, and hatchery facilities, and the employment of people in supporting services. It will also do this without having any significant adverse effect on the ability of other coastal activities to do the same. Its remote location means the only other existing activity that contributes to peoples social, economic and cultural wellbeing and which could potentially be impacted is commercial fishing. As a major quota owner in this area, Sanford is satisfied that the Project South proposal will have minimal effect on fishing activities in this area.

With respect to sections 5(a), (b) and (c):

- Project South will not impact on the ability of the coastal marine area to meet the reasonably foreseeable needs of future generations, noting that it will not have any adverse effects water quality or on coastal processes. Nor is it expected to have any significant adverse effect on the resources in the area which are important for cultural, commercial or recreational reasons.
- The ecological assessments completed for Project South have demonstrated that the life supporting capacity of the coastal marine area will be safeguarded, noting that the proposed activity is not expected to have any adverse effect of biological significance on water quality of coastal processes.
- A range of measures are proposed to avoid, remedy or mitigate the adverse effects of Project South on the environment. These are described in Section 7 of the AEE and have been informed by expert assessment and the directions of the planning framework which applies here in the NZCPS, RPS and Coastal Plan.

10.4.2 Section 6

Section 6 of the Act sets out matters of national importance that all persons exercising functions and powers under the RMA shall recognise and provide for. With respect to Project South the matters of relevance are:

- Natural character in the area the Five Farming Areas would be located is likely to be high, and for the reasons set out in Sections 9.2.6, 9.3.4 and 9.4.11 it will be preserved in accordance with the expectations of the NZCPS, RPS and Coastal Plan. This recognises and provides for natural character management in accordance with section 6(a) of the Act.
- The location of the Five Farming Areas was selected to avoid outstanding natural features and landscapes and recognises and provides for landscape in the manner directed by section 6(b) of the Act.
- The area in which the Five Farming Areas are located is habitat for some species of seabird (including yellow eyed penguin and Foveaux shag) and some marine mammal species. For the reasons set out in Section 6.3.8 and 6.3.9, and 9.2.4, Project South has been designed to protect that habitat and avoid adverse effects on those species. This achieves the outcome sought by section 6(c) of the Act.
- For the reasons set out in Section 9.4.10, public access in the coastal marine area will be maintained in accordance with the expectation of the Coastal Plan. This recognises and provides for the maintenance of public access in accordance with section 6(d) of the Act.
- Sanford acknowledge that the broader seascape in which Project South would be located is very important to Te Rūnanga o Ngāi Tahu and its papatipu rūnanga, and

Section 6.8 sets out how Sanford intends these Project South address these matters. By following that process Sanford anticipates that the relationship of Māori and their culture and traditions with their ancestral lands, water, sites, wāhi tapu, and other taonga will be recognised and provided for by Project South in accordance with section 6(e) of the Act.

10.4.3 Section 7

Section 7 of the RMA identifies additional matters that consent authorities shall have particular regard to when exercising their functions and powers under the Act. With respect to Project South the matters of relevance are:

- Sanford acknowledges kaitiakitanga and the ethic of stewardship (sections 7(a) and (aa)) and the relationship with this area of Te Rūnanga o Ngāi Tahu, Te Rūnanga o Awarua, Te Rūnanga o Oraka/Aparima, Te Rūnanga o Hokonui, Te Rūnaka o Waihōpai, and whanau from the outer islands. How these concepts should be incorporated into Project South will be discussed during the consultation process.
- The proposed marine farm is considered to be an efficient use of natural and physical resources in the context of section 7(b), as it will enable the utilisation of a coastal location that is suitable for the farming salmon (due to its water depth, water quality and sheltered located). The location of Project South also enables it to make more efficient use of Sanford's substantial existing shore-based facilities associated with its Big Glory Bay operation, including its hatcheries and processing plant.
- In respect of section 7(c), Project South will maintain amenity values in accordance with the expectation of the Coastal Plan (see Section 9.4.13).
- Sections 7(d), (f) and (g) of the RMA relate to the intrinsic values of ecosystems, the quality of the environment, and the finite characteristics of natural and physical resources. All of these matters were given consideration when selecting the location of, and design for, Project South, as well as when assessing its effects and identifying appropriate mitigation and monitoring measures.

10.4.4 Section 8

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

Sanford is not a *"person exercising functions and powers under the RMA"*. With respect to the resource consent being sought by Sanford that is Environment Southlands role. That said, Sanford anticipates that the consultation which it will undertake with tangata whenua

will assist the Council to ensure that the principles of the Treaty of Waitangi have been taken into account.

10.4.5 Summary

After considering all the relevant matters under Part 2 and section 104, granting the resource consents with appropriate conditions will promote the purpose of the Act and would constitute sustainable management of natural and physical resources for the following reasons:

- It allows the use of natural and physical resources in a way which enable people and the community to provide for their social, cultural and economic wellbeing; and
- It safeguards the life-supporting capacity of the coastal marine area, and ensures that adverse effects are appropriately avoided, remedied or mitigated.

10.5 SECTION 105

Section 105 of the RMA sets out additional matters which must be considered by a consent authority when considering an application for a discharge permit. Section 105(1) states:

> *"If an application is for a discharge permit or coastal permit to do something that would contravene section 15 or section 15B, the consent authority must, in addition to the matters in section 104(1), have regard to—*
>
> *(a) the nature of the discharge and the sensitivity of the receiving environment to adverse effects; and*
>
> *(b) the applicant's reasons for the proposed choice; and*
>
> *(c) any possible alternative methods of discharge, including discharge into any other receiving environment.*

The only discharges associated with Project South are:

- The discharge of feed using a subsurface mechanism in the manner described in Section 3.4.1; and
- Any application of medical therapeutants, which, in the unlikely event of being needed, would occur under strict procedures and at the direction of a specialist veterinarian (not having been required in all of Sanford's 25 years of operating in Big Glory Bay).

The proposed discharges are appropriate having regard to the matters specified in section 105. In both cases the discharges will be managed to the extent that no effects on water quality of biological significance are expected.

10.6 SECTION 107

Sections 107(1)(a) and (b) of the RMA specify that the consent authority shall not grant a discharge permit allowing the discharge of water / contaminant into water or land if, after reasonable mixing, the contaminant or water discharged (either by itself or in combination with the same, similar, or other contaminants or water), is likely to give rise to all or any of the following effects in the receiving waters:

- The production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials;
- Any conspicuous change in the colour or visual clarity;
- Any emission of objectionable odour;
- The rendering of fresh water unsuitable for consumption by farm animals; and
- Any significant adverse effects on aquatic life.

As is outlined in Section 6, no discharge gives rise to any of these effects in the receiving waters.

11. CONCLUDING COMMENT

This AEE is in support the coastal permit application to authorise Project South's salmon farming activities at the Five Farming Areas.

Project South will make a significant contribution to the social and economic wellbeing of Southland and New Zealand through its provision of a sustainable food resource, export revenue, and the employment and wages it will inject into the economy. This includes skilled jobs associated with the farming itself, harvesting, processing, and its hatchery facilities, and the employment of people in supporting services.

Sanford is seeking a 35 year consent term for the coastal permit. A 35 year consent term recognises the significant investment associated with establishing Project South and the significant economic contribution it will provide to the Southland Region. The proposed staged development of the Five Farming Areas and adaptive management approach also supports a 35 year term.

An assessment of the potential effects of the proposal on the environment is provided in Sections 6 and 7, as informed by the various technical assessments commissioned by Sanford which are included in **Appendices A – N**. By way of summary, it is considered that the project can be undertaken in a manner that appropriately avoids, remedies or mitigates adverse effects on the environment, as directed by section 5 of the RMA.

With respect to the statutory planning framework that applies to the applications, it is concluded that the development of the project in the manner proposed by Sanford align comfortably with the relevant national and regional planning documents. The proposed activities will not be contrary, nor repugnant, to any of the relevant statutory planning documents.

For reasons relating to the commercial sensitivity of this project, and the manner in which coastal space is allocated, Sanford regrets it has not been able to undertake any consultation on the Project South activities before lodging resource consent applications.

Sanford will commence a full, thorough and open dialogue as soon as possible following lodgement of this application.

This includes undertaking a comprehensive engagement and consultation programme in respect of Project South with tangata whenua.

To allow fulsome public input into this consent process Sanford has also requested full public notification of the applications.

A

APPENDIX A

Assessment of ecological effects of Project South, an open ocean salmon farm proposed for eastern Foveaux Strait.

Report prepared by Mark James (Aquatic Environmental Sciences Ltd), Neil Hartstein (Aquadynamic Solutions Ltd) and Hilke Giles (Pisces Consulting) for Sanford Ltd.

B

APPENDIX B

Project South, Stewart Island – Volume I Seabed Survey.

Report prepared by ADS Environmental Services SDN BHD for Sanford Ltd.

C

APPENDIX C

Project South, Stewart Island – Volume II Hydrodynamic modelling.

Report prepared by ADS Environmental Services SDN BHD for Sanford Ltd.

D

APPENDIX D

Project South, Stewart Island – Volume III Depositional modelling.

Report prepared by ADS Environmental Services SDN BHD for Sanford Ltd.

APPENDIX E

Project South, Stewart Island – Volume IV Nutrient modelling.

Report prepared by ADS Environmental Services SDN BHD for Sanford Ltd.

F

APPENDIX F

Project South salmon farm development: Marine pests assessment of effects.

Report prepared by Salt Ecology for Sanford Ltd.

G

APPENDIX G

Wild-harvest fisheries in Foveaux Strait. Report prepared by Pisces Research for Sanford Ltd.

APPENDIX H

Project South salmon farm development: Marine pests assessment of effects. Report prepared by Dr Barrie Forest of Salt Ecology for Sanford Ltd.

APPENDIX I

Assessment of environmental effects for Project South: Foveaux Strait seabirds. Report prepared by Wildlands for Sanford Ltd

J

APPENDIX J

Project South salmon farm development: Assessment of Seascape and Natural Character Effects. Report prepared by Frank Boffa for Sanford Ltd

APPENDIX K

Project South salmon farm development: Assessment of Navigation Matters. Report prepared by experienced mariner Jason Eriksson for Sanford Ltd.

APPENDIX L

Project South salmon farm development: Assessment of the planning documents.

M

APPENDIX M

Project South salmon farm development: An assessment of the information provided against the requirements of the Fourth Schedule of the RMA and the information requirements of the Regional Coastal Plan for Southland.

N

APPENDIX N

Project South Preliminary Pen and Grid Configuration by AKVA. Report prepared by Mark Porter of Porters Primary Production & Consulting.