

20 December 2019

Attn: Peter Johnson

Marlborough District Council 15 Seymour Street
PO Box 443
Blenheim 7240

Email: mdc@marlborough.govt.nz

To whom it may concern,

Re: The New Zealand King Salmon Co Limited – North of Cape Lambert, North Marlborough – U190438

I refer to the application U190438 from The New Zealand King Salmon Co Limited (NZKS) to get coastal permits and establish and operate new ‘open ocean’ salmon farms within a 1791 hectare site located between 5 kilometres and 12 kilometres due north of Cape Lambert (the ‘application’).

Thank you for the opportunity to respond to the issues that arise in the application. Please find enclosed a submission from the McGuinness Institute, which I have written in my capacity as chief executive. The application is concerning because it seeks to establish farming operations on a scale far beyond what has ever been done in New Zealand, yet it lacks any clear technical detail, operational guidelines or design information. This lack of information means that there cannot be a sufficient assessment of the environmental effects of the application, meaning that there are a number of serious risks and implications of these which have not been analysed.

Some key issues of concern include:

1. Inadequate information

There is a serious lack of information and clarity on what the design and operation methodologies of the farm will be. I submit that plans must be provided as part of this application, including the technology and engineering details of the farm, in particular the type, size and location of the structure as well as how this will affect the inputs (feed, antibiotics and pesticides) and discharge levels. NZKS are pushing for flexibility, but a precautionary approach is required here because:

- (a) This is a novel proposal with a scale far beyond any other farms in New Zealand, testing technology that has never been used in these conditions. The health and safety risks of inadequate construction are severe and would irreversibly harm the ecosystem.
- (b) Design and operation details are critical as they affect how the farm operates, including how the feed and discharge will impact the surrounding environment. Without detailed modelling information, there is no opportunity to measure and monitor adverse environmental effects of this application.

2. Negative impact on marine species, habitat and ecosystems (including increased biosecurity risk)

This application is located adjacent to the habitats of a number of vulnerable and threatened marine life. It will have significant negative impacts on the water quality, benthos and delicate ecosystem of the unique natural Marlborough Sounds area.

- (a) The scale of this application is unprecedented and will have significant carbon impacts (as illustrated in the infographic 'NZKS: *A Life Cycle Analysis and Carbon Assessment: An External Assessment*' in Appendix 1).
- (b) The application will lead to increased irreversible biosecurity risk, noting that the application should be considered in light of the mortality and disease issues NZKS have had at existing farms.
- (c) There is a lack of consideration of the application's cumulative impacts. The application does not look at the interconnected relationship between the marine environment and the impact that each element will have on one another, particularly in regards to threatened marine and bird life and habitats.

3. Wider context should be considered, including climate change, the application of s 91 of the Resource Management Act (RMA) and the level of public interest

- (a) New Zealand needs to grow an industry in a sustainable way; that means meeting the needs of the environment and the community now and over the long-term. It is the community that provides companies the social license to operate. Climate change issues will seriously impact the potential of salmon farming in the future. Increasing sea temperatures resulting in increased disease and fish mortality rates are negatively impacting the viability of ocean farming. The scale (an additional 80,000 t of feed discharged to be permitted), length of time (35 years) and the impact on the economy and the environment must be taken into account. If salmon are dying in the Sounds, that means our flora and fauna will be being challenged. We need to question why we would add more stress to an already stressed ecosystem.
- (b) The application proposes a significant new offshore farm location which is nationally significant and sets a new precedent of its kind in New Zealand. It represents a transition in farming operations from NZKS's current inshore sites towards more sustainable lower temperature offshore locations. On this basis it can be expected that this is the first of a number of similar applications as sea temperatures make inshore farming unsustainable. I submit that the implications of this decision on future offshore farming applications above and beyond the current application must be considered.
- (c) Public interest in this application (in particular that NZKS are a foreign-owned company using a publicly owned asset for their private gain) means that the precautionary principle, rather than adaptive management, should be followed here.

4. No checks or controls

Inadequate detail in this application means that there are no baseline measurements and models to identify, report and manage the risks of this application. We were unable to find where conditions for independent measurement have been made to monitor and control potential negative impacts or incidents that might occur.

Please find further explanation of these points in the attached Submission (and Appendices) below. I submit that the application should be refused and request that additional independent information is produced as part of the application so that an educated decision can be made.

I also request to be heard as an expert witness in support of this Submission. Please also ensure that any additional information is provided ahead of this hearing to ensure there is time for consideration and response.

Yours sincerely,



Wendy McGuinness
Chief Executive

Resource Management Act 1991 Form 13: Submission on publicly notified application concerning resource consent

To: Marlborough District Council

Name of submitter: Wendy McGuinness, McGuinness Institute

Applicant: The New Zealand King Salmon Co Limited (NZKS)

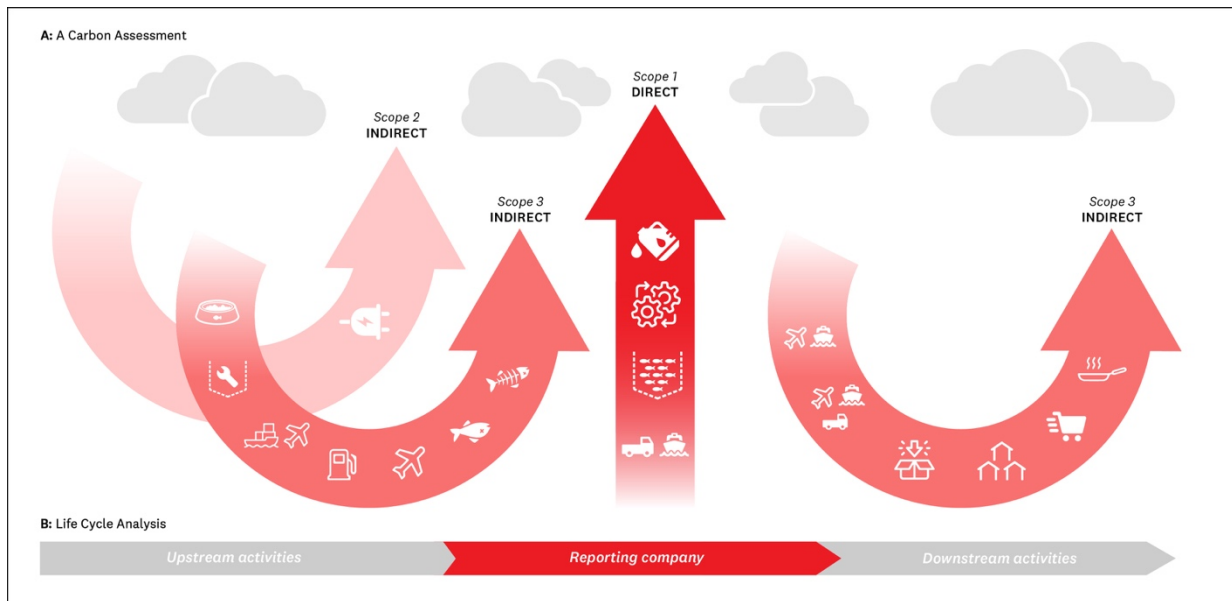
Locations: North of Cape Lambert, North Marlborough

Description of activity: To establish and operate new salmon farms within a 1791 hectare site located between 5 kilometres and 12 kilometres due north of Cape Lambert.

Application number: U190438

My submission relates to: The entire application.

My submission is: To oppose the application.



Submission

The New Zealand King Salmon Co Limited (U190438)
North of Cape Lambert, North Marlborough

December 2019

Section 1: Introduction

The McGuinness Institute is a non-partisan think tank working towards a sustainable future for New Zealand. *Project 2058* is the Institute's flagship project focusing on New Zealand's long-term future. As a result of our observation that foresight drives strategy, strategy requires reporting, and reporting shapes foresight, we developed three interlinking policy projects: *ForesightNZ*, *StrategyNZ* and *ReportingNZ*. Each of these tools must align if we want New Zealand to develop durable, robust and forward-looking public policy. The policy projects frame and feed into our research projects, which address a range of significant issues facing New Zealand. We also operate a *GDS Index*, which reviews all government department strategies in operation.

We have been involved with the New Zealand King Salmon applications since 2011. The McGuinness Institute was a submitter and economics expert at the Board of Inquiry. We understand the complexity and strong public interest regarding the role of NZKS using New Zealand oceans for their private operations. We have worked with a number of other organisations to try help find the best solution for New Zealand on this issue.

The following appendices are provided at the back of this submission or attached to provide background material. The PowerPoint in Appendix 3 also raises issues that we would like to raise at the Hearing.

Appendix 1: NZKS: A Life Cycle Analysis and Carbon Assessment: An External Assessment

Appendix 2: Graphs using NZKS Annual Reports, Applications and Resource Consents

Appendix 3: PowerPoint – Oral submission to NZKS Hearing in Blenheim on Waitata (edited) (Wendy McGuinness's 27 November 2019)

(Available on <http://www.mcguinnessinstitute.org/submissions/>)

Section 2: Application

2.1 Inadequate information

1. The open ocean aquaculture approach proposed in this application is experimental and untested, and therefore highly risky, especially in the New Zealand context. The nature and scale of the proposed farm are far greater than what has been done before (or what currently exists) in New Zealand. Thus a precautionary approach is required, especially when this application is considered in the context of the unique Marlborough Sounds environment.
2. The effects of the application's proposed activity have the potential to seriously and irreversibly damage the local marine environment and harm local marine life, potentially causing harm to human, environmental and marine diversity. The application as it stands has serious gaps in design and technical detail, with no specification on the precise plan to be implemented. This illustrates that there is a large amount of work to be done before these farms can be constructed and operated in open waters safely. Specific design, location, size and material details are crucial in determining the anticipated risks of this application.
3. It is impossible to quantify impacts of the proposed farm on the environment due to the lack of technical and design information included in the application. An application of such substantial scale requires significant research in order to ensure the final result will be safe in the unique conditions of the proposed site. It is also important to have information on engineering and operation methodologies so that the impacts on the environment can be modelled and monitored. In order to assess the risks of this application, information on the following must be included:

- a) Farm location, structure, materials (including lighting), layout and size (including net area);
 - b) Feeding methodology including anticipated feed levels and content of feed;
 - c) Waste levels and discharge (including modelling of these depending on water conditions);
 - d) Water and seabed quality (and how these levels will be maintained); and
 - e) Use of 'preventative immunization,' antibiotics and other chemicals and pesticides. These all have significant adverse effects on the local marine ecosystem, but there is no explanation or investigation into the effects of these in this application.
4. Design and engineering detail should at a minimum be independently reviewed by impartial and relevantly qualified experts. The integrity of the farm structure is critical to avoid health and safety risks and harm to the surrounding marine environment.

This application lacks detail on the proposed productivity and economic gains that NZKS believes would outweigh the risks, environmental costs and cultural implications of the farm as proposed. I request that clearer economic information is provided so that a more thorough cost-benefit analysis of this application can be made.

- (a) This should include the carbon impacts of this proposal. We consider the existing RMA legislation enables carbon emissions to be taken into account and that proposals should include reporting on Scopes 1-3 and put in place internal carbon price. NZKS has a significant footprint as outlined in Appendix 1: *NZKS: A Life Cycle Analysis and Carbon Assessment: An External Assessment*.
 - (b) This should include an assessment of full time employees (FTEs) and how this proposal will impact employment. From our perspective, there have been a number of instances in the past where increased labour figures have been promised by NZKS but appear not to have materialised.
 - (c) This should also include an assessment of plant and other services undertaken in New Zealand.
5. The application does not satisfy s 88(2) Resource Management Act 1991 because the description of the activity and the assessment of the effects are inadequate and do not satisfy the purpose for which the application is required. There is no investigation into the adverse effects of the staged development plan, in particular on the cumulative impacts of the feed discharge increases (which are 'unlimited,' with an anticipated amount of approximately 80,000 tonnes). I submit that the application lacks information on the adverse impacts of the proposed activity, and is especially unclear in any assessment of environmental effects on the full scale and size of the farm.¹
6. As well as more detail on the farm structure and design, this application requires more detail on the impacts of the proposed farming activities at the anticipated 'full scale' operation. In particular, modelling is required to show the impacts of the application on:
- a) Water quality;
 - b) Indigenous species and their habitats; and
 - c) Natural character.

¹ A 2018 study concluded that there was considerable need for more life-cycle assessments of agriculture and other production methods to determine the true environmental impact of such industries. See Hilborn, R. *et al.* (2018). 'The environmental cost of animal source foods.' *The Ecological Society of America*, 16(6), pp. 329–335. Retrieved 19 December 2019 from <https://arxiv.org/5jxdz/download>.

2.2 Negative impact on marine species, habitat and ecosystems (including increased biosecurity risk)

1. The application has implications under the *NZ Coastal Policy Statement*, including that there are 13 ecologically significant marine sites around the proposed farm. The coastal habitats of endangered and at risk marine species should be protected, especially at a time when climate change is already causing irreversible damage to the livelihoods of these species.
 - a) The Marlborough Sounds location of the farm presents huge risks for the surrounding sensitive ecosystem and threatened marine life. This part of New Zealand is a fragile ecosystem and includes a large number of interconnected benthic ecosystems, habitats and species. The application does not include how it will ensure there are no negative effects on benthic ecosystems, water quality and marine mammals, sharks and seabirds, and what controls will be put in place if harm occurs.
 - b) There is a diverse marine bird population in the location of the proposed site, including a number of rare and threatened species, and this proposal fails to give any detail on how NZKS will prevent risks to the health and habitats of these vulnerable species.
 - c) There is an increasing and irreversible loss of biodiversity in our oceans, and thus applications such as this require an evidence-based and integrated approach to decision making.
 - d) The application fails to identify and assess the impacts on the surrounding ecosystem and marine habitats of the waste produced under this proposal. The waste is at a far greater scale than what has previously been allowed in New Zealand. See Figure 1 in Appendix 2.
2. The ecosystems in our oceans are deeply interconnected which means this application will disrupt and negatively impact the wider ocean environment. These shifts are difficult to measure, so significant investment in research is required to ensure we protect the biodiversity of our oceans. A salmon farm of the scale proposed in this application is likely to decrease the diversity, health and density of benthic communities, which will have a corresponding impact on the flora and fauna that inhabit this area. This application includes no assessment or consideration of the cumulative and wider effects on the marine ecosystem. It also includes no action plan on how to identify, report and manage negative impacts that may occur as a result of this proposal, if it was approved.
3. Negative impacts of the application on threatened marine species are severe and irreversible. In protection of these ecosystems, an 'adaptive management' approach is inadequate as once damage occurs it will be too late. It is clear from the Marine Mammal and Seabird Reports included in the application that there is a real lack of information on the habitats and livelihoods of these species. In order to ensure their protection, a precautionary approach is required, especially because this application proposes to use new technology that has never before been used in New Zealand.
4. Significant marine ecosystems, habitats and species (including some rare, at risk, vulnerable or threatened species) living within and near to the application location which will be affected by the application, and the adverse impacts of the proposed farm (in its entirety) on this marine life has not been considered. Baseline monitoring is required so that the impacts can be measured and these species can be protected. The area of the proposed farm is an important location for benthic communities to breed from and flush throughout the sounds.
5. This application must provide more detailed, independent data to clarify the below gaps in information:
 - a) Lack of any baseline data to establish current marine conditions (including water column, benthos and marine mammals and birds);

- b) Unclear how to protect the environment if there is limited baseline information;
 - c) Unclear measurement of how the impacts of the farm will be measured;
 - d) No controls or restrictions on operations in place if incidents occur (e.g. marine mammal entanglement, wild fish disease);
 - e) If negative incidents occur, there should be consequences for NZKS, such as ceasing farming operations or improving operational systems; and
 - f) No information on how the application will adapt new practices and technology to reduce waste and emissions.
6. There is extremely inadequate assessment of increased biosecurity risks and the impact this will have on the surrounding marine environment. The magnitude of biosecurity issues are large and will have extremely negative impacts on the environment, including from parasites, fungi, bacteria and viruses. These can be transferred through a number of different methods and are a serious concern because:
- a) NZKS have had previous issues with increased mortality rates and diseases at current farm locations. Not only does this result in reduced productivity and decreased economic gains, it also raises ethical and animal welfare concerns. This application should demonstrate how it will identify, measure and manage these mortalities and what will happen if they increase over the baseline levels established. For example, will the dead fish be taken to the landfill in Blenheim?
 - b) There is no clarity on who will cover the costs of biosecurity investigations when issues occur. For instance, in 2012 NZKS had a major biosecurity issue at an existing farm and, we understand this investigation was paid for by the public.^{2,3,4}
 - c) The current application does not identify these risks and the implications of them with sufficient detail.

2.3 Negative impact on outstanding natural character and landscape and visual effects

1. The untouched Marlborough Sounds location of this site has been labelled as an area of outstanding natural character and 'landscape and visual effects'.
2. The placement of structures and their design will have a negative visual impact on the amenity and views of the ocean setting proposed in the application. This location is currently completely natural and visually stunning due to the absence of man-made structures and landform modification. Above and beyond these physical qualities, the location also has a long history of cultural and spiritual value to mana whenua, mana moana and tangata whenua, none of which has been considered in the application.
3. The application lacks detail on the location, scale and size of the farm which makes it difficult to determine what the impact and effects of it will be. Despite this lack of clarity, it is clear that approximately 45% of the proposed site sits within an Outstanding Natural Landscapes (ONL) or natural character space. The addition of a farm in this location will undoubtedly create visual pollution on the expansive ocean views and current striking coastal landforms.

² See 2013 report at <https://www.mpi.govt.nz/dmsdocument/4094/send>.

³ See 2016 report at <https://www.mpi.govt.nz/dmsdocument/16048/direct>.

⁴ See 2017 update on MPI website at <https://www.mpi.govt.nz/news-and-resources/media-releases/mpi-and-salmon-farmers-examine-summer-fish-mortality-issue>.

2.4 Wider context should be considered, including climate change, the application of s91 of the Resource Management Act (RMA) and the level of public interest

1. Climate impacts are decreasing productivity and increasing the waste and pollution formed by the salmon farming industry. New Zealand oceans are warming quickly, with NIWA predicting that climate change will result in frequent and more intense marine heatwaves. These dramatic increases in sea surface temperatures means there is more ‘fuel’ for incoming storms, changing marine ecosystem habitats and making salmon farming less sustainable in the long term.⁵
2. As the ocean temperature increases, disease rates and mortalities correspondingly increase, which suggests the ocean-based salmon farming industry is not robust and resilient to environmental changes. The wider climate crisis and its environmental impacts call into question the long term viability and sustainability of this application. This risk has not been identified in the application, but the impacts of rising sea temperatures can be seen by analysing the mortality rates of previous years at other NZKS farms:
 - a) Decreased productivity from increased mortalities can be seen in data by looking at NZKS mortality increases over the last year, increasing from \$7,254,000 (a change from 2017 figures [\$5,244,000] to 2018 figures [\$12,498,000]). The increase is equivalent to half of the reported comprehensive income \$14,658,000 in the 2018 financial year (see Note 15, p. 79 of the 2018 Annual Report). See also Figure 5 in Appendix 2.
 - b) This increase in mortality has a number of serious implications, especially in terms of ethics, disease, waste management and legal and financial decision making. NZKS has announced that the figures this year will be worse again. The 1 May 2019 NZKS Post-Summer Fish Performance Update on the NZX states:

The 2019 summer season has again been challenging for overall fish performance, due to sustained warm water temperatures which continued into April. The full year mortality cost for the year ended 30 June 2019 (FY19) will now be materially higher than in FY18.⁶

3. A longer term view on the benefits, risks and sustainability of salmon farming in these current conditions should be part of this application. Alternative options, such as land-based farming, may be superior over the long term. This alternative will also not have the same negative environmental and biosecurity impacts as offshore farming and will also be more robust to environmental changes.
4. This application is for a large expansion of farming operations that is nationally significant and sets a new precedent of its kind in New Zealand. The shift to offshore farms is being pursued to find more sustainable locations than those with warmer temperature increases inshore. On this basis alone it can be expected that this will be the first of a number of applications that will facilitate the transition from inshore to offshore farming. In this context, it is reasonable to raise the application of s 91 of the Resource Management Act.
 - a) This application should be looked at in consideration with NZKSs other operations in New Zealand. Inshore and offshore farms are highly interconnected and should be looked at together in order to ensure the best decision is made for New Zealand. If a shift towards offshore aquaculture is to be pursued, the inshore permits should be reassessed (potentially reducing the timeframes of consents on these correspondingly).

⁵ Morton, J. (15 Dec 2019). ‘Another marine heatwave? NZ’s seas are warming fast’. *NZ Herald*. Retrieved 16 December 2019 from <https://www.nzherald.co.nz/index.cfm?objectid=12293986&ref=twitter>.

⁶ See update at <https://www.nzx.com/announcements/333854>.

- b) NZKS currently have a number of other applications for more space in the Marlborough Sounds, such as the recent application at Waitata Reach. NZKS are currently pursuing new space through extending and expanding existing coastal permits as well as completely new applications.
 - c) The public interest factor in this application should be considered. This application does not provide for any payment to New Zealand for its use of water space for private gain. This is an issue of public concern which means that local and central government have no opportunity to recover costs for the time and expense spent on this application (and others), while the shareholders of NZKS (the majority of which are based overseas) benefit financially. The costs are sitting with the public whilst the benefits are sitting with private owners.
5. This application proposes to allow NZKS to use and pollute a substantial amount of water space, and creates a situation where NZKS are incentivised to constantly seek expansion of farming operations in order to increase profit. The free use of water space (with no punishment for pollution or breach of conditions) means that there are minimal limits on consumption of this public asset. Local and central government need financial support to assist with all the work created by such significant proposals, especially in terms of the environmental measuring, monitoring and modelling of areas. These financial costs should be considered as part of the application, and there should be checks and controls to ensure the economic benefits promised by NZKS actualise. See in particular Appendix 2 and 3.
 6. The 'adaptive management' approach proposed in this application is inadequate for a proposal with such high risks in such a new and untested area of aquaculture technology. NZKS is a listed company and thus is legally required to maximum profit for shareholders. This gives a legal incentive for NZKS to work purely for maximum production above and beyond any negative environmental impacts. The role of those hearing this proposal is to ensure that the needs of the community and the environment are heard and taken in to account and to weigh the effects and to put in place checks and balances. See in particular Appendix 2 and 3.

2.5 No checks or controls

1. This proposal lacks any opportunity for controls to be maintained on the promises and claims made by NZKS. Insufficient information and inadequate detail in this application mean that there are no baseline measurements and models, which means there are no conditions for independent measurement and enforcement.
2. As the application stands, there are no allowances to monitor and control the 1791 hectare site NZKS operations are aiming to control under this proposal. What happens when negative impacts or incidents occur. Further, what is NZKS paying for use of such a large site and who will receive those funds. These issues need to be discussed and made clear up front, before the proposal is decided (and after the decision is made).

2.6 Need for per farm data

1. There is an issue over the poor amount of data that is currently available on a per farm basis. At the BOI the economic effects was grouped together as a package. Since the BOI, NZKS has made applications on an ad hoc basis and there has been no assessment of the total impact as a package of coastal permits. We consider this a major issue in terms of meeting the intent of the RMA.
2. We also believe the financial accounts should provide better per farm information – on mortalities in terms of tonnes and number of fish. The Global Salmon Initiative reports on the

number of fish that die due to disease; we question why this information is not contained in the financial statements and therefore audited. The reason for this is that NZ King Salmon is a listed company therefore meets the “higher level for public accountability” (being Tier 1) discussed in IAS 1: *Presentation of Financial Statements*. Further, Paragraphs 91 and 92 of NZ IFRS 13: *Fair Value Measurement* (NZ IFRS 13) set out what information should be disclosed.⁷

Section 3: Conclusion

I seek that the application is declined.

Please note I also seek to be heard at any hearing and in support of this submission as an expert witness.

Kind regards,



Wendy McGuinness
Chief Executive

Attachments:

Appendix 1: NZKS: A Life Cycle Analysis and Carbon Assessment: An External Assessment
Appendix 2: Graphs using NZKS Annual Reports, Applications and Resource Consents
Appendix 3: PowerPoint – Oral submission to NZKS Hearing in Blenheim on Waitata (edited)
(Wendy McGuinness’s 27 November 2019)
(Available on <http://www.mcguinnessinstitute.org/submissions>)

⁷ Para 91: An entity shall disclose information that helps users of its financial statements assess both of the following:

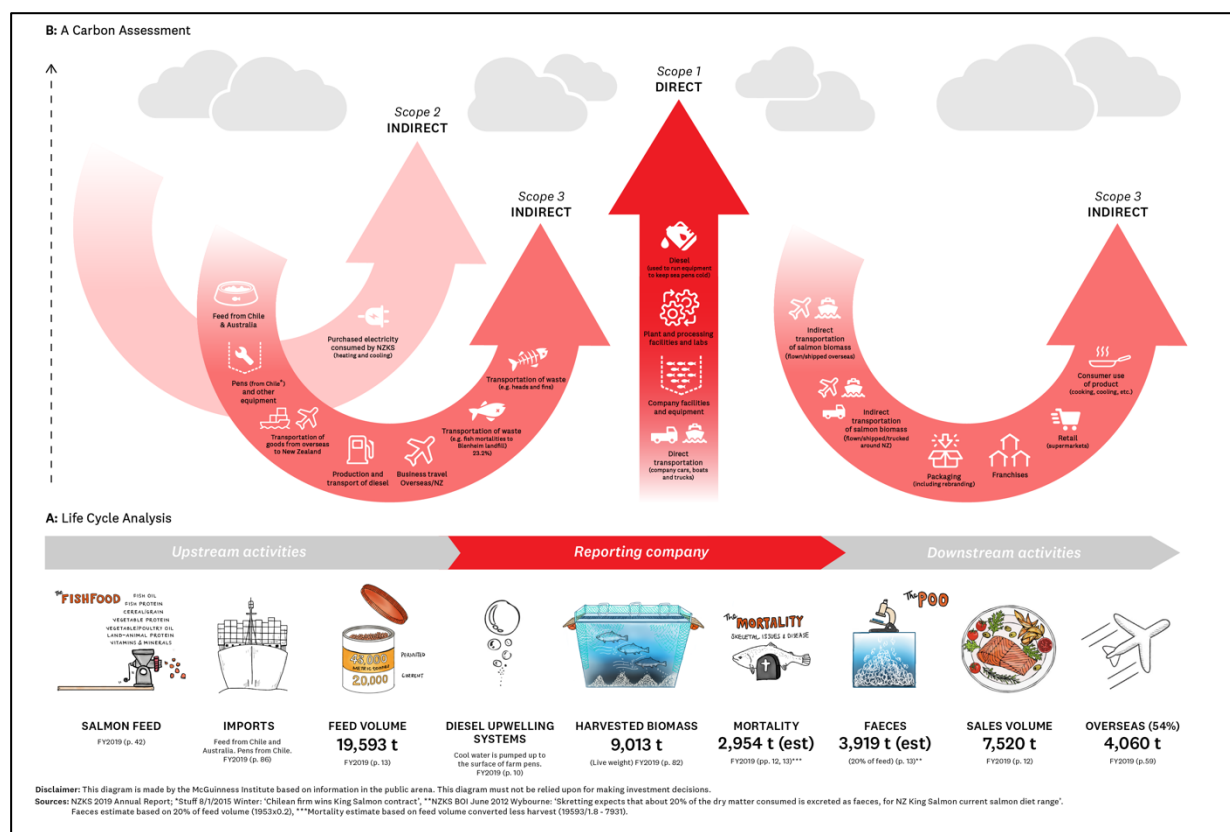
- (a) For assets and liabilities that are measured at fair value on a recurring or non-recurring basis in the statement of financial position after initial recognition, the valuation techniques and inputs used to develop those measurements.
- (b) For recurring fair value measurements using significant unobservable inputs (Level 3), the effect of the measurements on profit or loss or other comprehensive income for the period.

Para 92: To meet the objectives in paragraph 91, an entity shall consider all the following:

- (a) The level of detail necessary to satisfy the disclosure requirements;
- (b) How much emphasis to place on each of the various requirements;
- (c) How much aggregation or disaggregation to undertake; and
- (d) Whether users of financial statements need additional information to evaluate the quantitative information disclosed.
- (e) If the disclosures provided in accordance with this NZ IFRS and other NZ IFRSs are insufficient to meet the objectives in paragraph 91, an entity shall disclose additional information necessary to meet those objectives.

See <https://www.xrb.govt.nz/accounting-standards/for-profit-entities/nz-ifs-13>.

Appendix 1: NZKS: A Life Cycle Analysis and Carbon Assessment: An External Assessment



Fairr⁸, a collaborative Investor network, released the 2019 *Fairr Coller Protein Producer Index Report* which found that, out of the fifteen aquaculture companies included in the index, 'on average, fish feed accounts for around 87% of GHG emissions in Atlantic salmon production. However, none of the companies have a Scope 3 emissions-reduction target'. The report also found in a life-cycle analysis conducted in 2019 that 'farmed Atlantic salmon production is more GHG-intensive than chicken production'.

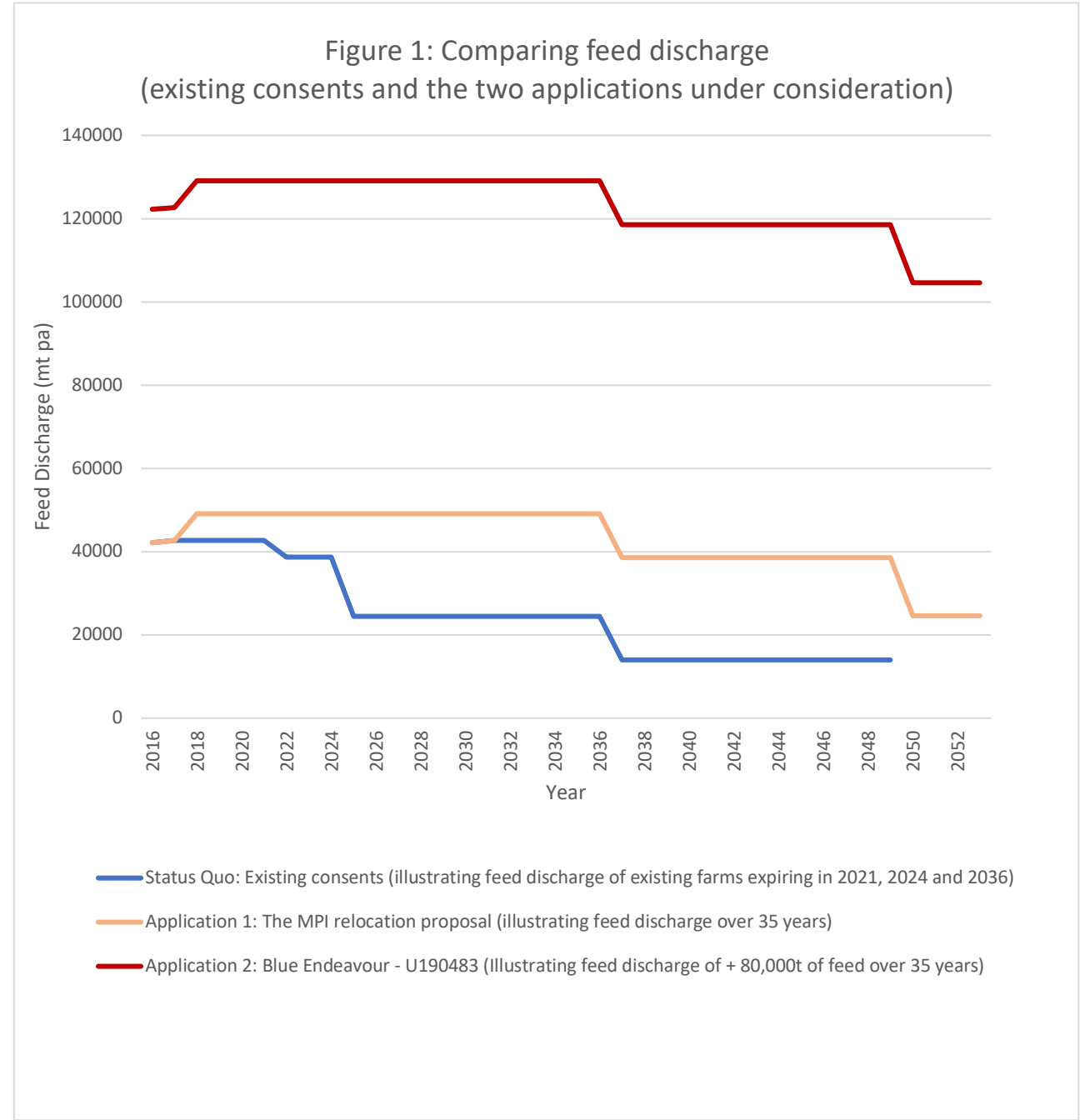
If we consider this information when assessing King Salmon, we also need to take into account New Zealand's unique geographical location and the additional emissions resulting from extended travel time via ships and planes when importing feed and exporting product.

⁸

Fairr. (2019). Aquaculture. Retrieved 13 December 2019 from <https://www.fairr.org/index/protein-types/aquaculture>.

Figure 1: Existing feed discharge compared with two applications currently under consideration

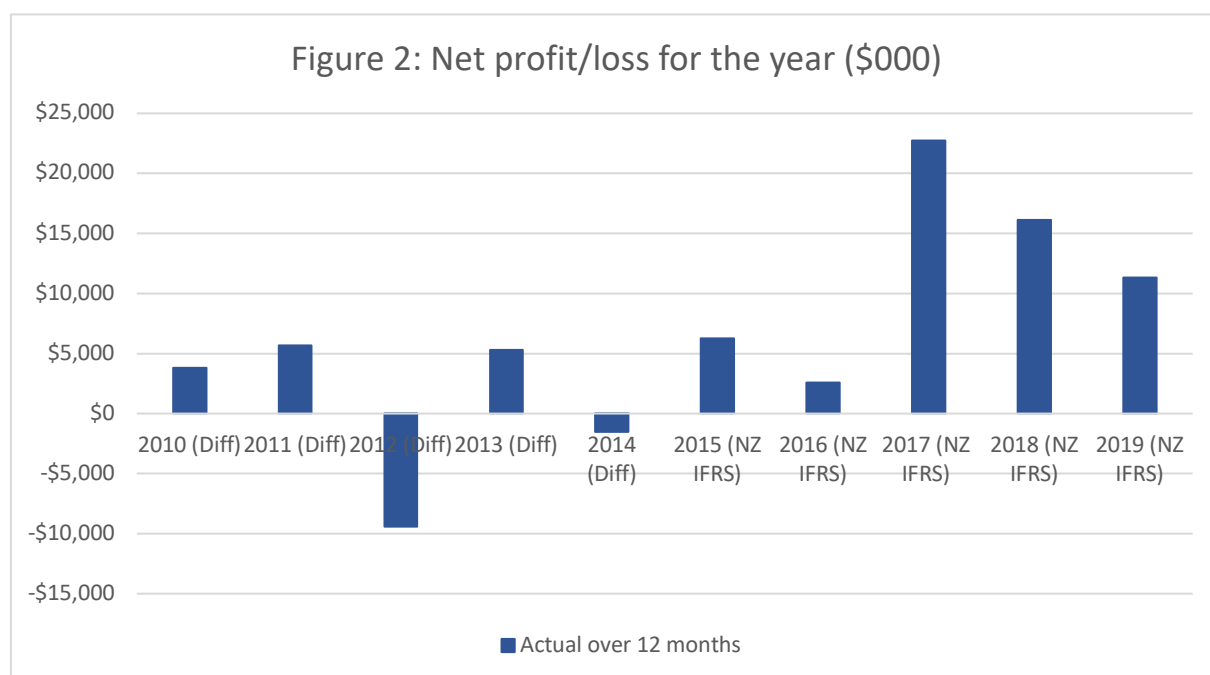
Note: We understand that there has been no change to existing consents for feed since April 2017.
Application 2 below reflects the earlier proposal by NZKS to relocate the farms.



Assumptions and notes for Figure 1

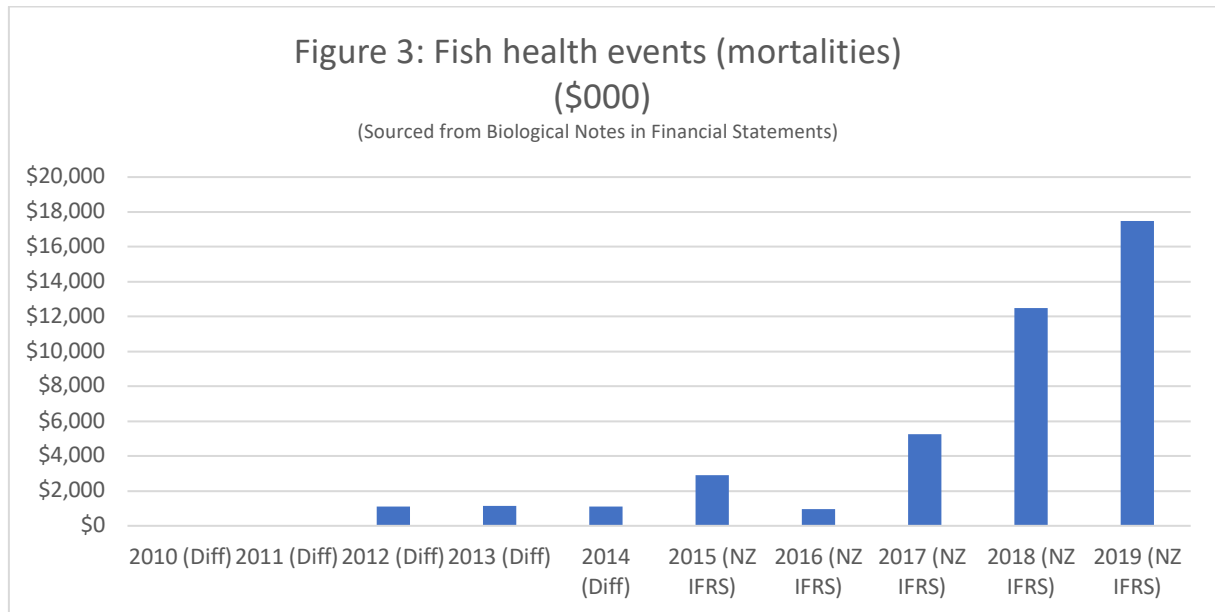
1. Table (A) outlines maximum consented feed discharge figures for existing farms. These figures and their expiry dates are taken from the individual numbered resource consents of each site.
2. Table (B) includes some of the same figures as Table (A) but is adjusted for the conditions of the proposal. The figures for the new farms are taken from MPI *Discussion Paper No: 2017/04*. We note that in MPI *Discussion Paper No: 2017/04*, consented maximum discharge for the Waitata MidChannel (new) site was reported as 7000 on p. 39 and 6000 on p. 84. We have assumed that 7000 is the correct figure.
3. The individual resource consents for each site do not have a standardised format clearly outlining the start and expiry dates for each consent alongside the maximum consented feed discharge. This means that we may have misunderstood the exact operation of a consent in relation to its precise start and end date.
4. It is assumed that the proposed maximum feed discharge levels are consented for 35 years.

Figures 2 and 3: Profit/loss and fish health events (mortalities)



Assumptions and notes for Figure 2

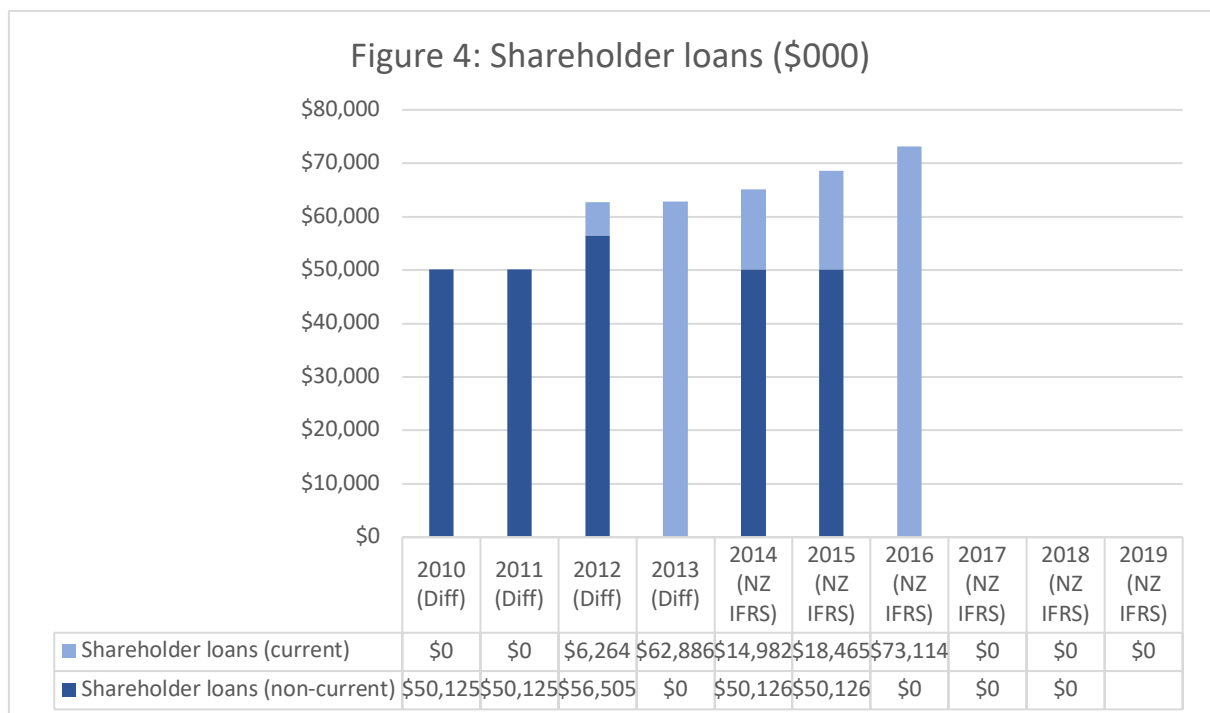
1. Two types of reporting frameworks are being compared here: (Diff) refers to Differential Reporting and (IFRS) refers to NZ International Financial Reporting Standards.
2. Actual data (12 months) is sourced from the financial statements on the Companies Office website for years 2010 to 2016. NZKS has often changed figures over time, so where this has happened we have used the latest figures available and used IFRS above Diff.
3. Actual interim data (6 months) is found on NZX.
4. Forecast data is sourced from the Prospective Financial Information (PFI) (assuming 23 September 2016).
5. Net profit (Loss) also refers to 'Net profit/loss for the period attributable to equity holders of the company' (\$'000).
6. It is assumed that the proposed maximum feed discharge levels are consented for 35 years.



Assumptions and notes for Figure 3

1. We have assumed that the 'Fish health event' data in the expenses of the financial statement is net of insurance proceeds (See p. 3 of the PFI). Occasionally this can be treated differently in New Zealand.
2. Fish health events are not on the forecasted figures for Yr17 and Yr18 - this is implied in note 1 of the PFI.

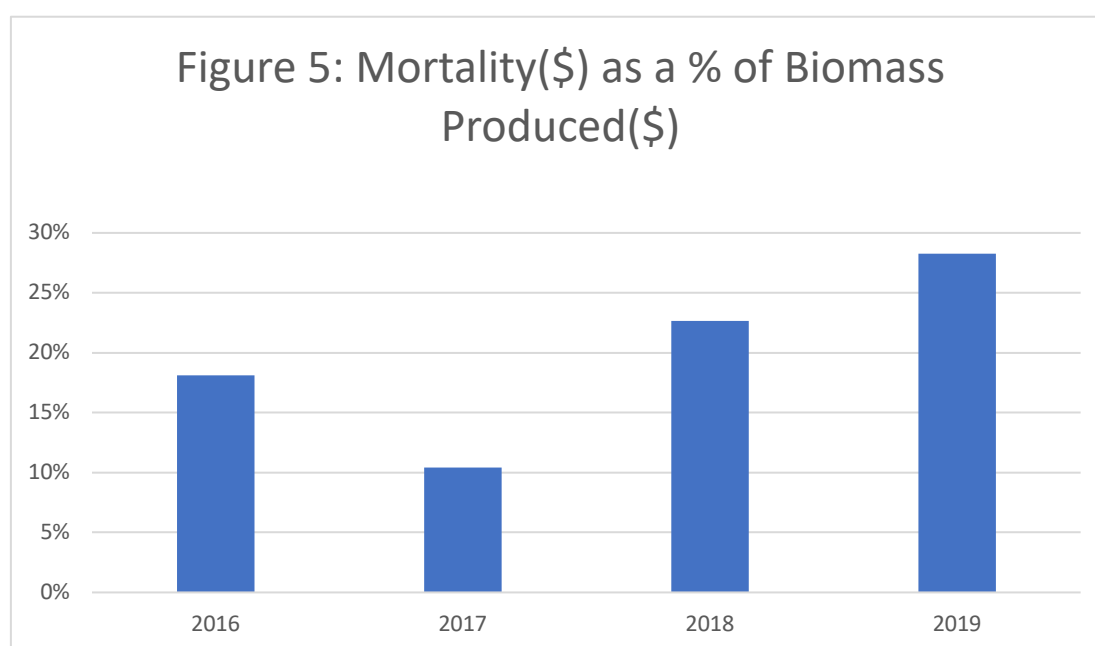
Figure 4: Shareholder loans



Assumptions and notes for Figure 4

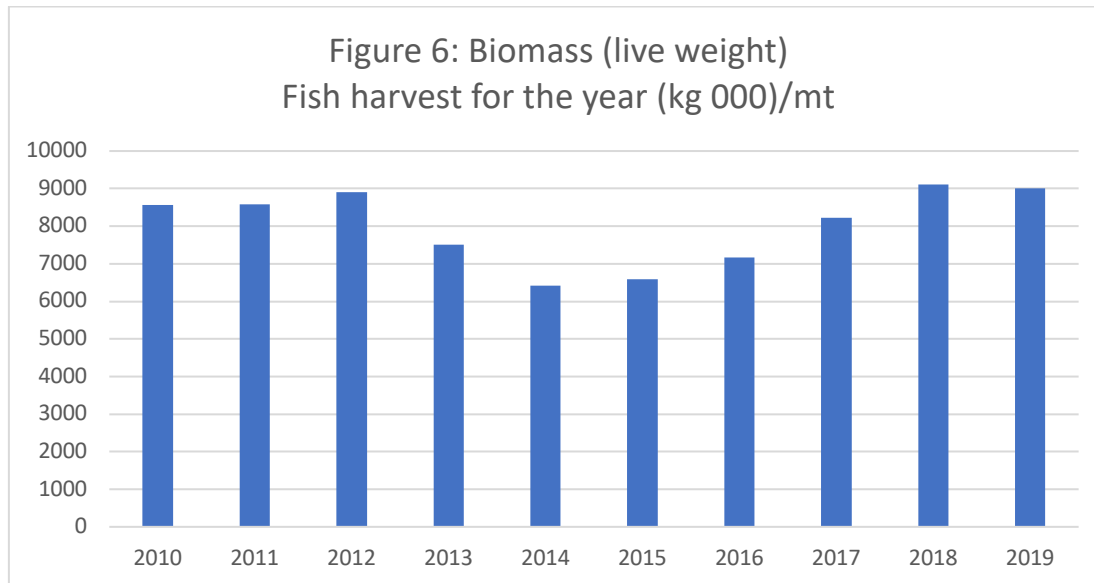
1. There are two types of reporting frameworks being compared here: (Diff) refers to Differential Reporting and (IFRS) refers to NZ International Financial Reporting Standards.
2. Actual data (12 months) is sourced from the financial statements on the Companies Office website for years 2010 to 2016. NZKS has often changed figures over time, so where this has happened we have used the latest figures available and used IFRS above Diff.
3. Actual interim data (6 months) is found on NZX.
4. The PFI does contain total shareholder loans. See p. 11. The forecasts for FY17 and FY18 are both nil. For FY2014, FY2015, FY2016, they have used adjusted actuals but we have used the financial statements.
5. The interim actual figure shows nil.

Figure 5: Mortality(\$) as a % of Biomass Produced(\$)



Assumptions and notes for Figure 4 (see sources in Appendix 1)

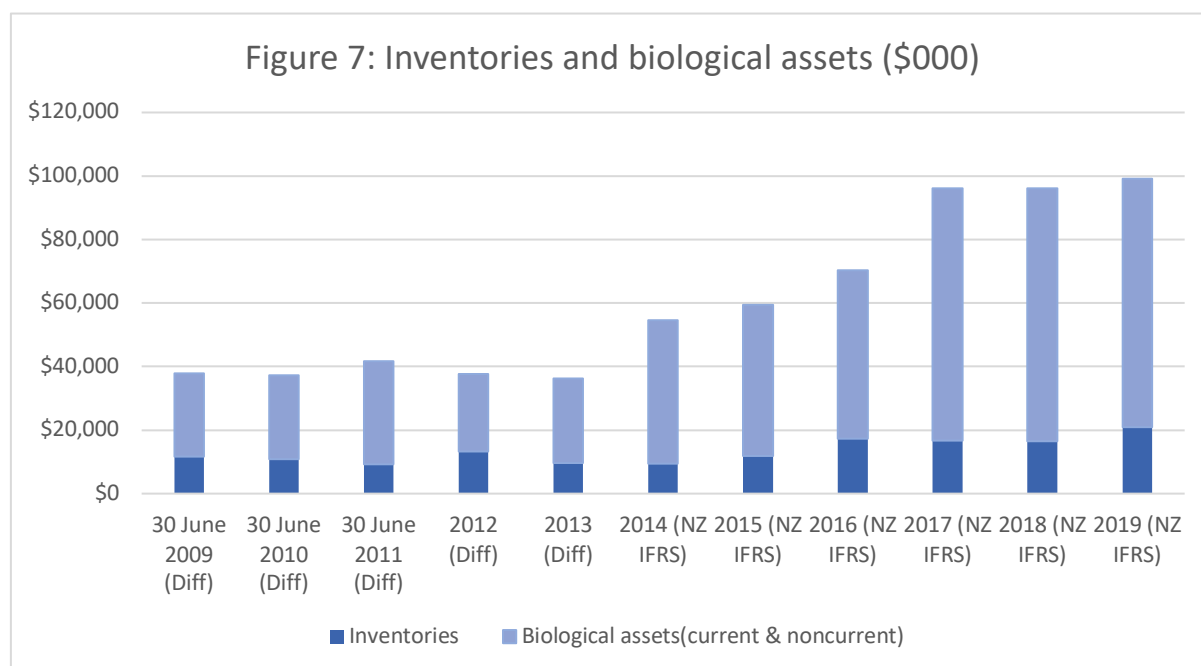
Figure 6: Biomass (live weight) Fish harvest for the year (kg 000)



Assumptions and notes for Figure 6

1. There are two types of reporting frameworks being compared here: (Diff) refers to Differential Reporting and (IFRS) refers to NZ International Financial Reporting Standards.
2. Actual data (12 months) is sourced from the financial statements on the Companies Office website for years 2010 to 2019. NZKS has often changed figures over time, so where this has happened we have used the latest figures available and used IFRS above Diff.
3. Actual interim data (6 months) is found on NZX.
4. Forecast data is sourced from the Prospective Financial Information (PFI) (assuming 23 September 2016).

Figure 7: Inventories and biological assets



Assumptions and notes for Figure 7

1. There are two types of reporting frameworks being compared here: (Diff) refers to Differential Reporting and (IFRS) refers to NZ International Financial Reporting Standards.
2. Actual data (12 months) is sourced from the financial statements on the Companies Office website for years 2010 to 2019. NZKS has often changed figures over time, so where this has happened we have used the latest figures available and used IFRS above Diff.

Appendix 3: PowerPoint – Oral submission to NZKS Hearing in Blenheim on Waitata (edited) (Wendy McGuinness’s 27 November 2019)
(Available on <http://www.mcguinnessinstitute.org/submissions/>)

Introduction

My full name is Wendy Louise McGuinness. I am the Chief Executive of McGuinness Institute.

Summary

NZKS updated their feed discharge data in August 2021 (see difference between Appendix 1 and Appendix 2), meaning our earlier 2019 graph is now out of date. This note is simply to replace our previous Figure 1: Comparing Feed discharge (existing consents and the two applications under consideration) contained in our *Submission: The New Zealand King Salmon Co Limited (U190438) North of Cape Lambert, North Marlborough December 2019*. The updated Figure 1, far below, takes into account the proposed change in mt of feed pa, comparing the new feed with existing consents (see Appendix 3). The aim is simply ensure our records before the commissioners are accurate and update.

Figure 1: Comparing Feed discharge (July 2019)

See Appendix 1.

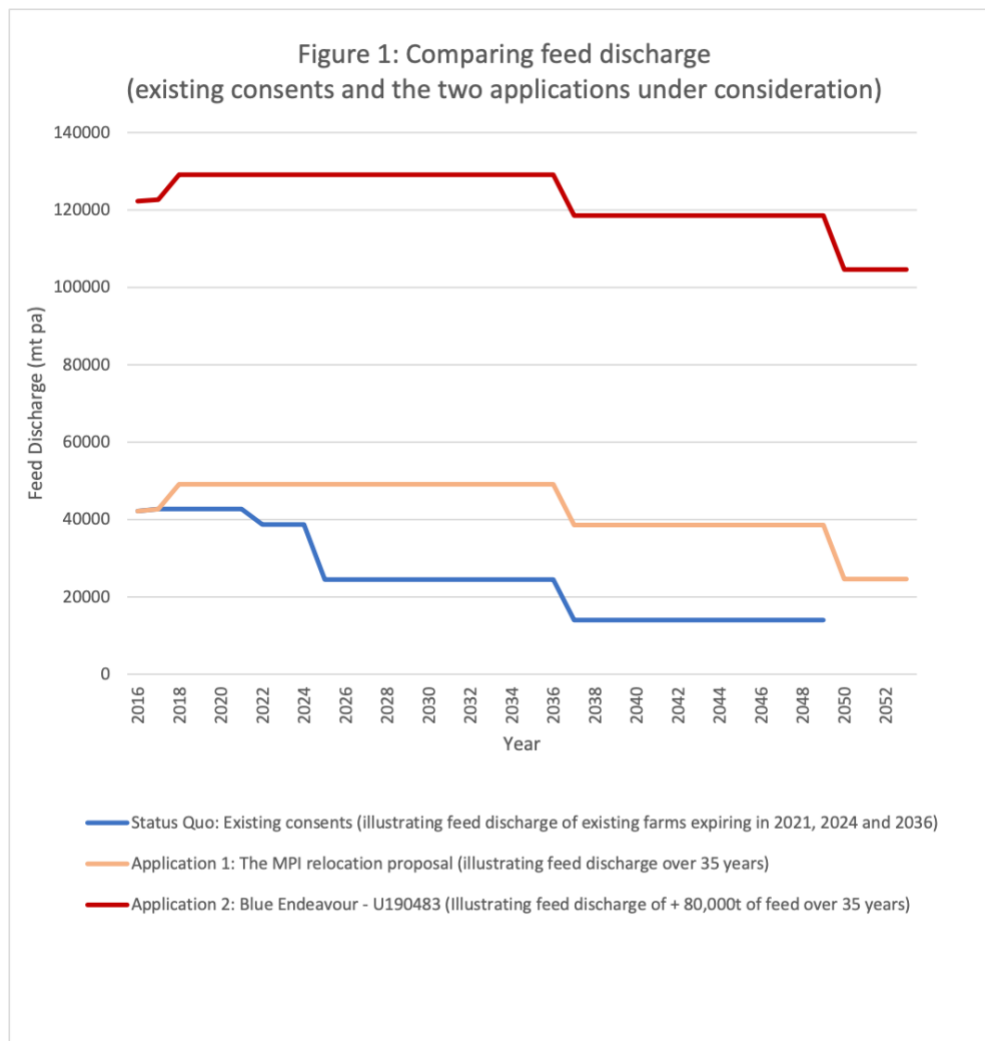
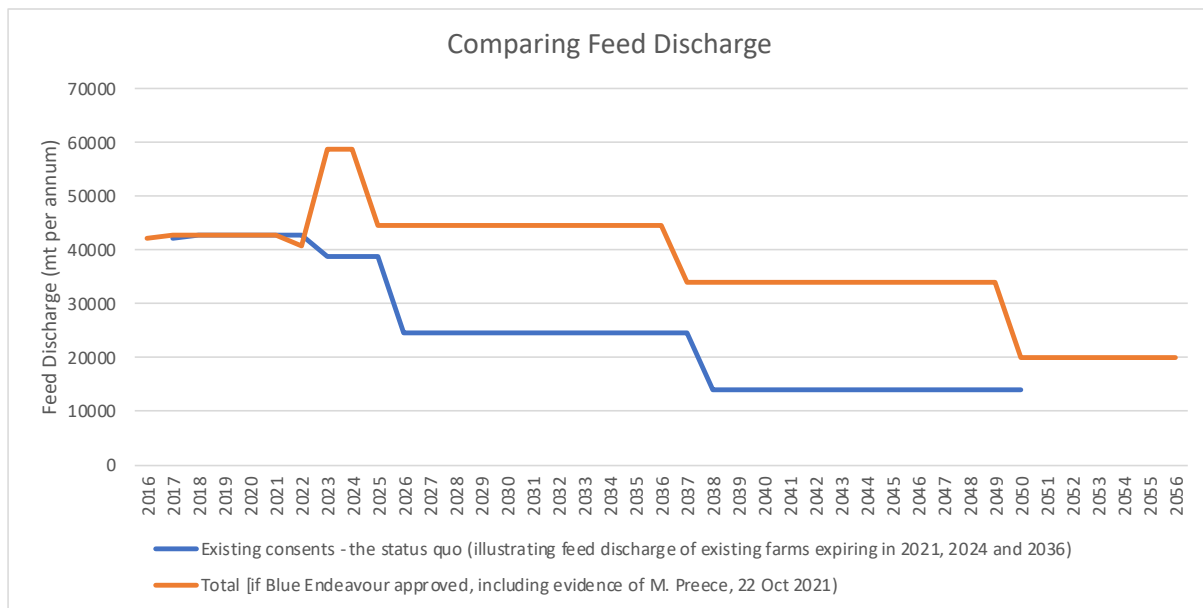


Figure 1: Comparing Feed discharge (updated)

See Appendix 2.



Signed: _____
 Wendy Louise McGuinness

Date: _____

Appendix 1: NZKS 2019 Application (June and July 2019)

Application (Part 1 of 4)(29.8MB)

Record: 19153855

Upload: 05 Jul 2019 (see [here](#))

A: Assessment Of Seabed Effects From An Open Ocean Salmon Farm Proposal In The Marlborough Coastal Area (June 2019)

1.1. Proposed salmon farm

NZ King Salmon's proposal is to develop an area of 1,792 ha to farm King salmon (*Oncorhynchus tshawytscha*). Two blocks of black-coloured net pens will be installed within this area in a staged development:

- Stage 1 = up to approximately 10,000 tonnes of production (20,000 tonnes of feed per annum; tpa) over two separate sets of pens (16 in total); the proposed farm layout at this stage is shown in Figure 2.
- Stage 2 = up to 40,000 tpa feed over 40 pens.
- Further staged increases to reach a production level of 40,000+ tonnes production (80,000 tpa of feed) (aspirational at this stage).

Each set of pens will comprise up to eight plastic circles with a circumference of up to 200 m each; supported by mooring lines leading to a grid system at depth and one barge.

B: Open Ocean Salmon Farming Cook Strait Application of Resource Consent (July 2019)

Stage 1

NZ King Salmon has identified a way in which it would begin to implement the resource consent, if granted. At Stage 1, up to 20,000 tonnes of feed will be discharged in up to 20 pens (using pens of up to 200 metres in circumference). In the medium term, NZ King Salmon considers the following layout as being a realistic scenario on the information it has to hand:

- a. On the site there will be two sets of pens. Each set of pens will comprise up to eight plastic circles with a circumference of up to 200 metres each. Each set of pens will be supported by one barge. Consequently, at Stage 1 there will be approximately 16 plastic circle pens and two barges.
- b. There will be a maximum discharge of approximately 1,000 tonnes of feed per annum, into each pen (still well below the 20,000 tonnes total for Stage 1). Each pen will therefore produce approximately 500 tonnes of fish.
- c. Each set of pens will be supported by mooring lines leading to a grid system at depth which, in turn, enables tension to be kept on the nets. The pens will be laid out in a regular pattern of two lines of four pens. Each of those lines will most likely run parallel with the current.
- d. Navigation lighting will be installed as required by the Harbourmaster.

Beyond Stage 1

Before moving to the second stage, NZ King Salmon will give 12 months' notice of this to Council. It will review all relevant scientific and technical reports and together with peer review lodge those with Council six months before any increase. New pens may be located in the green-grey area of the site plan at **Appendix A**. The pens may be located in another location, and that might be because:

- a. There is a change in distribution of horse mussels and brachiopods caused by reasons unrelated to farming (for example natural cyclical changes, or commercial fishing); or
- b. It may be through the monitoring undertaken by NZ King Salmon that it is established that, in this location given these currents it can sustainably farm over horse mussels without having a significant adverse effect; or
- c. Further extensive areas of horse mussels are discovered in North Marlborough more generally; or
- d. A policy decision is made that such farming might be appropriate and consequently, the constraint placed around the initial location of the pens will not apply to subsequent positioning.

Six months prior to additional feed going in the water, NZ King Salmon will need to update all of its scientific and technical reports with any new information gathered through monitoring and through other means. At the same time as those reports are rewritten, the Management Plans would be formally updated where appropriate to reflect whatever recommendations were made in those reports. All of that material would be provided to Council six months prior to any increase in feed discharge beyond 20,000 tonnes. Each time NZ King Salmon intends to increase the feed discharge by 20,000 tonnes, it would need to repeat this process. NZ King Salmon's current projection is that discharge at this site of up to 40,000 tonnes is possible.

Appendix 2: Revised Proposal Description for Blue Endeavour (August 2021)

Uploaded: Application (Amended) - 1 - Revised Proposal Description(261.3KB)

Record: 21172792 (their Appendix 1)

11 Aug 2021 (see [here](#))

Feed

23. Feed is to be discharged through a series of pipes located at or near the surface of the water from the feed barge to the pens using a system of either air blowers or water pumps. Feed monitoring to minimise waste will be undertaken with an active feedback system (e.g. underwater cameras) which will be used for every pen. This is likely to be similar to the AKVA SmartEye or ScaleAQ camera systems.⁶
24. NZ King Salmon will not discharge more than 2,286t of salmon feed per month per block.
25. In addition, NZ King Salmon will not discharge more than 10,000t per annum per block in any given year commencing on 1 October.
26. Within those limits, feed can be discharged in a number of different ways, including on a continuous or periodic basis. Cawthron has undertaken depositional modelling to account for a range of possible feed discharge scenarios, and has assessed the maximum predicted benthic effects within the monthly and annual feed discharge constraints.

Source: Consents

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
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