

# Project South

## Assessment of Seascape and Natural Character Effects

Prepared for  
Sanford Limited



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## Executive Summary

- i. Project South will be located approximately 12 km to the south-east of Ruapuke Island and 15km to the east of Bench Island.
- ii. Within the Application site there will be Five Farming Areas, each of which will contain ten 120m circumference submersible pens.
- iii. While there have been no natural character assessments of the area incorporating the Application Site, based on studies carried out at Stewart Island and its inshore marine area, it is likely the natural character of the Application Site area would be in the high to very high classification.
- iv. 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.
- v. Overall the visual effects of the Five Farming Areas and their associated servicing will be very low and relatively insignificant.
- vi. Seascape effects relative to NZCPS (Policy 15) and the Regional Coastal Plan are likely to be low to very low.
- vii. Natural character effects relative to NZCPS (Policy 13) and the Regional Coastal Plan are likely to be in the moderate to low category.
- viii. Cumulative effects are likely to be very low to relatively insignificant.



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## 1.0 Background

This report addresses the effects of Project South on visual amenity, natural character and landscape/seascape as they relate to the Resource Management Act 1991 (RMA) New Zealand Coastal Policy Statement 2010 (NZCPS), Southland Regional Policy Statement (RPS) and the Regional Coastal Plan for Southland.

## 2.0 Project Description

Project South and its Five Farming Areas will be located between 10km and 20km to the south-east of Ruapuke Island and approximately 15km to the east of Bench Island. In its seascape context, Project South will be situated in a relatively remote location within the outer waters of the Coastal Marine Area (CMA), with little or no visual relationship to any adjacent land mass.



Figure 1: Location and Seascape context of the Project South Application Site

Project South includes Five Farming Areas. Each of the Five Farming Areas will contain a series of up to 10 individual floating pens. The individual pens will:

- Be circular structures with a circumference of 120m.
- 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.

- Have no walkways or other surface structures 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 during storm events.

The proposed layout for structures is shown in Figure 2. Key points to note are:

- 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 to allow safe anchorage for large service vessels.
- Pens will have a nominal 120m circumference and will be located within a 110m<sup>2</sup> grid.
- The barge at each of the Five Farming Areas will sit between the grids and parallel to the prevailing conditions. The barge moorings will utilize 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.
- The total surface area that the pens and the associated grid system would occupy at each of the Five Farming Areas will be no more than 26.2 hectares, as depicted in dark blue in Figure 2.
- When the necessary allowance is made for subsurface mooring lines the overall area occupied at each of the Five Farming Areas will be no more than 157.4 hectares (as depicted in light blue in Figure 2).

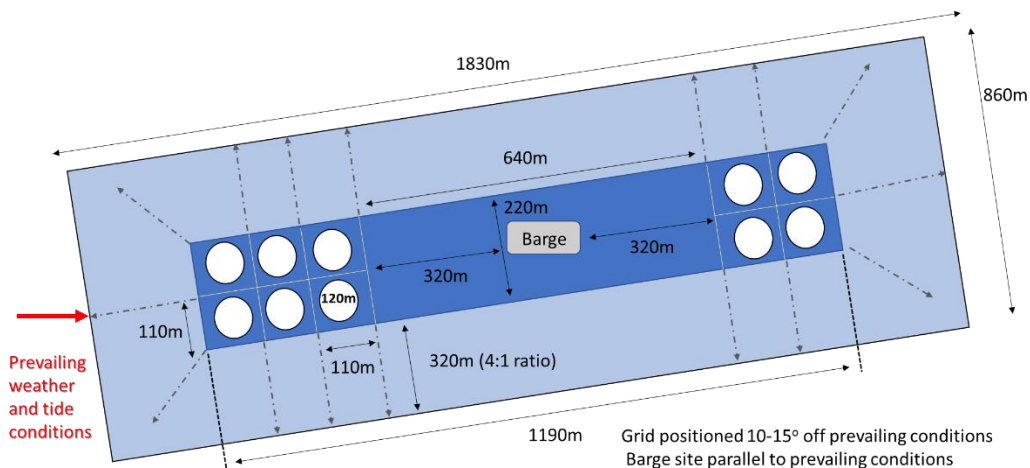


Figure 2: Example layout for a Project South farming area using 120 m circumference pens.

Within each of the Five Farming Areas, the most visible element will be the centrally located 600 tonne control barge. It will have a length of 65 meters and height of up to ten metres. Service vessels will also visit the farmed areas as and when required.

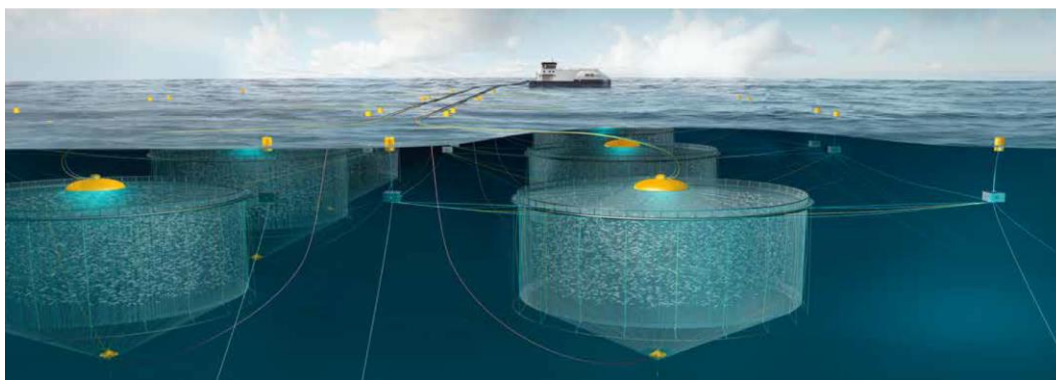
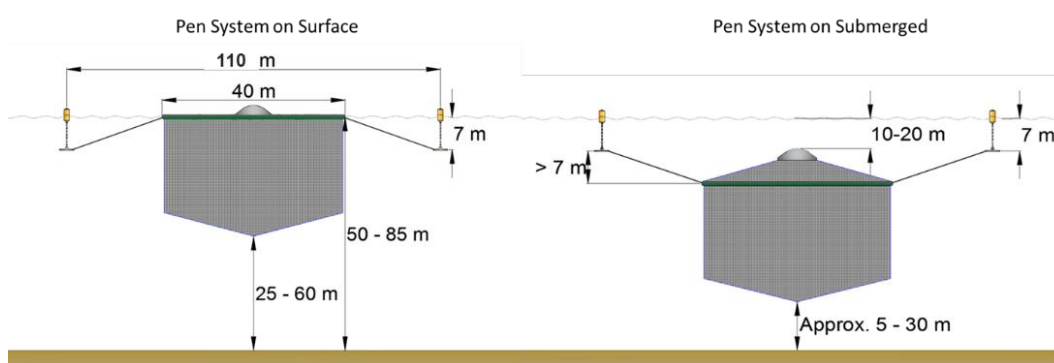


Figure 3: The proposed submersible pens

### 3.0 Existing Environment

As the Five Farming Areas will be in excess of 10 and 15km respectively from Ruapuke and Bench Islands, it is unlikely the farms or elements of them will be visible from land-based locations. Accordingly, the pens will be in an open sea setting to the south of Ruapuke Island and to the east of Bench Island in water depths of 55-85m. Ruapuke Island, the largest Island between the South Island and Stewart Island, is highly valued by Iwi. Bench Island to the east of Stewart Island is a Nature Reserve, and some 15km

to the north of Ruapuke Island is the Catlins Marine Mammal Sanctuary. In terms of its seascape context, the Application Site is in a relatively remote location within the outer open waters of the CMA with little or no visible relationship to any land mass.

## **4.0 CMA Values and Natural Character**

With the exception of the north-east end of Paterson Inlet, Halfmoon Bay and Horseshoe Bay, the entire coastline of Stewart Island and its outer Islands are virtually unmodified and have high to very high natural character values. While recent studies (Petrie 1994 and Boffa Miskell 2017), did not specifically include the Ruapuke Islands and the CMA immediately about them, it can be reasonably assumed that the natural values ascribed to the Eastern Bays and offshore Islands Character Area<sup>1</sup> and the Eastern Marine Character Area both of which include Bench, Herekopare and Jacky Lee Islands and their adjacent marine areas to the north-east of Stewart Island, would probably extend to the Ruapuke Islands and their associated offshore reefs which are likely to have high to very high landscape/seascape and natural character values.

The Regional Coastal Plan for Southland (March 2013), notes that Ruapuke Island was once a very significant settlement which figured extensively in early trade, navigation and settlement around the southern part of New Zealand. The missionary station established in 1844 also served as a base for Foveaux Strait inhabitants for 40 years. The Plan also identifies and maps an area around Ruapuke Island and its adjacent Islands and reefs, as being within an Area Containing Significant Values (ACSVs), (see figure 4). While this map tends to highlight and focus on archaeological sites there are no doubt inshore areas with significant natural values. All Five Farming Area however, are excess of 5km beyond the area identified as having significant values.

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<sup>1</sup> Stewart Island Landscape and Coastal Natural Character Study. Boffa Miskell Ltd, 30 October 2017. Prepared for Environment Southland.



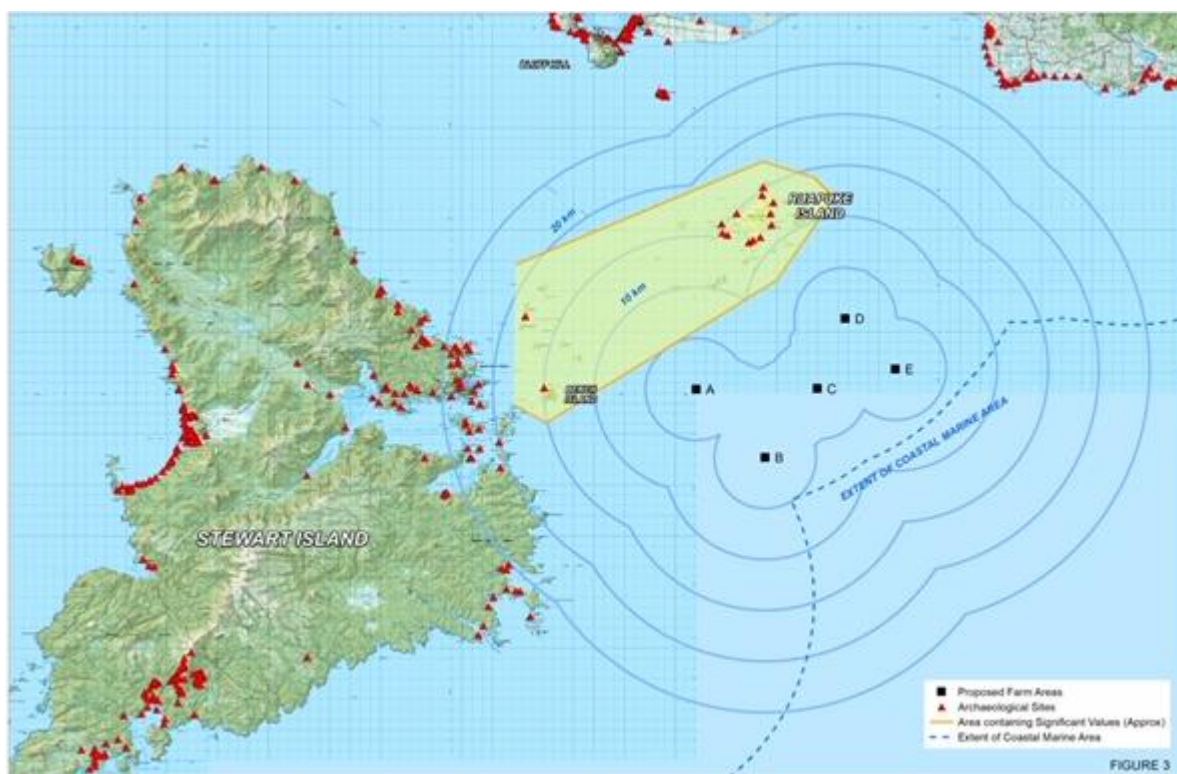


Figure 4: Areas containing significant values. Regional Coastal Plan for Southland

The Coastal Plan lists the following as being significant values within the classified area:

- *Wildlife and in particular birds, predator and rodent free status of Islands*
- *Special marine and terrestrial communities and populations*
- *Unique topographic and high natural character*
- *Maori settlement and mission station remnants. Seasonal harvesting of titi.*
- *Regionally significant coastal landforms, reefs and associated habitats.*

While the Coastal Plan notes that in terms of the NZCPS, the ACSVs have no legal significance, the Plan identifies these areas as they contain particular values of regional, national and international significance. The ACSV boundary relative to Ruapuke Island and the adjacent Islands to the south-west is shown in Figure 4.

## 5.0 New Zealand Coastal Policy Statement 2010

Section 6 of the RMA requires the preservation of the natural character, and the protection of natural features and natural landscapes including seascapes. Under the RMA the New Zealand Coastal Policy Statement, Regional and District Plans are required to give effect to the relevant policies. While the Regional Coastal Plan adopts

what appears to be an earlier version of the NZCPS, the more recent 2010 NZCPS has been referenced in this report relative to the preservation of natural character (Policy 13), and the protection of natural features and natural landscapes, including seascapes (Policy 15). These policy provisions are as follows:

#### Policy 13 – Preservation of natural character

- I. *To preserve the natural character of the coastal environment and to protect it from inappropriate subdivision, use and development:*
  - a. *Avoid adverse effects of activities on natural character in areas of the coastal environment with outstanding natural character; and*
  - b. *Avoid significant adverse effects and avoid, remedy or mitigate other adverse effects of activities on natural character in all other areas of the coastal environment;*
  - c. *Including by;*
  - d. *Assessing the natural character of the coastal environment of the region or district, by mapping or otherwise identifying at least areas of high natural character; and*
  - e. *Ensuring that regional policy statements, and plans, identify areas where preserving natural character requires objectives, policies and rules, and include those provisions.*
- II. *Recognise that natural character is not the same as natural features and landscapes or amenity values and may include matters such as:*
  - a. *Natural elements, processes and patterns;*
  - b. *Biophysical, ecological, geological and geomorphological aspects;*
  - c. *Natural landforms such as headlands, peninsulas, cliffs, dunes, wetlands, reefs, freshwater springs and surf breaks;*
  - d. *The natural movement of water and sediment;*
  - e. *The natural darkness of the night sky;*
  - f. *Places or areas that are wild or scenic;*
  - g. *A range of natural character from pristine to modified; and*
  - h. *Experiential attributes, including the sounds and smell of the sea; and their context or setting.*

#### Policy 15 – Natural features and natural landscapes

- I. To protect the natural features and natural landscapes (including seascapes) of the coastal environment from inappropriate subdivision, use, and development:*
  - a. avoid adverse effects of activities on outstanding natural features and outstanding natural landscapes in the coastal environment; and*
  - b. avoid significant adverse effects and avoid, remedy, or mitigate other adverse effects of activities on other natural features and natural landscapes in the coastal environment; including by:*
  - c. identifying and assessing the natural features and natural landscapes of the coastal environment of the region or district, at minimum by land typing, soil characterisation and landscape characterisation and having regard to:*
    - i. natural science factors, including geological, topographical, ecological and dynamic components;*
    - ii. the presence of water including in seas, lakes, rivers and streams;*
    - iii. legibility or expressiveness – how obviously the feature or landscape demonstrates its formative processes;*
    - iv. aesthetic values including memorability and naturalness;*
    - v. vegetation (native and exotic);*
    - vi. transient values, including presence of wildlife or other values at certain times of the day or year;*
    - vii. whether the values are shared and recognised;*
    - viii. cultural and spiritual values for tangata whenua, identified by working, as far as practicable, in accordance with tikanga Māori; including their expression as cultural landscapes and features;*
    - ix. historical and heritage associations; and*
    - x. wild or scenic values;*
  - d. ensuring that regional policy statements, and plans, map or otherwise identify areas where the protection of natural features and natural landscapes requires objectives, policies and rules; and*
  - e. including the objectives, policies and rules required by (d) in plans.*

The NZCPS 2010 thresholds for natural character and landscape/seascapes effects can be summarised as follows:

- Avoid adverse effects in outstanding areas
- Avoid significant adverse effects in all other areas
- Avoid, remedy or mitigate other adverse effects in all other areas.

## **6.0 Assessment of Effects**

In the context of the proposed farmed areas and their offshore location in Foveaux Strait, this assessment is structured under the following headings –

- Visual effects
- Seascape effects
- Natural character effects
- Cumulative effects

### **6.1 Visual Effects**

The Five Farming Areas will all be in excess of 10km from the nearest land masses, namely Ruapuke and Bench Islands, and in excess of 20km from Stewart Island and the lower part of the South Island. Accordingly, structures at the Five Farming Areas are unlikely to be visible from land-based viewpoints.

Based on past marine farm assessments and consideration of the effects of the earth's curvature and light refraction, at a viewing distance of 15km, a structure or object on the sea would need to be in excess of 15.2 m in height to be visible. Recent photographs taken from Farming Areas A, B & D by Sanford during water quality sampling looking towards Ruapuke and Bench Islands, show the land masses as being distant objects. In the context of the visibility of the Five Farming Areas it would be most unlikely, even under optimum viewing conditions, that the main elements of the Five Farming Areas would be visible from these islands. While some of the service vessels may be visible from time to time, these vessels would not be inappropriate in the coastal environment.

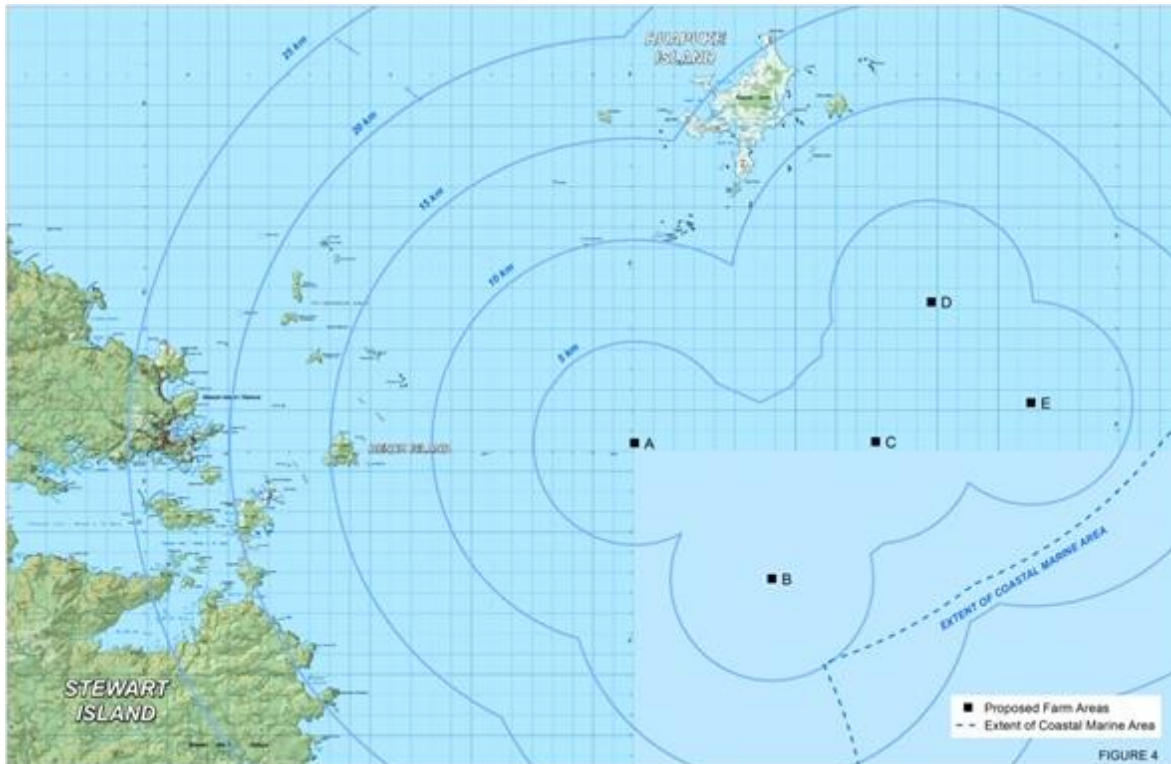


Figure 2: Distances from Five Farming Areas to nearest landmass.

Given the location of the Five Farming Areas, and the likelihood that the component elements within each Farming Area would be less than 10m in overall height, other than perhaps the occasional servicing vessels, any visual effects are likely to be negligible and relatively insignificant.

Passing commercial or cruise vessels may obtain views of the Five Farming Areas, depending on their position and deck elevation relative to any particular area. While these transient views would be intermittent and influenced by weather conditions, the effects would be 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 likely be limited given the location of the Five Farming areas relative to flight paths.

Overall the visual effects of the Five Farming Areas and the servicing of those areas, will likely be minor and relatively insignificant.

## 6.2 Seascape Effects

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

While Policy 15 of the NZCPS which refers to landscapes and seascapes, it also makes reference to (iv) aesthetic values, (vi) transient wildlife values, (vii) shared and recognised values, (viii) cultural and spiritual values, (ix) historic and heritage associations and (x) wild and scenic values. In the context of landscape / seascape

and the distant offshore location of the Five Farming Areas, adverse effects on these values where relevant, are likely to be minor.

### **6.3 Natural Character Effects**

Natural character assessment differs from coastal indigenous biodiversity assessments and determining whether coastal features, habitats or species are geologically or ecologically significant, or in the case of biotic attributes the extent to which indigenous biodiversity prevails. Indigenous biodiversity is specifically covered in NZCPS 11. 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, where the degree of naturalness depends on the following:

- The extent to which natural elements, patterns and processes occur;
- The nature and extent of modifications to the ecosystem and landscape/seascape;
- The proposition that the highest degree of natural character (greatest naturalness) occurs where there is least modification/uncluttered by obvious disruptive human intervention and/or influence, and
- Recognition that the degree of natural character is context and scale dependent and can change over time.

While Policy 13 of the NZCPS includes some of the matters that contribute to natural character, the biophysical matters considered relevant to this application have been reviewed and assessed under the following headings

#### Physical

- Waves and currents
- Rocky reefs and seafloor sediments
- Water quality

#### Ecological

- Fish
- Marine mammals
- Seabirds

#### Experiential

- Darkness of night sky
- Wild and scenic character
- Sounds and smell of the sea

Biophysical material for the natural character component of this assessment has largely been sourced from Aquatic Environmental Services (AES) reports.<sup>2</sup>

### **Waves and Currents**

The AES study concluded that the hydrodynamic effects including changes to current speed and direction, stratification and wave characteristics will be localised around Five Farming Areas and that these effects would not impact on overall circulation patterns.

### **Rocky Reefs and Seafloor Sediment**

The offshore location of the Application Site and the AES marine survey carried out to the east of Ruapuke Island, indicated that the seabed environment is well scoured with a substrate dominated by coarse and fine sand, occasionally mixed with mud and shell hash. No acute changes in topography or biogenic reefs were observed in the proposed farm areas. AES concluded that the absence of sensitive biogenic and reef communities around the farm sites and within the overall farm area, the generally low abundance and richness of infauna, the small area actually occupied, the disturbance from strong currents and previous dredging and fishing, distance from any reef or biogenic communities, and localised deposition meant that there is unlikely to be any measurable effects within the wider food chain relative to fish, birds and inshore areas in general.

### **Water Quality**

Water quality modelling results indicate that any increase in total ammonia nitrogen (TAN) concentrations would likely be short term and could be rapidly dispersed and mixed. Results also indicate that effects of the Five Farming Areas on dissolved oxygen (DO) would not be ecologically meaningful or result in any adverse effects on the farmed fish or the natural biota.

### **Fish**

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, terakihi, trumpeter, wrass and rig. The Foveaux Strait region and the area of the proposed farm supports important commercial fisheries for cod potting; bottom trawling for barracouta, flatfish and several other species; set-netting for spiny dogfish, school shark and rig; a nationally important oyster fishery; and paua and lobster fisheries.

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<sup>2</sup> Aquatic Environmental Sciences. Assessment of Ecological Effects of an Open Ocean Sanford Farm proposed for Foveaux Strait. Prepared for Sanford Ltd. January 2020.

There is a relatively low level of recreational fishing compared with other parts of New Zealand.

The effects on the benthic community and food resources from the Five Farming Areas will be very localised, and flow-on effects on wild fish populations are not expected. The location in deep water and away from shallow water reefs and habitats will reduce the risk of fish aggregations compared with inshore farms but there is likely to be attraction of larger predatory pelagic fish around the farm areas.

There is likely to be some overlap of the Five Farming Areas with commercial fisheries. The nationally important oyster fishery is based mostly to the west of Ruapuke Island, however, the application site and depths occupied overlap with important areas in Foveaux Strait for barracouta, flatfish, gurnard, red cod, stargazer and spiny dogfish.

While there may be some effects on fish, in terms of the perception of natural character these effects are likely to be relatively minor.

## **Mammals**

The Foveaux Strait region is considered an important area for a large number of New Zealand's cetacean and pinniped species. At least seven marine mammal species are considered year-round residents and / or seasonal visitors of 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 species most likely to potentially be affected by the Application are New Zealand fur seals, New Zealand sea lions, bottlenose dolphins, southern right and humpback whales, and orca. While the farm areas represent similar habitats to those available across the wider Foveaux Strait region, it also potentially constitutes important winter mating habitat for southern right whales and forms part of humpback whales' northern migration corridor. Southland and 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.

AES identifies the main matters to be addressed as possible habitat displacement and entanglement. Other impacts considered include underwater noise, artificial submerged lighting and trophic flow-on effects. A range of management measures are proposed to address these matters.

## **Seabirds**

The area around the Five Farming Areas, namely 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) are supported in this region.

The main matters to be addressed are exclusion, changes to food resources and entanglement. While foraging distributions of the above species may overlap with the proposed location of the farmed areas, all have wide foraging ranges compared with the very small area occupied by the Five Farming Areas, or feed at different depths. A range of management measures are proposed to address these matters.

### **Darkness of the Night Sky**

In the context of the site's offshore location and the use of submersible pen lights, the lighting of the proposed farmed areas will not be apparent from land-based locations due to the nature of the lighting and distance being in excess of 10km.

### **Wild and Scenic Character**

Peoples' perception of the wild and scenic character of the Five Farming Areas within the wider offshore marine area will not generally be adversely affected, albeit some will be aware of the farms presence even though they may not be visible. Given the size of Five Farming Areas and the spacing between each farm area, being at least 8km apart, any sense of compromise to the wild or scenic character of the wider area will be minor and relatively insignificant.

### **Sounds and Smell**

The sounds and smell of the sea will not be affected or compromised in any way as a consequence of the proposed Application.

### **Cumulative Effects**

There are unlikely to be cumulative effects within or beyond the application area, with the nearest marine farming area being some 20-25km to the west in Big Glory Bay on Stewart Island. With regard to the Five Farming Areas themselves, all are more than 8km apart and as a result, it is unlikely that there will be cumulative visual or natural character effects, as such.

## **6.5 Summary of Natural Character Effects**

- In terms of physical (abiotic) attributes, the effects are likely to be in the order of low to very low.
- In terms of ecological (biotic) attributes, the effects are likely to be in the order of moderate to low.

- In terms of experiential attributes, the effects are likely to be very low to insignificant.
- Overall the combined natural character effects are assessed as moderate to low.

## **7.0 Conclusions**

- i. Overall the visual effects of the Five Farming Areas and their associated servicing will be very low and relatively insignificant.
- ii. Seascape effects relative to NZCPS (Policy 15) and the Regional Coastal Plan are likely to be low to very low.
- iii. Natural character effects relative to NZCPS (Policy 13) and the Regional Coastal Plan are likely to be in the moderate to low category.
- iv. Cumulative effects are likely to be very low to relatively insignificant.