

SANFORD LIMITED

**PROJECT EAST OPEN OCEAN  
MARINE FARM**



Summary Document:

Resource Consent Applications and  
Assessment of Environmental Effects



## 1. OVERVIEW

**Project East** would involve offshore farming of up to 24,000 green weight tonnes (GWT) of King salmon per year using two discrete farming areas, in one integrated operation, in the open ocean, northeast of Otago Harbour (see Figure 1) (hereafter referred to as the **Two Farming Areas**).

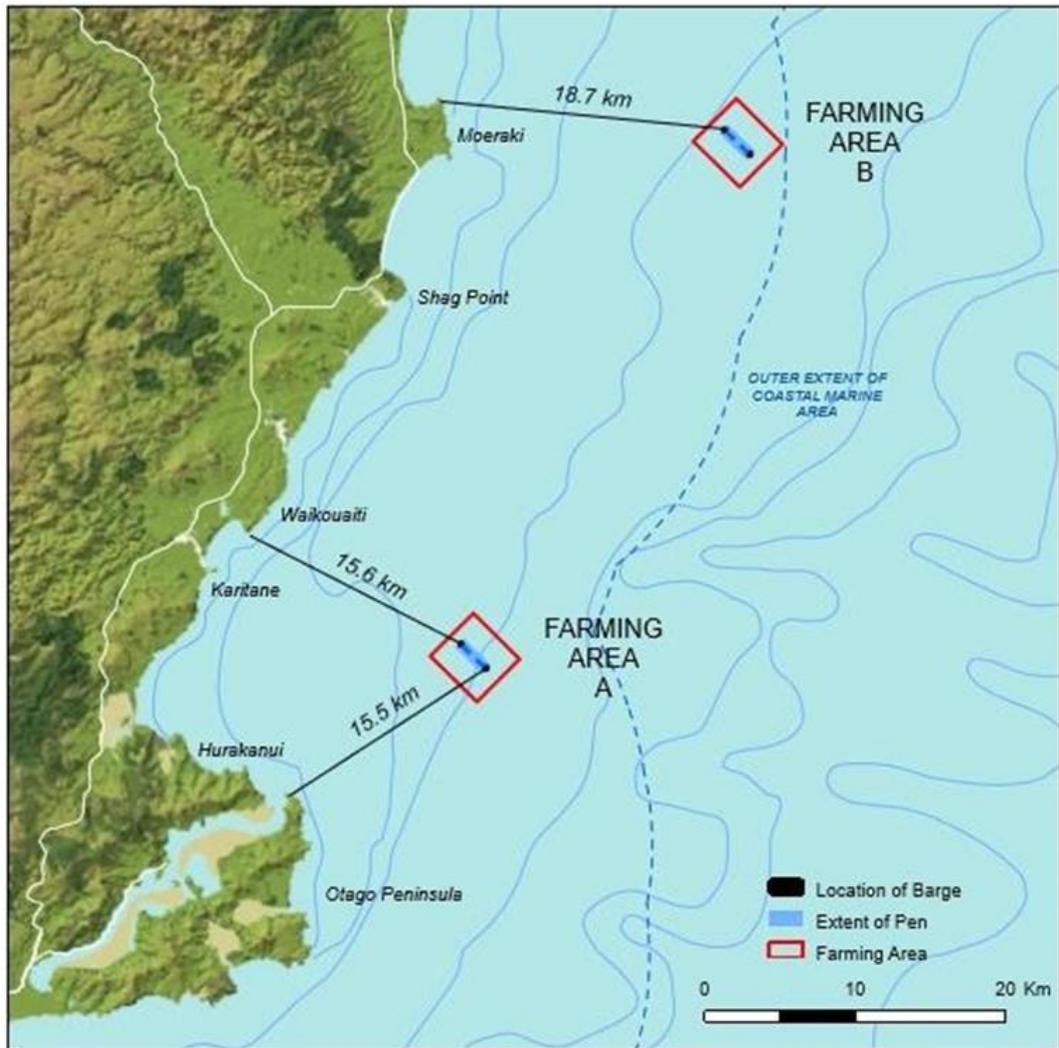


Figure 1: Project East and the location of its Two Farming Areas.

Sanford went through an extensive multiyear search using New Zealand marine and planning experts with extensive local knowledge to advise on site selection. International marine farming experts were also engaged to design the farming system suitable for a high energy open ocean salmon farm in the South Island. With these experts we prepared and lodged applications for two sites, each with multiple farming areas. Sanford has invested more than five years into the applications to date.

The two sites (Project East and Project South) are designed to complement Sanford's existing Big Glory Bay King salmon operation and will enable the Company to make efficient use of (and grow) its already significant salmon infrastructure in the lower South Island, including the fleet of support vessels, hatcheries, the processing plant and our local skilled workforce.

Project East was identified as an ideal site for an open ocean salmon farm because:

- It has suitable water depth;
- It has suitable water quality and coastal conditions (currents, wave heights and water temperatures while being outside of freshwater river influences);
- It avoids locating within, and provides a buffer from, coastal protection areas, marine reserves, other known areas of significant environmental and cultural value and outstanding natural features and landscapes;
- It has access to onshore port facilities and yards;
- It has access to medium size communities for staffing and contracting services; and
- Both farming areas (and the pens within those areas) are sized, designed, and located for efficient farm servicing and fish husbandry needs.

Sanford, in consultation with our international experts who are advising us on this development, has worked on the structure designs for our farming areas so that it meets high health and safety standards for our staff, protects marine life in the area, and will provides exemplary fish welfare. Achieving these three objectives in a high energy site is demanding and needs flexibility. We have also been in discussions with three Kāi Tahu Rūnaka along the coastline north of Dunedin.

## **2. THE MARINE FARMS**

Sanford has been working with leading global aquaculture technology and service partner, AKVA Group to determine an appropriate pen technology for the proposed open ocean farms, including Project East. The result of this work is that each of the Two Farming Areas for Project East would contain a series of up to 20 individual floating pens. The individual pens would:

- Be circular structures;
- Be inter-connected by a grid of subsurface lines and moored to the ocean floor using conventional mooring lines and screw and block anchors;
- Be serviced by a centralised barge (likely one per 10 pens), with feed being delivered to each pen via hoses/ pipes;
- Have no walkways connecting the pens; and

- Incorporate a winch system which can raise and lower the pen structures through the water column, as required. This would allow the pens to be submerged below the high energy wave environment at all times, and to be lowered deeper during severe storm events.

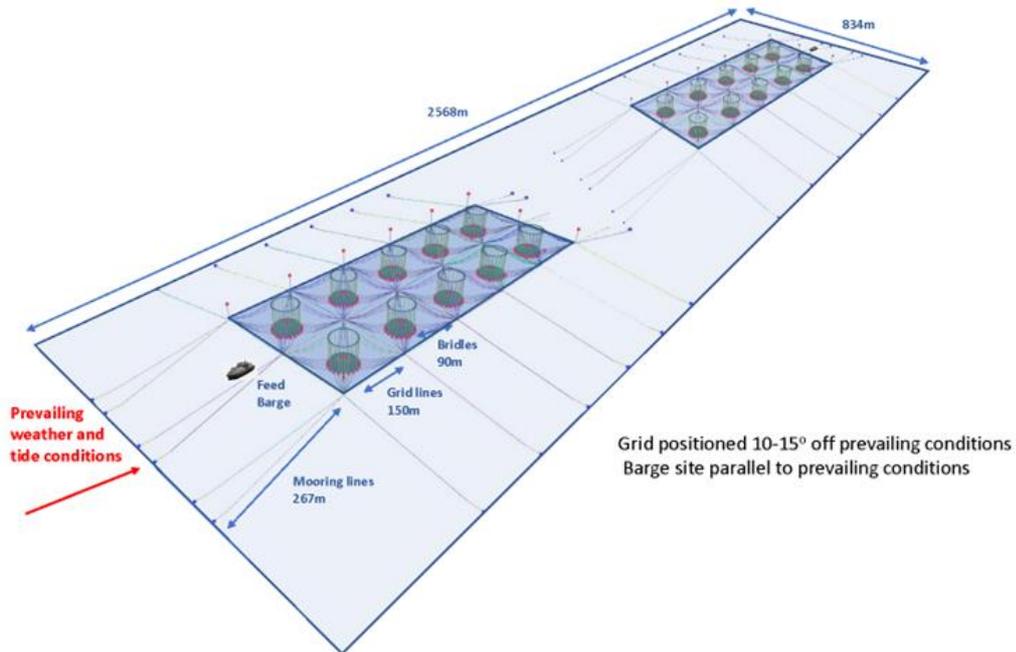


Figure 2: 3D schematic of the proposed layout at each Farming Area.

Unlike other salmon farms in New Zealand, the pens would be submerged below the surface away from the high wave energy environment, with the feeding zone for fish (which is in the upper part of the pen) sitting between 14m and 21m from the surface water line. The only time the pens will be at the surface is for harvest, for temporary operational purposes to do with fish health such as grading, and for net maintenance, replacing lights etc. Raising the pens to the surface is expected to occur approximately once per month for a period which would depend on the work being done; likely to be somewhere between a few hours and a couple of days.

The pen net design will be high strength and more rigid than the conventional nets historically used in fish farms, and it is designed to operate without separate predator nets.

### 3. 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. Sanford would follow this precautionary approach with Project East.

It is proposed that the development of each Farming Area would be implemented in three Stages, as follows:

- Stage 1 The development and operation of up to six pens and two barges at a Farming Area with a combined maximum standing biomass of no more than 3,000 tonnes (25% of full production at that Farming Area).
- Stage 2 The development and operation of up to 10 pens and two barges at a Farming Area with a combined maximum standing biomass of no more than 6,000 tonnes (i.e. completing one full pen and barge set in the layout shown in Figure 2) (50% of full production).
- Stage 3 The development and operation of up to 20 pens and two barges at a Farming Area with a maximum standing biomass of no more than 12,000 tonnes (100% of full production).

Development of the Two Farming Areas through each stage may occur simultaneously or sequentially.

Each of Stages 1 – 3 would take in the order of three to five years to complete and is expected to involve:

- The collection of at least 12 months' pre-development environmental monitoring data at and around a Farming Area (Stage 1 only);
- Development and operation of a Farming Area up to the maximum standing biomass for that stage; and
- The collection and analysis of environmental monitoring data at and around the Farming Area.

Moving to the next stage once:

- The maximum standing biomass in the Farming Area has been maintained above 75% of the allowable maximum standing biomass for that stage for at least 12 months;
- The environmental monitoring data has been analysed against the relevant environmental management goals and the environmental quality standards; and
- Compliance against all the conditions has been confirmed.

## 4. ASSESSMENT OF ENVIRONMENTAL EFFECTS

Sanford commissioned a number of independent technical experts to undertake detailed assessments of the potential effects of Project East, and to provide advice on how those effects could be appropriately managed such that they align with the expectations of the Resource Management Act 1991 (“**RMA**”) and the relevant statutory planning documents.

Those reports address:

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

The reports include:

| Topic  | Author   |
|--|--|
| Benthic Environment, Water Quality and General Ecology | Dr Mark James (Aquatic Environmental Sciences Ltd), Dr Hilke Giles (Pisces Consulting Limited) and Dr Pete Wilson (SLR Consulting New Zealand Limited) |
| Hydrodynamic Modelling                                 | Dr Neil Hartstein and ADS Environmental Services   |
| Nutrient Modelling                                     | Dr Neil Hartstein and ADS Environmental Services   |
| Depositional Modelling                                 | Dr Neil Hartstein and ADS Environmental Services   |
| Wave Modelling   | Dr Neil Hartstein and ADS Environmental Services   |
| Biosecurity  | Dr Barrie Forrest of Salt Ecology  |
| Pathogen Risk  | Dr Gary Knowles of Aquaculture Veterinary Services New Zealand   |
| Fisheries and Fish Populations                         | Dr David Middleton of Pisces Research  |
| Marine Mammals   | Dr Deanna Clement of Cawthron Institute  |
| Seabirds   | Dr David Thompson of NIWA  |
| Landscape, Natural Character and Visual Effects        | Frank Boffa  |
| Navigation   | Jason Eriksson and Steve Collier   |

| Topic                        | Author                 |
|------------------------------|------------------------|
| Aids to Navigation           | HSE New Zealand        |
| Engineering / Mooring System | Dr Mark Porter         |
| Planning                     | Mitchell Daysh Limited |

The key conclusions of these reports are summarised below. By way of summary, the reports confirm the environmental effects of Project East can be managed in a manner which aligns with the expectations of the RMA and planning documents which apply to this area.

#### 4.1 POSITIVE EFFECTS

Project East would make a significant contribution to the social and economic wellbeing of people and communities. This is through its provision of a sustainable food resource, export revenue, and the employment and wages it would inject into the economy by both permanent staff and the wide use of local contractors.

Project East will build towards more than 300 enduring FTE jobs across the wider industry, involving a range of skillsets both on and off water. This includes skilled jobs associated with the farming itself, harvesting, processing, and its hatchery facilities, as well as the employment of people in supporting services.

At full development Project East is expected to produce upwards of \$500 million pa in annual revenue.

Project East would also contribute positively to the broader development of New Zealand's aquaculture industry. This includes making a significant contribution to delivering the governments Aquaculture Strategy which 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.

#### 4.2 ECOLOGY

##### 4.2.1 Hydrodynamics and Physical Features

Overall, the effects of Project East on hydrodynamics are expected to be very small and localised, and to not affect overall circulation patterns. Furthermore, in the open ocean environment of, and around, the Two Farming Areas, the ecological consequences of potential alterations to the hydrodynamic regime because of the proposal are expected to be negligible.

#### 4.2.2 Water Quality and Plankton

The main considerations for the water column resulting from the proposed farming activities are the release of total ammoniacal-N (“**TAN**”), potential enhancement of phytoplankton biomass, and consumption of oxygen.

The increases in TAN and chl-a will be localised and minor compared with the available nitrogen for phytoplankton growth and phytoplankton biomass observed in these waters. The estimated reductions of dissolved oxygen are negligible, not ecologically meaningful, and would not result in any adverse effects on the farmed fish or natural biota such as wild fisheries and marine life.

#### 4.2.3 Effects on the Seabed

The location of the Two Farming Areas 12+ km offshore were chosen to avoid areas containing significant benthic habitats which would be sensitive to deposition of organic matter from the salmon farm operation, including avoiding the biogenic reef habitats and bryozoan beds on the Otago shelf.

In summary, the benthic surveys undertaken of the Farming Areas to inform the Project East application, and previous surveys and broad-scale mapping in the region, have shown:

- The benthic environment around the Farming Areas comprises largely sand with varying proportions of gravel and small fractions of mud;
- Sediments in both areas have low organic content;
- Infaunal communities in the Farming Areas are dominated by polychaetes, molluscs (largely bivalves) and crustaceans (largely amphipods) and are similar to those in nearby coastal communities;<sup>1</sup> and
- No rare or endangered organisms or rocky reefs have been observed in or adjacent to the farming areas.

Deposition is predicted to be confined to the Two Farming Areas, which do not contain any habitats, fauna or flora of particularly high ecological value or sensitivity. Specifically, the deposition modelling showed that deposited material would not affect bryozoan beds, the closest being located 4.5 km to the north-east of Farming Area A.

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<sup>1</sup> This is an important consideration for the effects assessment because, in general, it is considered that benthic communities at offshore sites may be more sensitive to organic loading than nearshore communities as they may not be as well adapted to organic matter inputs as communities along the coastal fringe. The analysis of infauna communities in Farming Areas A and B has demonstrated that this may not be an important consideration in these areas.

The absence of sensitive habitat or fauna at the farm sites and in the immediate area, the existing regular disturbance of the seabed from strong currents and previous dredging and fishing, distance from bryozoan beds and other high value benthic communities, and the localised nature and moderate level of deposition mean that benthic effects will not be of ecological concern or significant.

#### **4.2.4 Biosecurity**

Aquaculture in New Zealand is highly unlikely to contribute to marine pest and disease risk at the border but, once pests become established, aquaculture activities can become an exacerbator of risk.

In the broader picture Project East is expected to add a relatively small increment to the risk already posed by existing activities, and it has been determined that the risk which it would present can be managed effectively via a relatively standard Biosecurity Management Plan (“**BMP**”).

For Project East, Sanford intends that specific biosecurity provisions for marine pests be incorporated into an overarching BMP that covers hatchery and on-farm operations for their salmon farming ventures.

#### **4.2.5 Marine Mammals**

Like many areas in New Zealand the Otago coastline is an important area for many of New Zealand’s cetacean and pinniped species.

The species most likely to potentially be affected by the proposal are the New Zealand fur seal, New Zealand sea lions, Hector’s dolphins, dusky and common dolphins, bottlenose dolphins, southern right and humpback whales.

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.

Project East would protect these species by:

- Not using predator nets;
- Implementing the proposed staged development; and
- Implementing appropriate monitoring and mitigation measures, which align with the recently released Fisheries New Zealand document on best practices and

technologies, to minimise and mitigate marine mammal interactions with open ocean finfish aquaculture.<sup>2</sup>

As a result, the residual level of effect of entanglement on endangered or threatened species has been assessed to be no more than minor, and the residual level of all other effects on marine mammals will be somewhere between nil and less than minor.

#### 4.2.6 Seabirds

Conservatively, 59 seabird taxa are known to, or are very likely to, occur in the environs of the Two Farming Areas. A total of 16 of these taxa (27%) are classified as 'Threatened' by the New Zealand Threat Classification System, with a further 28 taxa (47%) classified as 'At Risk'. Of the remaining taxa, eight are classified as 'Migrant', one as 'Coloniser' and the remaining six as 'Not Threatened'. Three seabird species have been identified to be of particular conservation concern. These are Whenua Hou diving petrel, yellow-eyed penguin, and Otago shag, which all have at-sea distributions that overlap with the proposed farming areas, and all have relatively small breeding populations.

A detailed risk assessment has been undertaken by NIWA to assess the effects for all 59 seabird species likely to occur in the environment in which Project East is located. The report includes an assessment of the likelihood of the potential effects occurring and the consequence of the potential effect for the species. It addresses:

- Entanglement;
- Habitat exclusion;
- Changes to prey availability and abundance;
- Disturbance;
- Artificial nocturnal lighting;
- Litter and debris;
- Vessel/propeller strike;
- Fuel/oil spill; and
- Provision of resting/roosting structures.

Levels of risk for all seabird species with regard to potential negative effects were classified as 'low', indicating that overall, the proposal is unlikely to have any measurable impact on seabirds using Otago waters. Even when considering the particularly sensitive species (Whenua Hou diving petrel, yellow-eyed penguin, and Otago shag) against the risk of entanglement, risk scores were similarly classified as 'low'. Although the consequence of entanglement was classified as 'moderate' for these species, the likelihood of entanglement occurring was classified as 'unlikely'.

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<sup>2</sup> Clement D, Milardi M, Cumming S. 2021. Best practices and technologies available to minimise and mitigate the interactions between finfish open ocean aquaculture and marine mammals. Wellington: Ministry for Primary Industries. New Zealand Aquatic Environment and Biodiversity Report No. 273.

In completing the risk assessment, the NIWA report notes that the design of the fish pens and associated infrastructure for Project East, particularly the lack of surface nets and/or predator nets, together with completely enclosed pens, differs markedly from the types of nets used at fish farms that have reported seabird entanglements.

Notwithstanding the above, the NIWA report recommends that a Seabird Environmental Management and Monitoring Plan be developed and implemented, which includes management and monitoring measures that align with the recently released Fisheries New Zealand document on best practices and technologies to minimise and mitigate seabird interactions with open ocean finfish aquaculture.<sup>3</sup> This recommendation will be included as a consent condition.

### **4.3 LANDSCAPE, NATURAL CHARACTER AND VISUAL EFFECTS**

Because the Two Farming Areas are >15 km offshore, the main components of the Two Farming Areas would not be visible from land-based locations on the Otago coastline. While the service vessels may be visible from time to time, particularly when they are in transit, as sea-going vessels they would tend to be viewed as an integral component of the seascape.

As the Two Farming Areas are some 35 km apart there will be no cumulative visual effects from any terrestrial or marine locations. From more elevated areas on the adjacent coastline, including Katiki Point, Shag Point, Puketeraki, Seacliff, Karitane and Taiaroa Head, while the Farming Area elements may technically be visible due to the higher elevations of the landform features, the degree of acuity of the naked eye is such that a combination of distance, interference from light refraction, haze, mist and atmospheric conditions would mean that the main farm structures would continue to be very difficult to see, and at best only appearing as a faint tonal image on very clear, still days. Even if visible (which is unlikely), this would not translate to being an adverse visual effect.

The nearest outstanding natural landscapes on the adjacent coastline are some 12 - 14km southwest of the Farming Area A, near Otago Harbour on the Heyward Coast and Outer Otago Peninsula. Further north, but still 15 + kilometres from either of the Two Farming Areas, a number of areas are identified as having high but not outstanding landscape values, including the significant promontories of Cape Wanbrow, Moeraki Peninsula and Shag Point.

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<sup>3</sup> Gaskin, C., Milardi, M., Cumming, S. (2021) Best practices and technologies available to minimise and mitigate the interactions between finfish open ocean aquaculture and seabirds. New Zealand Aquatic Environment and Biodiversity Report No. 272. Fisheries New Zealand, Wellington.

The offshore location of the Two Farming Areas in the outer areas of the coastal marine area means they have little or no visual relationship with any of these scheduled areas of outstanding natural landscape or outstanding natural features.

#### **4.4 NAVIGATION**

While there are no formal navigation routes passing through the Project East area, the Two Farming Areas are in the vicinity of natural, uncharted vessel routes used by international and domestic shipping, and fishing vessels. The route is also subject to some recreational use for fishing and yachting.

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

#### **4.5 COMMERCIAL FISHING**

The key fisheries in the wider statistical area and likely to overlap with the farming areas are the bottom trawl fishery for sea perch (Farming Area B), and flat fish trawling and set net fishery for rig and school shark (Farming Area A). However, only a small percentage of the fishery in this area would be impacted by the Two Farming Areas, and because of the arrangement of the Two Farming Areas and the gently sloping bathymetry, trawling activity and set netting should generally be able to continue around the farms.

As a major quota owner in this area, and very experienced fishing vessel operator, Sanford is satisfied that adverse effects of Project East on fishing activities can be managed and would be minimal.

#### **4.6 RECREATION**

The coastal marine area in which Project East would be located is used for recreational fishing and yachting, however, the Project East activities are not incompatible with the continued use of the area for those purposes. While it is envisaged that a 200m exclusion zone around the Farm Pen Area would 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 would be maintained.

The Otago coastline also contains a number of surf breaks, including Karitane, The Spit (Aramoana) and Whareakeake, which are attributed national significance in the New Zealand Coastal Policy Statement 2010. Project South has been located and designed to not adversely affect these surf breaks. In that regard, an assessment of the Two Farming

Areas on swell waves is included in the wave modelling report prepared by ADS Environmental Services. It conservatively predicts:

- As a worst-case scenario, a reduction in wave height of no more than 2% on the coastline and only at some locations; and
- Little or no observable impact on the coastline in terms of wave energy.

#### **4.7 CULTURAL MATTERS**

Sanford is working with tangata whenua on this matter. This work is ongoing.

### **5. MANAGEMENT AND MONITORING OF ENVIRONMENTAL EFFECTS**

As outlined above, the location and design of Project East and its Two Farming Areas were carefully selected to minimise the effects of the salmon farming activity on the environment.

Technical assessments have recommended the implementation of various measures to assist in avoiding, remedying, or mitigating potential adverse effects from Project East on ecological values and navigation. The need for monitoring has also been identified and acknowledged.

The key management measures proposed by OGNZL are summarised further in Table 1 below. The potential management and monitoring of matters relating to cultural values are being determined in consultation with tangata.

The staged development of Project East and its Two Farming Areas, and the use of adaptive management practices in response to monitoring results, are important components of managing the potential effects of Project East. Adaptive management and staged development would enable the effects of Project East to be confirmed as acceptable and in line with expectations while Project East and its Two Farming Areas are developed incrementally. It would also allow environmental management measures to be optimised over time.

**Table 1: Summary of recommended management and monitoring measures**

| Issue   | Proposed Management Approach  | Proposed Monitoring Action   |
|---|---|--|
| Hydrodynamics   |   |  |
| Changes to current speed and direction.                           | None required. This matter has been addressed by the location and design of the Two Farming Areas.  | None required.   |
| Water quality and plankton  |   |  |
| Potential for increased concentrations of TAN and chl- <i>a</i> . | <p>None required. This matter has been addressed by the location and design of the Two Farming Areas.</p> <p>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.</p> | <p>TN will be measured at the edge of the reasonable mixing zone of each Farming Area. Chl-<i>a</i> will be measured at selected potentially sensitive locations. DO will be measured at the edge of the reasonable mixing zone of farm blocks (i.e., outside but not near the pens).</p> <p>Monitoring will occur before development and during each stage.</p> <p>Details will be prescribed in an Environmental Management Plan (<b>EMP</b>).</p> |
| Reduction in dissolved oxygen concentrations.                     | None required. This matter has been addressed by the location and design of the Two Farming Areas.  | DO will be measured at the edge of the reasonable mixing zone of farm blocks (i.e., outside but not near the pens).  |

| Issue   | Proposed Management Approach  | Proposed Monitoring Action  |
|---|---|---|
| Benthic environment                                   |   |   |
| <p>Deposition of excess feed and faecal material.</p> | <p>None required. This matter has already been addressed by the location and design of the Two Farming Areas.</p> <p>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, changing location/configuration of pens, or resting sites.</p> | <p>A pre-development survey will be required to characterise pre-development (baseline) conditions at monitoring sites and confirm the suitability of monitoring sites, particularly reference sites.</p> <p>Monitoring at various distances from pens and at reference sites at the end of each stage will also occur. Details will be prescribed in an EMP. It is proposed that benthic monitoring parameters will include:</p> <ol style="list-style-type: none"> <li>1. Sediment grab samples, analysed for: <ol style="list-style-type: none"> <li>a. Total free sulphides (TFS);</li> <li>b. TOC, TN;</li> <li>c. Grain size; and</li> <li>d. Relevant additives (e.g., zinc).</li> </ol> </li> <li>2. Visual assessment (video or drop camera), to identify and characterise: <ol style="list-style-type: none"> <li>a. Benthic habitat and epifauna;</li> <li>b. Bacterial mats (coverage); and</li> <li>c. Outgassing.</li> </ol> </li> <li>3. Sediment grab samples to characterise infauna community composition and calculate common infauna indicators.</li> </ol> |
| Changes to benthic biota.                             | As above.   | As above.   |

| Issue   | Proposed Management Approach  | Proposed Monitoring Action   |
|---|---|--|
| Biosecurity   |   |  |
| Increased risk of introduced pest species on structures.  | Preparation and implementation of a Biosecurity Management Plan.  | Monitoring for early detection of potential harmful organisms and disease in accordance with the Biosecurity Management Plan.  |
| Increased risk of disease in farmed salmon.   | Biosecurity Management Plan to include actions to eliminate or contain new incursions.  | Monitoring for early detection of potential harmful organisms and disease in accordance with the Biosecurity Management Plan.  |
| Increased risk of structures acting as hub for spread of disease to natural biota and oyster beds nearby. | A comprehensive biofouling control programme would be undertaken as part of the Biosecurity Management Plan to manage biofouling risks.   | Surveillance for potential harmful organisms and disease as part of monitoring programme required by the Biosecurity Management Plan.  |
| Wild Fisheries  |   |  |
| Exclusion in farmed areas.  | None required. This matter has been addressed by the location and design of the Two Farming Areas.  | None required.   |
| Mammals   |   |  |
| Exclusion.  | <p>Staged development and adaptive management of the Two Farming Areas.</p> <p>A Marine Mammal Management Plan (<b>MMMP</b>) would 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</p> | <p>A monitoring programme will be developed in accordance with the FNZ Marine Mammal Guidelines.</p> <p>The monitoring programme will include at least 1 year of baseline monitoring prior to development, and ongoing</p> |

| Issue                | Proposed Management Approach   | Proposed Monitoring Action  |
|----------------------|--|---|
|                      | <p>measures are in place. A key management goal for the MMMP would be to minimise and / or mitigate marine mammals' avoidance of the Two Farming Areas.</p>  | <p>monitoring during the staged development of the Farming Areas.</p>   |
| <p>Entanglement.</p> | <p>Risk of entanglement will be prevented by:</p> <ul style="list-style-type: none"> <li>➤ Implementing the MMMP, a key objective of which will be to avoid, minimise and/or mitigate entrapment, injury, or entanglement incidents; and</li> <li>➤ Staging development of the Two Farming Areas and incorporating monitoring, and adaptive management.</li> </ul>   | <p>A monitoring programme will be developed in accordance with the FNZ Marine Mammal Guidelines.</p> <p>The monitoring programme will include at least 1 year of baseline monitoring prior to development, and ongoing monitoring during the staged development of the Farming Areas.</p> |
| <p>Birds</p>         |  |   |
| <p>Entanglement.</p> | <p>Risk of entanglement will be prevented by:</p> <ul style="list-style-type: none"> <li>➤ Implementing best available management practices for net design (including avoiding the use of traditional bird netting and avoiding the use of predator nets);</li> <li>➤ Subsurface feeding;</li> <li>➤ Implementing a Seabird Management and Monitoring Plan developed 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; and</li> <li>➤ Staging development of the Two Farming Areas and incorporating monitoring, and adaptive management.</li> </ul> | <p>A monitoring programme will be developed in accordance with the FNZ Seabird Guidelines.</p> <p>The monitoring programme will include at least 1 year of baseline monitoring prior to development, and ongoing monitoring during the staged development of the Farming Areas.</p>       |

| Issue  | Proposed Management Approach   | Proposed Monitoring Action |
|--|--|----------------------------|
| Navigation   |  |                            |
| Effects on the safe and efficient navigation of vessels through the Project East area. | Implement best practice measures to identify the Two Farming Areas to mariners, the final design of which would 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 required.             |
| Commercial Fishing   |  |                            |
| Effects on commercial fishing in the Project East area.                                | Implement best practice navigational marking to enable skippers to operate in the area safely and efficiently.   | None required.             |
| Visual Amenity, Landscape and Natural Character  |  |                            |
| Effects on visual amenity, landscape, and natural character.                           | <p>None required. These effects have already been avoided by:</p> <ul style="list-style-type: none"> <li>➤ Locating the Farming Areas offshore and in locations where they cannot be seen from land; and</li> <li>➤ Locating the Farming Areas outside areas of outstanding natural landscape and natural character</li> </ul>   | None required.             |

| Issue   | Proposed Management Approach   | Proposed Monitoring Action  |
|---|--|---|
| Recreation  |  |   |
| Effects on the recreational fishing and yachting. | Implement best practice navigational marking to enable skippers to operate in the area safely and efficiently.           | None required.  |
| Effects on surfing.                               | None required. This matter has been avoided by the offshore location and design of the Two Farming Areas.                | None required.  |
| Cultural Values                                   |  |   |
| Effects on cultural values.                       | The potential management of matters relating to cultural values would be determined in consultation with tangata whenua. | The potential monitoring of matters relating to cultural values will be determined in consultation with tangata whenua. |