New Zealand King Salmon

ENVIRONMENTAL PRODUCT DECLARATION

EPD® AUSTRALASIA
ENVIRONMENTAL PRODUCT DECLARATION

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This EPD has been developed in accordance with ISO 14025 for:
King Salmon from the
New Zealand King Salmon Company Ltd

An EPD should provide current information, and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com

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INTRODUCING NEW ZEALAND KING SALMON

At New Zealand King Salmon (NZKS), we are passionate about creating the ultimate salmon experience. As the world's largest producer, we are the King salmon experts with more than 30 years of farming, processing and branding this unique breed.

Vision

To be the Top of the South's most valued organisation and the world's most inspirational salmon company.

Mission

We want all NZKS interactions to leave stakeholders better off as a result.

Values

- Maximise value for all stakeholders
- Integrity
- Quality
- Teamwork and team culture
- Continuous improvement
- Innovation

Supporting strategies

- Health and safety including food safety
- Sustainability
- People
- Dominate premium salmon niche
- Community engagement
- Brands
- Farm one species: King Salmon
- Cost competitive

The New Zealand King Salmon Company Ltd was a pioneer in marine salmon farming in New Zealand, utilising King salmon stock introduced from California over 100 years ago.

We have been growing and selling King salmon to consumers in New Zealand and overseas for over 30 years. We have a well-established domestic market share along with a successful history in offshore markets.

We believe our key points of difference are the rare species of salmon that we produce and the high-quality premium brands that we have developed. We're proud that our Ōra King brand has ensured that we are one of the first protein companies in the world to achieve branding through to the restaurant menu.

546
Employees

7,336
Tonnes Harvested

We supply more than
50%
of the world's farmed king salmon

4kg
Average harvest size

Total Sales
44% New Zealand
56% Export

Revenue of
$155.3 million

$25.1
Pro forma operating EBITDA

Net profit after tax
$18 million

49%
Fresh whole King salmon makes up nearly half of all sales

17
Surface hectares of salmon farm space

FY20 annual report

OUR SALMON

King salmon origins

King salmon (*Oncorhynchus tschawytscha*), are the largest of the Pacific salmon. Native to the north west coast of North America and North East Asia, King salmon were first introduced into New Zealand from northern California as a game fish in the late 19th century. In the 1980s New Zealand entrepreneurs sought to develop salmon farms in the cool, deep waters of the Marlborough Sounds.

King salmon is the only salmon species farmed in New Zealand, whilst the rest of the world farms the more common Atlantic salmon species (*Salmo salar*).

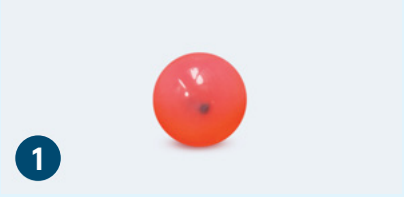
King Salmon life Cycle

King salmon are anadromous fish; they are born in fresh water, spend most of their life at sea before returning to fresh water to spawn. We mimic this natural lifecycle in our farming operations.

Only 0.7% of the world's salmon is King salmon

A King Salmon's life can span up to 3 years

Freshwater



1. **Egg is fertilised and develops into an eyed Ova**

2. **Salmon hatch from their eggs as Alevin**

3. **Alevin develop into Fry, then transfer to outside races to mature into Parr and then Smolt**

Seawater

4. **Smolt are transferred to seafarms**

5. **Smolt grow into adults**

6. **Harvest**

FARM LOCATIONS & PROCESSES *(FRESHWATER)*

Our King salmon are raised in one of the cleanest rearing environments in the world. From the crystal-clear waters flowing from Te Waikoropupu Springs in Takaka, Golden Bay, to the majestic marine environment that is the Marlborough Sounds.

Our three freshwater facilities located throughout the South Island of New Zealand collectively breed, hatch and grow smolt for our seafarms.

Breeding programme

Our classical breeding programme has been in place for more than 25 years and we believe it is the longest running, commercial selective King salmon breeding programme in the world. It delivers the critical scientific rigour to our unique breed of King salmon. The salmon we use for breeding are referred to as our 'broodstock'.

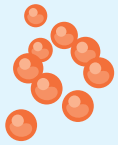
Our breeding programme has spanned across 10 generations of salmon, with approximately 150 families and records on more than 200,000 fish.

We believe the result of this programme, which crosses the traits of observed families for beneficial inherited characteristics, is salmon with superior characteristics to that of wild King salmon. Our primary focus has been on developing salmon that are bred for culinary excellence and that grow faster and larger, than wild King salmon. In addition to having a higher fat content which is highly desirable for our discerning chefs around the world.

FRESHWATER PROCESS

Broodstock Selection

Each year, female and male salmon are assessed for specific performance traits which enable us to determine the best specimens of our unique breed. Independent analysis helps us decide which salmon are best for production, and which will be the next generation of broodstock.

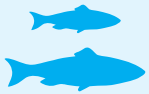


Spawning

Female salmon are hand sorted to assess the perfect time for egg removal. The harvested eggs are then fertilised and incubated. This spawning process can start in November and finish in July of the following year.

Hatching

After fertilisation, the eggs are incubated for a short time before hatching. By controlling the temperature during this period, we can delay egg development, which assists us to have a year-round supply of fresh salmon.



Growing

'Smoltification' typically occurs around 8 months after hatching, the salmon develop physical characteristics such as silver skin, yellow eyes and their mouth and fins turn black. Once they have developed into smolt, salmon are physiologically capable of surviving in sea water.

Feeding

Feeding commences one month after hatching. Initially, salmon are fed by hand and as they grow this becomes automated. In preparation for life at sea, they are fed a specially formulated diet to help them adapt to the marine environment.

Grading

Throughout the growth process, salmon are methodically assessed. Smolt undergo quality and size grading. They also receive a health check before they are transferred to sea.

Sea transfer

Custom-built tankers maintain a cool environment and automatically oxygenate and remove CO_2 from the water. Once the road trip from the freshwater facility to the wharf is complete, the tanker travels by boat to the sea farm for final transfer into individual pens.

FARM LOCATIONS & PROCESSES *(SEAWATER)*

Seafarm sites require high quality, deep, cool waters with sufficient flow. Our Marlborough Sounds seafarms are situated in the Tory Channel, Queen Charlotte Sound and Pelorus Sound.

Seawater process

Arrival of smolt
Smolt arrive in custom-built tankers which are designed to maintain a cool, oxygenated environment. Each batch of smolt are transferred to a dedicated pen. In order to minimise stress, there is no handling of the fish while they grow, which typically takes around 18 months.

Feeding
King salmon require a unique diet for optimal health and growth, and the formulation of this diet changes throughout their lifecycle. The main components of the feed are complex fats and quality proteins, along with carbohydrates and essential vitamins and minerals. Automatic feeders are used to dispense several meals each day - more often when the salmon are smaller and less often as they grow. Underwater cameras closely monitor appetite and activity during each feed, ensuring our salmon receive just the right amount and to help reduce the amount of feed not eaten by the fish.

Harvest
Our King salmon typically take around 18 months to reach an optimal harvest weight of around 4kg. We gently corral the salmon with specially designed nets which allow smaller fish to pass through. Once the fish are harvested, they are then transported on ice by specialised tankers straight to our Nelson processing facility.

Our seawater farm locations

PRIMARY PROCESSING

1 Arrival

Whole salmon arrive at the plant for processing on the same day they are harvested. The salmon are washed and temperature checked.

2 Initial Process

The gills are removed then the salmon are split through the belly and the viscera is removed. The internal cavity is cleaned and the whole fish receives a thorough wash.

3 Grading

Each salmon is hand-graded and carefully inspected internally and externally. The grading process divides the salmon into three categories — Ōra King grade, Premium grade and Standard grade.

4 Weighing and Packing

Each salmon is individually weighed and packaged according to demand.

5 Dispatch

Whole salmon typically leave the processing plant within 24 hours of harvest. Fresh whole salmon are distributed across NZ and globally.

EGG TO PLATE

From breeding right through to branding, we believe a key component to delivering the highest quality salmon products to consumers and chefs around the world is retaining complete control of our processes.

Freshwater & Broodstock

We operate three freshwater facilities for broodstock, smolt and as risk mitigation.Broodstock are tagged and monitored throughout their lives – we assess the best female and male salmon for our breeding programme.

Seafarms

Following transfer from freshwater facilities, salmon are grown for up to 18 months in one of our Marlborough Sounds sea farms.

Harvest

Salmon are transferred to our harvest barge, where they are humanely dispatched and transported on ice by specialised tankers to our Nelson processing facility on the same day.

Processing

Whole salmon are weighed, gilled and gutted. Depending on customer demand, further processing such as filleting, portioning and smoking may also take place.

Branding

A wide variety of fresh, smoked and value-added products are dispatched to both foodservice and retail customers under our Regal, Southern Ocean, Big Catch and Omega Plus brands. The highest quality whole salmon are labelled Ōra King and individually numbered for traceability.

PRODUCTS & BRANDS

We proudly produce a diverse range of King salmon products. From fresh whole salmon to premium pet food, we create King salmon products that are loved here in New Zealand and worldwide.

Whole fish

Fillet

Raw portions

Cold smoked

Hot smoked

Ready to cook portion with sauce sachet

Salmon & potato cakes

Caviar

Oil

Kibble

Pet treats

Our premium brands tell the story behind our products to our core groups of customers – discerning chefs, consumers, retailers and wholesalers.

ŌRA KING®

Ōra King is our unique breed of King salmon, designed for culinary excellence. Focused on the premium food service channel, Ōra King is proudly featured on the menus of more than 1,300 fine dining restaurants worldwide.

Only the finest King salmon with the best culinary traits make the Ōra King grade.

Southern ocean

Our Southern Ocean products offer a range of natural, affordable and conveniently packed smoked salmon options, suitable for any occasion for the whole family.

OMEGA PLUS+®
ESSENTIAL MARINE-BASED NUTRITION

King salmon is the number one ingredient for all our pet food products – full of natural goodness, high quality protein and a well-balanced source of marine-based omega-3 and 6. Proudly made right here in New Zealand, our Omega Plus pet food range offers a complete diet to maintain the health and well-being of pets without compromising on taste.

REGAL™
MARLBOROUGH KING SALMON

Regal Marlborough King Salmon is known for its incredible flavour, colour, texture and healthy omega-3 fatty acids. Available in a wide variety of fresh salmon cuts, convenient 'ready to cook' options, and an extensive range of smoked salmon products including cold smoked slices and wood roasted fillets. Not only quick and easy to prepare, its versatility makes it suitable for every meal occasion.

OPERATING SUSTAINABLY

Care for the environment is a key pillar in our business strategy – we aim to minimise our footprint, whilst helping our people, our community and our stakeholders in the long-term.

We have chosen third-party certifications as we believe they are vital to ensuring our industry operates responsibly and to the highest standards possible. That is why we have committed to achieving some of the most stringent and widely respected standards in aquaculture.

These certifications and recommendations are achieved through regular independent audits.

- The Global Aquaculture Alliance has awarded us 4 stars under the Best Aquaculture Practices (BAP) programme which means every stage of our supply chain from feed to processing is covered.
- Achieved Aquaculture Stewardship Council (ASC) certification on our Clay Point farm – currently the only active salmon ASC certification in NZ.
- As a supplier to the Woolworth group, we have achieved WSE – Woolworth Supplier Excellence.
- All our manufacturing sites comply with Ministry of Primary Industry's (MPI) Risk Management Programme.
- All our fresh King salmon products are independently certified as Kosher, in addition to the majority of our smoked varients. They have been inspected by the Orthodox Rabbinate of New Zealand and our associated processing systems are under Rabbinical supervision.
- All our fresh King salmon products are independently certified as Halal, in addition to the majority of our smoked varients and our salmon feed.

BAP CERTIFIED 4 Star Certified

Monterey Bay Aquarium Seafood Watch

FARMED RESPONSIBLY asc CERTIFIED ASC-AQUA.ORG

UN GLOBAL COMPACT WE SUPPORT

A+ NEW ZEALAND Sustainable AQUACULTURE

gsi

Partnerships and Commitments

We partner with a range of global and local initiatives and organisations to strengthen and transform the sustainability of salmon farming and aquaculture.

Recent achievements include:

- Developed a supplier Code of Conduct in line with the UN Global Compact Ten Principles (a voluntary code addressing fundamental responsibilities in the areas of human rights, labour, environment and anti-corruption).
- Collaborated on the UN Global Compact's Sustainable Ocean Principles for investors in ocean-focused business.
- Completed a Task Force on Climate-Related Financial Disclosures (TCFD) Gap analysis for future climate reporting.
- Second annual Communication of Progress (COP) submitted in November 2020 as part of our participation in the UN Global Compact.
- Completed our first Modern Slavery Statement and submitted to the Australian Border Force 2021.

For more information visit:
www.kingsalmon.co.nz/our-environment

PRODUCT INFORMATION

Product(s) covered by EPD

This EPD covers King salmon which has been grown, processed and sold for human consumption by the New Zealand King Salmon Co. Ltd. Two product streams are included in this EPD – whole King salmon and value-added King salmon. All product is processed at our manufacturing facilities in Nelson, New Zealand. All product passes through Primary Processing for initial grading and cleaning, product may then be packaged ready for dispatch or continue to either the hot smoked or cold smoked facility depending on end product requirements. Products are sold through both retail and foodservice channels in New Zealand and globally. Products are packaged under one of our brands - Ōra King, Regal, Southern Ocean or the New Zealand King Salmon brand.

Declared Unit

The declared unit for the EPD is 1 kg of fresh, edible King salmon meat, ready for customer purchase. The reference flow is defined at the customer gate. Packaging and bones where applicable are included in the analysis but they do not contribute to the mass of the declared unit.

Table 1: Industry classification of products in this EPD

Product	Classification	Code	Category
Head-on gutted King salmon	UN CPC Ver.2.1	042	Fish live, fresh or chilled for human consumption
	ANZSIC 2006	1120	Seafood processing: Whole fin fish freezing
Value-added King salmon	UN CPC Ver.2.1	2123	Fish, dried, whether or not salted, or in brine; smoked, incl. fillets; edible fishmeal
	ANZSIC 2006	1120	Seafood processing: Fish fillet

Table 2: Content Declaration

The content of the declared units are shown below, per kg of edible meat.

Head-On Gutted Salmon

Material	Value	Unit
Salmon (edible meat)	1	kg
Salmon (inedible)	0.4	kg
Packaging (Polyethylene)	0.02	kg
Packaging (Polystyrene)	0.02	kg
Packaging (Polypropylene glycol)	0.03	kg

Value-Added Salmon

Material	Value	Unit
Salmon	1	kg
Added Sugar	<0.01	kg
Added Salt	0.02	kg
Packaging (PET)	0.14	kg
Packaging (Cardboard)	0.1	kg

None of the materials listed are included on the following European Chemicals Agency (ECHA) lists: Substances restricted under REACH, Authorisation List, Candidate List of substances of very high concern for Authorisation (ECHA, 2021).

LIFE CYCLE ASSESSMENT (LCA) METHODOLOGY

This EPD has been produced in conformance with the following standards:

- Fish and fish products Product Category Rules, 2021:05 (EPD International, 2021)

- Instructions of the Australasian EPD Programme v3.0 (EPD Australasia, 2018)

- The International EPD System General Programme Instructions (GPI) v3.01 (EPD International, 2019)

The data used to create this EPD largely comes from a report by Dr Robert Parker (Parker, 2019). Packaging data and the LCA modelling was carried out by thinkstep-anz. Site-specific data were collected directly from New Zealand King Salmon for each hatchery and farm site. Transportation distances and modes for distribution were based on weighted averages for each product type and destination market. The data collected covers an average of products sold between 2016 and 2018.

Annual feed composition data were solicited directly from feed suppliers, along with average per-tonne inputs to feed milling and packaging and typical transportation distances and modes for delivering feed from mills to New Zealand.

The environmental footprint of salmon is heavily dependent on the feed type, and also the life cycle inventory data selected for each feed. The life cycle impact assessment results are therefore highly dependent on the choice of database and the choice of co-product allocation method.

Secondary data were primarily sourced from two life cycle inventory databases: ecoinvent 3.6 from the Swiss Centre for Life Cycle Inventories (Wernet et. al., 2016) and Agri-Footprint from Blonk Consultants (2016). Electricity inputs were modeled specific to each country's grid.

Explanation of Average / Representative Products & Variation

The two products considered in this EPD are a head-on gutted (HOG) salmon product and a value-added product. The value-added product is production weighted average for hot and cold smoked salmon and unsmoked filleted salmon. The smoking process has a low environmental impact (less than 10%) on the whole life cycle of value-added salmon. As such, the impacts of each individual product is within 10% of the representative value-added product, which follows the guidance of the GPI for showing multiple product as a single representative one (EPD International, 2019).

Cut off criteria

Environmental impacts relating to personnel, infrastructure, and production equipment not directly consumed in the processes of any life cycle stage are excluded from the system boundary as per the PCR (EPD International 2021). All other reported data were incorporated and modelled using the best available life cycle inventory data. Data for flows contributing to a minimum of 99% of the declared environmental impact was included in the modelling and results of this EPD as per the PCR.

Allocation

In Parker (2019), inputs were collected separately for each processing type when possible, and when inputs were combined they were allocated between products based on relative mass following PAS 2050-2 (BSI, 2012).

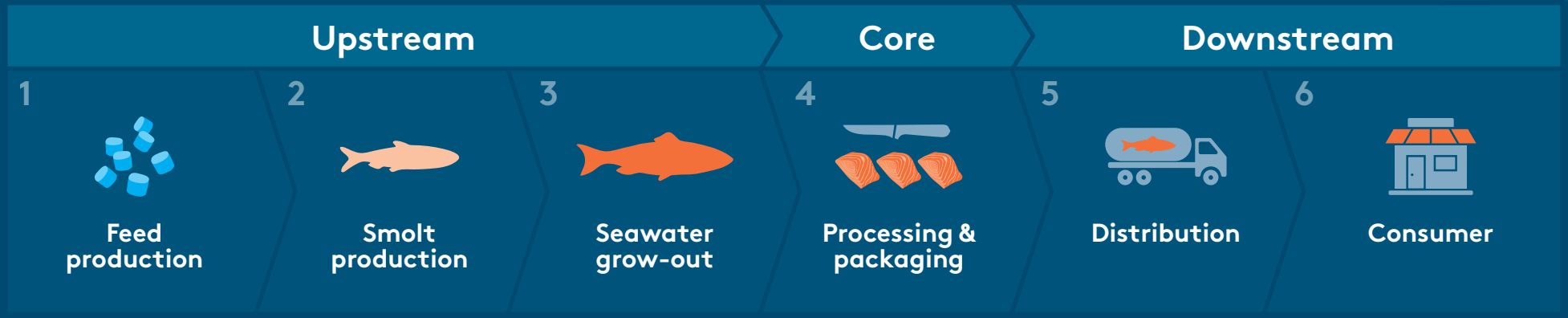
For the feed datasets, economic allocation was used to align with the recommendation of the PCR (EPD International, 2021). End-of-life allocation follows the requirements of ISO 14044 section 4.3.4.3.

SYSTEM BOUNDARIES

This EPD includes all attributional processes from 'cradle to grave', which have been separated into three different life cycle stages following the requirements of the PCR (EPD International, 2021):

1. Upstream processes ('cradle to gate')
2. Core processes ('gate to gate')
3. Downstream processes ('gate to grave')

Figure 1: Life Cycle Stages of salmon farming



Feed production

Upstream processes primarily involve the production of salmon feed. Feed production is inclusive of all agricultural inputs, as well as water, electricity, fuel, transport and packaging required to produce the raw salmon feed. The feed is a combination of animal by-product meals, crop meals, fish meals and oils. Ingredients are milled together and packaged for distribution. The geographical source and associated transport of ingredients has been accounted for.

Feed is milled and packaged at plants in Australia and Chile (for freshwater use only), and then delivered to New Zealand for consumption.

Smolt production

Salmon are called smolts during their intermediary stage of life where they mature to being ready for migration to the sea. Smolts are sourced from one of our three freshwater hatcheries in Takaka, Waiau, and Tentburn. A mortality rate of 11.1% was assumed. Mortalities are generally sent away for composting or rendering.

Seawater grow-out

Smolts are delivered to various seawater grow-out sites in the Tory Channel, Queen Charlotte Sound and Pelorus Sound. They spend around 18 months here until reaching full maturity ready for harvest.

Processing and packaging

Post-harvest, King salmon undergo primary processing which produces fresh or frozen, head-on gutted (HOG) salmon. Another processing chain produces value-added fillets, cold smoked and hot smoked salmon.

Distribution

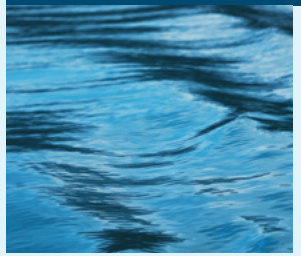
Distribution transport distances vary depending on the product. Most head-on gutted (HOG) salmon was transported by air freight to North America, while most value-added salmon was distributed to the North Island of New Zealand. The consequences of these different transportation distances is that the HOG salmon has a significantly higher transportation impact. Cold storage at retail is also included.

Consumer

Impacts from the consumer stage include the transportation of the product from the retail store to the customer and the cooking of the product in the case of the HOG salmon. The end of life of the packaging and inedible product is also included.

IMPACT ASSESSMENT INDICATORS

Water Scarcity Footprint > Water Stress (Boulay, et al., 2017)

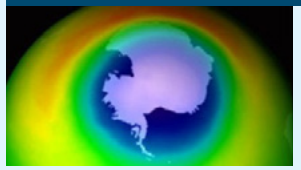


A measure of the stress on a region due to water consumption, addressed by applying the water stress index (WSI). The WSI is the ratio of total annual freshwater withdrawals to hydrological availability with values ranging from 0 (no water stress) to 1 (high water stress). It is multiplied by the water consumption value to indicate which portion of consumption contributes to water deprivation.

Global Warming Potential (GWP) > Climate Change (IPCC, 2013)

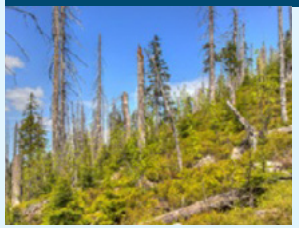
A measure of greenhouse gas emissions, such as carbon dioxide and methane. These emissions increase absorption of radiation emitted by the earth, intensifying the natural greenhouse effect. Contributions to GWP can come from either fossil or biogenic sources, e.g. burning fossil fuels or burning wood. GWP is reported as a total as well as both for just fossil carbon and including biogenic carbon.

Ozone Depletion Potential (ODP) > Ozone Hole (Guinee, et al.,2002)



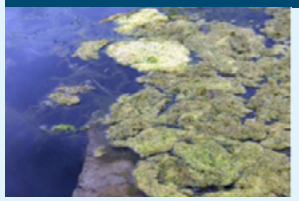
A measure of air emissions that contribute to the depletion of the stratospheric ozone layer, causing higher levels of ultraviolet B (UVB) to reach the earth's surface with detrimental effects on humans, animals, and plants.

Acidification Potential > Acid Rain (Hausschild & Wenzel, 1998)



A measure of emissions that cause acidifying effects to the environment. Acidification potential is a measure of a molecule's capacity to increase the hydrogen ion (H+) concentration in the presence of water, thus decreasing the pH value. Potential effects include fish mortality, forest decline and the deterioration of building materials.

Eutrophication Potential > Algal Blooms (Heijungs, et al., 1992)



A measure of nutrient enrichment that may cause an undesirable shift in species composition and elevated biomass production in both aquatic and terrestrial ecosystems. It includes potential impacts of excessively high levels of macronutrients, the most important of which are nitrogen (N) and phosphorus (P).

Photochemical Ozone Formation Potential > Smog (van Zelm R., 2008)

A measure of emissions of precursors that contribute to ground level smog formation (mainly ozone O^3), produced by the reaction of VOCs and carbon monoxide in the presence of nitrogen oxides under the influence of UV light. Ground level ozone may be harmful to human and ecosystem health and may also damage crops.

Abiotic Depletion Potential > Resource Consumption (van Oers, et al., 2002)

The consumption of non-renewable resources leads to a decrease in the future availability of the functions supplied by these resources. Depletion of mineral resource elements and non-renewable fossil energy resources are reported separately.

Land Competition > Land Use (Guinee, et al.,2002)

A measure of the amount of land that is used. As land is a finite resource, the use of land in the production chain limits the production of other goods and services. Measures as occupied area multiplied by time in years (m^2 a).

ENVIRONMENTAL PERFORMANCE

Table 2: Head-on gutted salmon environmental impact

Indicator	Unit	Upstream	Core	Downstream	Total
Global Warming Potential - Total	kg CO_2 eq.	5.70	0.540	7.07	13.3
Global Warming Potential – Fossil	kg CO_2 eq.	4.14	0.530	6.87	11.5
Global Warming Potential – Biogenic	kg CO_2 eq.	0.1000	0.0102	0.203	0.313
Global Warming Potential – Land Use and Land Use Change	kg CO_2 eq.	1.46	2.58E-04	9.37E-04	1.47
Acidification Potential	kg SO_2 eq.	0.0401	0.00155	0.0294	0.0711
Eutrophication Potential	kg PO_4^{3-} eq.	0.0827	7.69E-04	0.00594	0.0894
Ozone Depletion Potential	kg CFC-11 eq	2.90E-07	1.10E-07	1.18E-06	1.58E-06
Photochemical Oxidation Formation Potential	kg NMVOC	0.0261	0.00141	0.0332	0.0607
Abiotic Depletion Potential, Elements	kg Sb eq	9.80E-06	3.62E-06	1.88E-05	3.22E-05
Abiotic Depletion Potential, Fossil Fuels	MJ	49.9	7.05	95.5	152
Water Scarcity Footprint	m^3 eq.	0.757	0.232	0.178	1.17
Land Competition	$m^2.a$	5.86	0.0103	0.0800	5.96

Table 3: Head-on gutted salmon use of resources

Indicator	Unit	Upstream	Core	Downstream	Total
Renewable Primary Energy - Use as Energy Carrier	MJ	3.47	1.53	0.731	5.73
Renewable Primary Energy - Use as Raw Materials	MJ	0	0	0	0
Renewable Primary Energy - Total	MJ	3.47	1.53	0.731	5.73
Non-Renewable Primary Energy - Use as Energy Carrier	MJ	51.6	7.51	96.3	155
Non-Renewable Primary Energy - Use as Raw Materials	MJ	0	0	0	0
Non-Renewable Primary Energy - Total	MJ	51.6	7.51	96.3	155
Secondary Material	kg	0	0	0	0
Renewable Secondary Fuels	MJ	0	0	0	0
Non-Renewable Secondary Fuels	MJ	0	0	0	0
Net Use of Fresh Water	m^3	0.787	0.323	0.178	1.29

Table 4: Head-on gutted salmon waste categories and output flows

Indicator	Unit	Upstream	Core	Downstream	Total
Hazardous Waste Disposed	kg	0.0114	4.98E-05	0	0.0114
Non-Hazardous Waste Disposed	kg	0.414	5.15E-04	0	0.415
Radioactive Waste Disposed	kg	1.85E-04	0	0	1.85E-04
Components for Reuse	kg	0	0	0	0
Material for Recycling	kg	0	0	0	0
Materials for Energy Recovery	kg	0	0	0	0
Exported Energy, Electrical	MJ	0	0	0	0
Exported Energy, Thermal	MJ	0	0	0	0

Table 5: Value-added salmon environmental impact

Indicator	Unit	Upstream	Core	Downstream	Total
Global Warming Potential - Total	kg CO_2 eq.	5.77	1.20	2.18	9.15
Global Warming Potential – Fossil	kg CO_2 eq.	4.19	1.10	1.86	7.15
Global Warming Potential – Biogenic	kg CO_2 eq.	0.101	0.0981	0.319	0.518
Global Warming Potential – Land Use and Land Use Change	kg CO_2 eq.	1.48	0.00465	5.94E-04	1.49
Acidification Potential	kg SO_2 eq.	0.0406	0.00397	0.00688	0.0514
Eutrophication Potential	kg PO_4^{3-} eq.	0.0836	9.63E-04	0.00299	0.0876
Ozone Depletion Potential	kg CFC-11 eq.	2.94E-07	1.49E-07	2.99E-07	7.41E-07
Photochemical Oxidation Formation Potential	kg NMVOC	0.0264	0.00396	0.00732	0.0377
Abiotic Depletion Potential, Elements	kg Sb eq.	9.91E-06	4.38E-06	1.67E-05	3.10E-05
Abiotic Depletion Potential, Fossil Fuels	MJ	50.5	19.4	24.9	94.7
Water Scarcity Footprint	m^3 eq.	0.765	0.262	0.118	1.15
Land Competition	m^2.a	5.93	0.148	0.0528	6.13

Table 6: Value-added salmon use of resources

Indicator	Unit	Upstream	Core	Downstream	Total
Renewable Primary Energy - Use as Energy Carrier	MJ	3.51	3.83	0.456	7.80
Renewable Primary Energy - Use as Raw Materials	MJ	0	0	0	0
Renewable Primary Energy - Total	MJ	3.51	3.83	0.456	7.80
Non-Renewable Primary Energy - Use as Energy Carrier	MJ	52.2	21.9	25.4	99.5
Non-Renewable Primary Energy - Use as Raw Materials	MJ	0	0	0	0
Non-Renewable Primary Energy - Total	MJ	52.2	21.9	25.4	99.5
Secondary Material	kg	0	0	0	0
Renewable Secondary Fuels	MJ	0	0	0	0
Non-Renewable Secondary Fuels	MJ	0	0	0	0
Net Use of Fresh Water	m^3	0.796	0.268	0.118	1.18

Table 7: Value-added salmon waste categories and output flows

Indicator	Unit	Upstream	Core	Downstream	Total
Hazardous Waste Disposed	kg	0.0115	8.73E-05	0	0.0116
Non-Hazardous Waste Disposed	kg	0.419	0.907	0	1.33
Radioactive Waste Disposed	kg	1.88E-04	7.16E-04	0	9.04E-04
Components for Reuse	kg	0	0	0	0
Material for Recycling	kg	0	0	0	0
Materials for Energy Recovery	kg	0	0	0	0
Exported Energy, Electrical	MJ	0	0	0	0
Exported Energy, Thermal	MJ	0	0	0	0

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GENERAL INFORMATION

An Environmental Product Declaration, or EPD, is a standardised and verified way of quantifying the environmental impacts of a product based on a consistent set of rules known as a PCR (Product Category Rules).

The EPD owner has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programmes may not be comparable.

Declaration owner

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Reference Year for Data: 2016-2018

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PCR: PCR 2021:05 Live, fresh, chilled or frozen fish, fish fillets, fish meat and other fish products, Version 1.0, 2021-06-23

PCR review was conducted by: The Technical Committee of the International EPD® System

Chair: Massimo Marino
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Independent verification of the declaration and data, according to ISO 14025:

☐ EPD process certification (Internal)
☑ EPD verification (External)

Third party verifier:
Kimberly Robertson (Catalyst)
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Verifier approved by: EPD Australasia

Procedure for follow-up of data during EPD validity involved third-party verifier

☐ Yes
☑ No

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