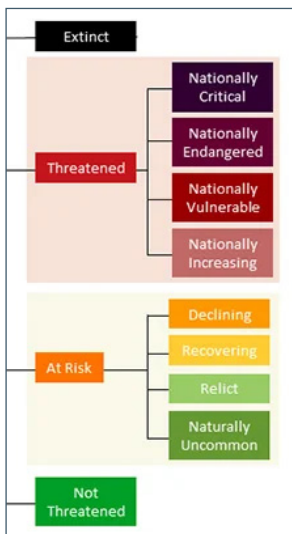


Preface references

1. See the map, found here: Protected Planet. (May 2021). Protected Planet Report 2020 – Chapter 5: Areas of particular importance for biodiversity and ecosystem services. Retrieved 25 August 2023 from www.livereport.protectedplanet.net/
 2. Personal communication with LINZ, 24 May 2023.
 3. There have been concerns raised that this agreement may lead to government focusing on scale and in doing so, removing stewardship that already exists in an NGO capacity or indigenous capacity, such as that of iwi. See Pearce, F. (7 December 2022). The 30 Percent Goal: Is Bigger Always Better for Biodiversity. YaleEnvironment360. Retrieved 25 August 2023 from e360.yale.edu/features/30-percent-conservation-biodiversity-protected-areas-size
 4. Kelly, R. (2 August 2023). Independent panel declines Ngāi Tahu’s plans for a salmon farm off the coast of Stewart Island. Stuff. Retrieved 23 August 2023 from www.stuff.co.nz/national/132666191/independent-panel-declines-ngi-tahus-plans-for-a-salmon-farm-off-the-coast-of-stewart-island
 5. NESMA states in Section 6: Meaning of inappropriate area for existing aquaculture activities ‘(1) In these regulations, inappropriate area for existing aquaculture activities means an area of the coastal marine area that, after 1 January 2019, has been identified as inappropriate for existing aquaculture activities.’ The background notes: ‘Part 2 provides for all replacement coastal permits for existing marine farms in areas identified in a policy statement plan or proposed policy statement or plan as inappropriate for existing aquaculture activities as a discretionary activity. It also enables a regional council to set more stringent rules for these types of activities in its plan or proposed plan.’
 6. Marlborough District Council. (n.d.). Variation 1: Marine Farming and Variation 1A: Finfish Farming. Retrieved 25 August 2023 from www.marlborough.govt.nz/your-council/resource-management-policy-and-plans/proposed-marlborough-environment-plan/variations/variation-1-and-1a
 7. Marlborough District Council. (23 May 2023). Variations to marine and finfish farming notified [media release]. Retrieved 25 August 2023 from www.marlborough.govt.nz/your-council/latest-news-notices-and-media-releases/all-news-notices-and-media-releases?item=id:2m6x4qhv01cxbyonbiwb
 8. Personal communication with Marlborough District Council, 21 August 2023.
 9. Personal communication with Marlborough District Council, 24 August 2023.
 10. Marlborough District Council. (23 May 2023). Variations to marine and finfish farming notified [media release]. Retrieved 25 August 2023 from www.marlborough.govt.nz/your-council/latest-news-notices-and-media-releases/all-news-notices-and-media-releases?item=id:2m6x4qhv01cxbyonbiwb
 11. Personal communication with Ms Hanneke Kroon M.Sc.Eng (committee member of the Kenepuru and Central Sounds Residents’ Organisation), 23 June 2023.
 12. As discussed in the NZKS AGM in Nelson, 14 June 2023.
 13. Orsman, B. (9 August 2023). Chris Hipkins confirms bottom trawling restrictions in Hauraki Gulf and tripling of marine protection areas. New Zealand Herald. Retrieved 10 August 2023 from www.nzherald.co.nz/nz/chris-hipkins-confirms-bottom-trawling-restrictions-in-hauraki-gulf-and-tripling-of-marine-protection-areas/WRTVSE2Q7JCZ5GSZTZOXKMSRTE
- See also Johnson, E. (9 August 2023). Hauraki Gulf marine protection area expands, but bottom trawling stays. Stuff. Retrieved 10 August 2023 from www.stuff.co.nz/environment/300945590/hauraki-gulf-marine-protection-area-expands-but-bottom-trawling-stays

Infographic 1 references

1. For an explanation of the conservation status system, see Department of Conservation (DOC). (n.d.). Conservation status of plants and animals. Retrieved 11 May 2023 from www.doc.govt.nz/nature/conservation-status



2. Southern Seabirds Trust. (2019). New Zealand Seabirds. Retrieved 11 May 2023 from www.catchfishnotbirds.nz/nz-seabirds
3. Forest & Bird. (2018). Important Bird Areas for New Zealand Seabirds. Retrieved 11 May 2023 from www.forestandbird.org.nz/resources/important-bird-areas-new-zealand-seabirds
4. Schuckard, R. (2022). New Zealand king shag – Kawau pāteketeke. New Zealand Birds Online. Retrieved 11 May 2023 from www.nzbirdsonline.org.nz/species/new-zealand-king-shag
5. NIWA. (March 2017). Unique research records rare whale species in Cook Strait. Retrieved 15 May 2023 from www.niwa.co.nz/news/unique-research-records-rare-whale-species-in-cook-strait

Seabird references

A: Conservation status

See Table 1.1.

B: Identification and location

For a list of IBA seabird species for (i) Cook Strait and (ii) the Marlborough Sounds, see Forest & Bird. (2014). Important Areas for New Zealand Seabirds – Sites at Sea, Seaward Extensions, Pelagic Areas, pp. 12–15. The Royal Forest & Bird Protection Society of New Zealand. Retrieved 10 May 2023 from www.forestandbird.org.nz/resources/important-bird-areas-new-zealand-seabirds. See excerpt in Tables 3 and 4 below.

C: Disclaimer

There are many other endangered seabirds that inhabit the Cook Strait and Marlborough Sounds IBAs that are not included in this infographic. See, for example, Table 5.

Marine mammal and shark references

A: Conservation status

See Table 1.2.

B: Identification

Dolphins

For a list of dolphins found in New Zealand waters, see Department of Conservation (DOC). (n.d.). Dolphins. Retrieved 15 May 2023 from www.doc.govt.nz/nature/native-animals/marine-mammals/dolphins. This list was reviewed by Elisabeth Slooten from the New Zealand Whale and Dolphin Trust, via personal correspondence (September 2021).

Humpback whale, southern right whale, blue whale (probably pygmy blue whale) Marlborough District Council. (2022). Resource Management Act 1991 – Decision of Marlborough District Council. New Zealand King Salmon Company Limited, U190438, p. 14. Retrieved 15 May 2023 from www.mcguinnessinstitute.org/wp-content/uploads/2022/12/U190438-Decision-Document.pdf

Humpback whale, southern right whale

Yahia, Y. A. (n.d.). Marlborough Sounds Wildlife Identification Guide. New Zealand King Salmon (NZKS). Retrieved 15 May 2023 from www.kingsalmon.co.nz/wp-content/uploads/2020/08/Marlborough-Sounds-Wildlife-ID-Booklet.pdf

Location: Past and present evidence of the appearance of marine mammals and sharks in Cook Strait/the Marlborough Sounds

Dusky dolphin, bottlenose dolphin, common dolphin, orca/ killer whale, Hector's dolphin

'Five types of dolphin cruise the waters of the Marlborough Sounds, including the dusky, bottlenose, common, orca, and the rare hector's dolphins.' Destination Marlborough. (2019). Wildlife & Conservation. Retrieved 15 May 2023 from www.marlboroughnz.com/guides/eco-environment/dolphins

Māui dolphin

'Māui dolphins live only on the west coast of the North Island from Maunganui Bluff to Whanganui. They were once found along most of the west coast of the North Island from Cook Strait to Ninety Mile Beach.' Department of Conservation (DOC). (n.d.). Facts about Hector's and Māui dolphin. Retrieved 15 May 2023 from www.doc.govt.nz/nature/native-animals/marine-mammals/dolphins/maui-dolphin/facts

Pilot whale

'Pilot whale (*Globicephala* sp.) calls detected by acoustic recorder stationed in Cook Strait, New Zealand from December 2016 to January 2017.' NIWA. (July 2017). Pilot whale (*Globicephala* sp.) calls detected by acoustic recorder stationed in Cook Strait, New Zealand. Retrieved 15 May 2023 from www.niwa.co.nz/videos/pilot-whale-globicephala-sp-calls-detected-by-acoustic-recorder-stationed-in-cook-strait-new-zealand

Antarctic blue whale

Figure 1: Study region, with median modelled Antarctic blue whale detection areas for June 2016. Warren, V. E., Širović, A., McPherson, C., Goetz, K. T., Radford, C. A. & Constantine, R. (6 January 2021). Passive Acoustic Monitoring Reveals Spatio-Temporal Distributions of Antarctic and Pygmy Blue Whales Around Central New Zealand. *Frontiers in Marine Science*, 7. Retrieved 15 May 2023 from www.frontiersin.org/articles/10.3389/fmars.2020.575257/full

Radio New Zealand (RNZ). (13 January 2021). Blue whale study finds special New Zealand connection. Retrieved 15 May 2023 from www.rnz.co.nz/national/programmes/summer-days/audio/2018779767/blue-whale-study-finds-special-new-zealand-connection

Humpback whale

In 2014, '92 humpback whales were counted [in Cook Strait], the second highest tally in the survey with the highest being 106 humpbacks in 2012.' Department of Conservation. (June 2015). Whale watching in Cook Strait. Retrieved 15 May 2023 from www.doc.govt.nz/news/media-releases/2015/whale-watching-in-cook-strait

Pygmy blue whale

'The other [pygmy blue] whale appeared to have been feeding in the Westport area before going through Cook Strait. "It just went right through the strait and down the other side ... It spent quite a bit of time in the Kaikōura area".' Daly, M. (20 March 2018). Tagged blue whale swims around the South Island. *Stuff*. Retrieved 15 May 2023 from www.stuff.co.nz/science/102420082/tagged-blue-whale-swims-around-the-south-island

Southern right whale

In 2018 '[a] southern right whale has been delighting camera-wielding onlookers hoping to get a shot in Wellington, but recordings from history show whaling was a very different hunt until quite recently.' Radio New Zealand (RNZ). (11 July 2018). Whaling history in New Zealand's Cook Strait: Ngā Taonga Sound & Vision archives. Retrieved 15 May 2023 from www.rnz.co.nz/national/programmes/afternoons/audio/2018653157/whaling-history-in-new-zealand-s-cook-strait-nga-taonga-sound-and-vision-archives

Basking shark and great white shark

'Relevant shark species that may interact with Blue Endeavour as identified by the AEE, included common thresher, shortfin mako, porbeagle, and blue shark. There is also potential for interactions with great white sharks (threatened, nationally endangered) in all areas, and basking sharks (threatened, nationally vulnerable) off the east coast of the South Island/TeWaipounamu.' MDC Decision on NZKS application [U190438]: Blue Endeavour (para 555).

Of note, only five sharks are protected under the Wildlife Act 1953, in that they cannot be retained by law but any catches must be reported. Schedule 7A of the Wildlife Act 1953 includes the basking shark and the white pointer shark (another name for the great white shark).

C: Disclaimer:

There are likely to be many other endangered marine mammals that inhabit Cook Strait and the Marlborough Sounds that are not included in this infographic.

Table 1.1: Selected seabirds – conservation status

Species (A–Z) This list is generated from the IBA lists in Tables 3 and 4	Conservation status	Year of status	Reference
Antipodean albatross 	Nationally critical	Not found	Elliott, G. P. & Walker, K. J. (2022). Antipodean albatross – Toroa. New Zealand Birds Online. Retrieved 10 May 2023 from www.nzbirdsonline.org.nz/species/antipodean-albatross
Australasian gannet 	Not threatened	Not found	Ismar, S. M. H. (2022). Australasian gannet – Tākapu. New Zealand Birds Online. Retrieved 10 May 2023 from www.nzbirdsonline.org.nz/species/australasian-gannet
Black-billed gull 	Declining	Not found	McClellan, R. K. & Habraken, A. (2022). Black-billed gull – Tarāpuka. New Zealand Birds Online. Retrieved 10 May 2023 from www.nzbirdsonline.org.nz/species/black-billed-gull
Black-fronted tern 	Nationally endangered	Not found	Bell, M. (2022). Black-fronted tern – Tarapirohe. New Zealand Birds Online. Retrieved 10 May 2023 from www.nzbirdsonline.org.nz/species/black-fronted-tern
Buller’s shearwater 	Declining	Not found	Taylor, G. A. (2022). Buller’s shearwater – Rako. New Zealand Birds Online. Retrieved 10 May 2023 from www.nzbirdsonline.org.nz/species/bullers-shearwater
Fairy prion 	Relict	Not found	Miskelly, C. M. (2022). Fairy prion – Titī wainui. New Zealand Birds Online. Retrieved 10 May 2023 from www.nzbirdsonline.org.nz/species/fairy-prion
Fluttering shearwater 	Relict	Not found	Gaskin, C. P. (2022). Fluttering shearwater – Pakahā. New Zealand Birds Online. Retrieved 10 May 2023 from www.nzbirdsonline.org.nz/species/fluttering-shearwater
Hutton’s shearwater 	Nationally vulnerable	Not found	Gaze, P. D. (2022). Hutton’s shearwater – Kaikōura titī. New Zealand Birds Online. Retrieved 10 May 2023 from www.nzbirdsonline.org.nz/species/huttons-shearwater
New Zealand king shag 	Nationally endangered	Not found	Schuckard, R. (2022). New Zealand king shag – Kawau pāteketeke. New Zealand Birds Online. Retrieved 11 May 2023 from www.nzbirdsonline.org.nz/species/new-zealand-king-shag
Northern royal albatross 	Nationally vulnerable	Not found	Sugishita, J. (2022). Northern royal albatross – Toroa. New Zealand Birds Online. Retrieved 10 May 2023 from www.nzbirdsonline.org.nz/species/northern-royal-albatross
Salvin’s albatross 	Nationally critical	Not found	Sagar, P. M. (2022). Salvin’s mollymawk – Toroa. New Zealand Birds Online. Retrieved 10 May 2023 from www.nzbirdsonline.org.nz/species/salvins-mollymawk
Sooty shearwater 	Declining	Not found	Sagar, P. M. (2022). Sooty shearwater – Titī. New Zealand Birds Online. Retrieved 10 May 2023 from www.nzbirdsonline.org.nz/species/sooty-shearwater
Westland petrel 	Naturally uncommon	Not found	Waugh, S. M. & Bartle, J. A. (2022). Westland petrel – Tāiko. New Zealand Birds Online. Retrieved 10 May 2023 from www.nzbirdsonline.org.nz/species/westland-petrel
White-capped albatross 	Declining	Not found	Sagar, P. M. (2022). White-capped mollymawk – Toroa. New Zealand Birds Online. Retrieved 10 May 2023 from www.nzbirdsonline.org.nz/species/white-capped-mollymawk
White-chinned petrel 	Not threatened	Not found	Bell, E. A. (2022). White-chinned petrel – Karetai kauae mā. New Zealand Birds Online. Retrieved 10 May 2023 from www.nzbirdsonline.org.nz/species/white-chinned-petrel

Table 1.2: Selected marine mammal and shark conservation status






Species (A-Z)	Conservation status	Year of status	Reference
Antarctic blue whale	Data deficient	2019	Baker, C. S., Boren, L., Childerhouse, S., Constantine, R., van Helden, A., Lundquist, D., Rayment, W. & Rolfe, J. R. (2019). Conservation status of New Zealand marine mammals, 2019. New Zealand Threat Classification Series 29. Department of Conservation, p. 12. Retrieved 14 June 2023 from www.nzctcs.org.nz/reports/1067
Basking shark 	Vulnerable	Not found	Department of Conservation (DOC). (n.d.). Basking sharks. Retrieved 29 May 2023 from www.doc.govt.nz/nature/native-animals/marine-fish-and-reptiles/sharks-mango/basking-shark
Bottlenose dolphin 	Nationally endangered	2019	Baker, C. S., Boren, L., Childerhouse, S., Constantine, R., van Helden, A., Lundquist, D., Rayment, W. & Rolfe, J. R. (2019). Conservation status of New Zealand marine mammals, 2019. New Zealand Threat Classification Series 29. Department of Conservation, p. 6. Retrieved 11 May 2023 from www.nzctcs.org.nz/reports/1067
Common dolphin 	Not threatened	2019	Baker, C. S., Boren, L., Childerhouse, S., Constantine, R., van Helden, A., Lundquist, D., Rayment, W. & Rolfe, J. R. (2019). Conservation status of New Zealand marine mammals, 2019. New Zealand Threat Classification Series 29. Department of Conservation, p. 6. Retrieved 11 May 2023 from www.nzctcs.org.nz/reports/1067
Dusky dolphin 	Not threatened	2019	Baker, C. S., Boren, L., Childerhouse, S., Constantine, R., van Helden, A., Lundquist, D., Rayment, W. & Rolfe, J. R. (2019). Conservation status of New Zealand marine mammals, 2019. New Zealand Threat Classification Series 29. Department of Conservation, p. 6. Retrieved 11 May 2023 from www.nzctcs.org.nz/reports/1067
Great white shark 	Vulnerable	2018	Department of Conservation (DOC). (n.d.). White sharks. Retrieved 29 May 2023 from www.doc.govt.nz/nature/native-animals/marine-fish-and-reptiles/sharks-mango/white-shark
Hector's dolphin 	Nationally vulnerable	Not found	Department of Conservation (DOC). (n.d.). Hector's dolphin. Retrieved 10 May 2023 from www.doc.govt.nz/nature/native-animals/marine-mammals/dolphins/hectors-dolphin
Humpback whale 	Migrant	2019	Baker, C. S., Boren, L., Childerhouse, S., Constantine, R., van Helden, A., Lundquist, D., Rayment, W. & Rolfe, J. R. (2019). Conservation status of New Zealand marine mammals, 2019. New Zealand Threat Classification Series 29. Department of Conservation, p. 6. Retrieved 11 May 2023 from www.nzctcs.org.nz/reports/1067
Long-finned pilot whale 	Not threatened	2019	Baker, C. S., Boren, L., Childerhouse, S., Constantine, R., van Helden, A., Lundquist, D., Rayment, W. & Rolfe, J. R. (2019). Conservation status of New Zealand marine mammals, 2019. New Zealand Threat Classification Series 29. Department of Conservation, p. 6. Retrieved 11 May 2023 from www.nzctcs.org.nz/reports/1067
Māui dolphin 	Nationally critical	Not found	Department of Conservation (DOC). (n.d.). Māui dolphin. Retrieved 10 May 2023 from www.doc.govt.nz/nature/native-animals/marine-mammals/dolphins/maui-dolphin
Orca/Killer whale 	Nationally critical	Not found	Department of Conservation (DOC). (n.d.). Killer whale/orca. Retrieved 10 May 2023 from www.doc.govt.nz/nature/native-animals/marine-mammals/dolphins/killer-whale-orca
Pygmy blue whale 	Data deficient	2019	Baker, C. S., Boren, L., Childerhouse, S., Constantine, R., van Helden, A., Lundquist, D., Rayment, W. & Rolfe, J. R. (2019). Conservation status of New Zealand marine mammals, 2019. New Zealand Threat Classification Series 29. Department of Conservation, p. 4. Retrieved 11 May 2023 from www.nzctcs.org.nz/reports/1067
Short-finned pilot whale 	Data deficient	2019	Baker, C. S., Boren, L., Childerhouse, S., Constantine, R., van Helden, A., Lundquist, D., Rayment, W. & Rolfe, J. R. (2019). Conservation status of New Zealand marine mammals, 2019. New Zealand Threat Classification Series 29. Department of Conservation, p. 12. Retrieved 14 June 2023 from www.nzctcs.org.nz/reports/1067
Southern right whale 	Recovering	2019	Baker, C. S., Boren, L., Childerhouse, S., Constantine, R., van Helden, A., Lundquist, D., Rayment, W. & Rolfe, J. R. (2019). Conservation status of New Zealand marine mammals, 2019. New Zealand Threat Classification Series 29. Department of Conservation, p. 17. Retrieved 11 May 2023 from www.nzctcs.org.nz/reports/1067

Table 1.3: Cook Strait IBA seabird species

Source: Forest & Bird. (2018). Important Bird Areas for New Zealand Seabirds: Sites at Sea: Seaward extensions, pelagic areas (p. 12). Retrieved 11 May 2023 from www.forestandbird.org.nz/resources/important-bird-areas-new-zealand-seabirds

NZ M005	Cook Strait
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Location	New Zealand, South Taranaki Bight, Cook Strait
IBA criteria (see page 14)	A1, A4ii, A4iii
Area	37, 776 km ²
Year of Assessment	2013

IBA trigger species:

Species	Tracking	Supporting data	Activity	IBA criteria	IUC
Fairy Prion		Seaward extensions (135km), observations	Foraging	A4ii	LC
Fluttering Shearwater	GLS	Seaward extensions (30km), observations	Foraging	A4ii	LC
Sooty Shearwater		Observations	Foraging, passage	A1, (A4iii)	NT
Australasian Gannet	GPS	Seaward extensions (60km), observations	Foraging	A4ii	LC
Black-billed Gull ¹		Observations	Post-breeding foraging	A1	EN
Black-fronted Tern ¹		Observations	Post-breeding foraging	A1	EN
Antipodean Albatross		Observations	Passage	A1	VU
Northern Royal Albatross		Observations	Passage	A1	EN
White-capped Albatross		Observations	Passage	A1	NT
Salvin's Albatross		Observations	Passage	A1	VU
Westland Petrel		Observations	Passage	A1, A4ii	VU
White-chinned Petrel		Observations	Passage	A1	VU
Buller's Shearwater	GLS	Observations	Passage	A1	VU
Hutton's Shearwater	GLS	Observations	Passage	A1, A4ii	EN
Species group (multiple species including a number not listed above)		Observations		A4iii	

¹ Included in Farewell Spit, Motueka, Wairau Lagoons and Lake Grassmere IBAs - all of which include coastal waters.

NB: Cook Strait is a major passage or flyway for pelagic seabirds breeding outside the region, including birds from northern islands (e.g. Buller's Shearwaters, Grey-faced Petrel), the West Coast of the South Island (e.g. Westland Petrel) and Subantarctic islands (e.g. Salvin's Albatross, Antipodean Albatross).

Table 1.4: Marlborough Sounds IBA seabird species

Source: Forest & Bird. (2018). Important Bird Areas for New Zealand Seabirds: Sites at Sea: Seaward extensions, pelagic areas (p. 14). Retrieved 11 May 2023 from www.forestandbird.org.nz/resources/important-bird-areas-new-zealand-seabirds

NZ M006	Marlborough Sounds
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Location	New Zealand, northern South Island
IBA criteria (see page 14)	A1, A4ii, A4iii
Area	1,358 km ²
Year of Assessment	2013

IBA trigger species:

Species	Tracking	Supporting data	Activity	IBA criteria	IUC
King Shag		Seaward extensions (25km), bathymetry (50m)	Foraging	A1, A4ii	EN
Fairy Prion		Seaward extension	Foraging, passage	A4ii	LC
Fluttering Shearwater ¹	GLS	Seaward extension, observations	Foraging	A4ii	LC
Australasian Gannet		Seaward extension (60km), observations	Foraging	A4ii	LC
Black-billed Gull		Observations	Post-breeding foraging	A1, (A4iii)	EN
Black-fronted Tern		Observations	Post-breeding foraging	A1, (A4iii)	EN
Species group (multiple species not listed above)		Observations		A4iii	

¹ A significant proportion of the global population of Fluttering Shearwaters breeds on islands in the Marlborough Sounds (5-10%). Large flocks are regularly seen foraging deep within the sounds and in waters immediately offshore and have been taken into account when drawing the boundaries for this IBA.

Table 1.5: Additional species not mentioned in the IBA, but that inhabit the area

Source: Personal communication with Rob Shuckard, 9 May 2023

Species (A–Z)	Conservation status	Year of status	Reference
Arctic skua	Migrant	Not found	Szabo, M. J. (2017). Arctic skua. New Zealand Birds Online. Retrieved 12 May 2023 from www.nzbirdsonline.org.nz/species/arctic-skua
Flesh-footed shearwater	Relict	Not found	Taylor, G. A. (2022). Flesh-footed shearwater – Toanui. New Zealand Birds Online. Retrieved 12 May 2023 from www.nzbirdsonline.org.nz/species/flesh-footed-shearwater
Little penguin	Declining	Not found	Flemming, S. A. (2022). Little penguin – Kororā. New Zealand Birds Online. Retrieved 12 May 2023 from www.nzbirdsonline.org.nz/species/little-penguin
Pied shag	Recovering	Not found	Powlesland, R. G. (2022). Pied shag – Kāruhiruhi. New Zealand Birds Online. Retrieved 12 May 2023 from www.nzbirdsonline.org.nz/species/pied-shag
Red-billed gull	Declining	Not found	Mills, J. A. (2022). Red-billed gull – Tarāpunga. New Zealand Birds Online. Retrieved 12 May 2023 from www.nzbirdsonline.org.nz/species/red-billed-gull
Southern giant petrel	Migrant	Not found	Szabo, M. J. (2022). Southern giant petrel – Pāngurunguru. New Zealand Birds Online. Retrieved 12 May 2023 from www.nzbirdsonline.org.nz/species/southern-giant-petrel
Whenua Hou diving petrel	Nationally critical	Not found	Taylor, G. A. (2022). Whenua Hou diving petrel – Kuaka Whenua Hou. New Zealand Birds Online. Retrieved 12 May 2023 from www.nzbirdsonline.org.nz/species/south-georgian-diving-petrel Department of Conservation. (n.d.). Whenua Hou diving petrel/kuaka. Retrieved 12 May 2023 from www.doc.govt.nz/nature/native-animals/birds/birds-a-z/whenua-hou-diving-petrelkuaka/
White-faced storm petrel	Relict	Not found	Southey, I. (2022). White-faced storm petrel – Takahikare. New Zealand Birds Online. Retrieved 12 May 2023 from www.nzbirdsonline.org.nz/species/white-faced-storm-petrel
White-fronted tern	Declining	Not found	Mills, J. A. (2013, updated 2022). White-fronted tern – Tara. New Zealand Birds Online. Retrieved 12 May 2023 from www.nzbirdsonline.org.nz/species/white-fronted-tern

Infographic 2 references

I: Marine area

1. Ministry for the Environment. (2007). *Environment New Zealand*, p. 315. Retrieved 17 May 2023 from www.environment.govt.nz/assets/Publications/Files/environment-nz07-dec07.pdf
- 1a. LINZ has advised this information is not currently available. However, they hope to undertake some work and have a figure available in 2024. Personal communication with LINZ, 24 May 2023.
- 1b. Personal communication with LINZ, 31 May 2023.
- 1c. Ministry for the Environment. (June 2005). *Offshore Options: Managing Environmental Effects in New Zealand's Exclusive Economic Zone*. Retrieved 29 May 2023 from www.environment.govt.nz/assets/Publications/Files/offshore-options-jun05.pdf

II: 9 coastal marine biogeographic regions

2. Department of Conservation. (14 June 2022). *NZ Coastal Marine Biogeographic Regions*. Retrieved 30 May 2023 from www.doc-deptconservation.opendata.arcgis.com/datasets/cefd4a9f7f464509be55eb60a718bd8a_0/explore?showTable=true
See also Department of Conservation. (2011). *Coastal marine habitats and marine protected areas in the New Zealand Territorial Sea: a broad scale gap analysis*, p. 49. Retrieved 6 June 2023 from www.doc.govt.nz/documents/conservation/marine-and-coastal/marine-protected-areas/coastal-marine-habitats-marine-protected-areas.pdf

III: Marine protected areas (MPAs) network

3. Molloy, L. (2007, updated 2015). *Protected areas – Protected marine areas and inland waters*. Te Ara – the Encyclopedia of New Zealand. Retrieved 17 May 2023 from www.TeAra.govt.nz/en/map-interactive/13882/marine-protected-areas-map
- 3a. Ministry for Primary Industries. (8 February 2022). *Marine Protected Areas Policy Under Reform*. Retrieved 17 May 2023 from www.mpi.govt.nz/fishing-aquaculture/sustainable-fisheries/protected-areas/marine-protected-areas
- 3b. Department of Conservation. (n.d.) *Hauraki Gulf Marine Park/Ko te Pataka kai o Tikapa Moana Te Moananui a Toi*. Retrieved 29 May 2023 from www.doc.govt.nz/parks-and-recreation/places-to-go/auckland/hauraki-gulf-marine-park
- 3c. Department of Conservation. (n.d.) *Mimiwhangata Coastal Park*. Retrieved 13 June 2023 from www.doc.govt.nz/parks-and-recreation/places-to-go/northland/places/mimiwhangata-coastal-park

IV: 8 marine mammal sanctuaries

4. Department of Conservation. (n.d.). *Marine mammal conservation*. Retrieved 17 May 2023 from www.doc.govt.nz/about-us/our-role/managing-conservation/marine-mammal-conservation
5. Department of Conservation. (n.d.). *Other marine protection tools*. Retrieved 18 May 2023 from www.doc.govt.nz/nature/habitats/marine/other-marine-protection
6. Department of Conservation. (n.d.). *Te Pēwhairangi (Bay of Islands) Marine Mammal Sanctuary*. Retrieved 18 May 2023 from www.doc.govt.nz/parks-and-recreation/places-to-go/northland/places/bay-of-islands-mms/?tab-id=Boating
Department of Conservation. (n.d.). *DOC Sanctuaries to Protect Marine Mammals*. Retrieved 22 May 2023 from www.doc-deptconservation.opendata.arcgis.com/datasets/abf12dd2f4cd43b3a7fdcf5a0a2ad2c9_0/about
7. Department of Conservation. (n.d.). *West Coast North Island Marine Mammal Sanctuary*. Retrieved 18 May 2023 from www.doc.govt.nz/nature/habitats/marine/other-marine-protection/west-coast-north-island
8. Department of Conservation. (n.d.). *Clifford and Cloudy Bay Marine Mammal Sanctuary*. Retrieved 18 May 2023 from www.doc.govt.nz/nature/habitats/marine/other-marine-protection/clifford-and-cloudy-bay
9. Department of Conservation. (n.d.). *Kaikōura/Te Tai-o-Marokura marine management*. Retrieved 18 May 2023 www.doc.govt.nz/news/media-releases/2014/new-marine-protected-areas-for-kaikoura
10. Department of Conservation. (n.d.). *Banks Peninsula Marine Mammal Sanctuary*. Retrieved 18 May 2023 from www.doc.govt.nz/nature/habitats/marine/other-marine-protection/banks-peninsula
11. Department of Conservation. (n.d.). *Catlins Coast Marine Mammal Sanctuary*. Retrieved 18 May 2023 from www.doc.govt.nz/nature/habitats/marine/other-marine-protection/catlins-coast
12. Department of Conservation. (n.d.). *Te Waewae Bay Marine Mammal Sanctuary*. Retrieved 18 May 2023 from www.doc.govt.nz/nature/habitats/marine/other-marine-protection/te-waewae-bay
13. Department of Conservation. (n.d.). *Auckland Islands - Motu Maha Marine Reserve*. Retrieved 22 May 2023 from www.doc.govt.nz/parks-and-recreation/places-to-go/southland/places/subantarctic-islands/auckland-islands/auckland-islands-motu-maha-marine-reserve

V: About

14. Ministry for the Environment. *Biodiversity and species conservation*. (1 June 2005). *Offshore options: Managing environmental effects in New Zealand's Exclusive Economic Zone: Introduction*. Retrieved 17 May 2023 from www.environment.govt.nz/publications/offshore-options-managing-environmental-effects-in-new-zealands-exclusive-economic-zone/introduction

However, there is some debate over whether New Zealand is the fifth-largest in the world, with some suggesting New Zealand is the fourth while others indicate a lower ranking. For example, Te Ara suggests New Zealand is the fourth-largest: Te Ara – the Encyclopedia of New Zealand. (n.d.). Exclusive economic zones. Retrieved 17 May 2023 from www.teara.govt.nz/en/map/33830/exclusive-economic-zones

The Ministry for the Environment 2007 *Environment New Zealand* report states, 'New Zealand administers the sixth largest marine area in the world.' Ministry for the Environment. (2007). *Environment New Zealand*, p. 315. Retrieved 17 May 2023 from www.environment.govt.nz/assets/Publications/Files/environment-nz07-dec07.pdf

15. Convention on Biological Diversity. (19 December 2022). COP15: nations adopt four goals, 23 targets for 2030 in landmark UN biodiversity agreement [press release]. Retrieved 13 February 2023 from www.cbd.int/article/cop15-cbd-press-release-final-19dec2022
16. New Zealand Foreign Affairs & Trade/Manatū Aorere. (n.d.). Biodiversity and species conservation. Retrieved 17 May 2023 from www.mfat.govt.nz/en/environment/biodiversity-and-species-conservation
17. Although the Convention on Biological Diversity states that about 7% of New Zealand's territorial sea is protected, this percentage may be based on old data. The marine reserves cover more like 9.5% (i.e. 1,726,007 ha of 18,100,000 ha). See Convention on Biological Diversity. (n.d.). New Zealand – Main details. Retrieved 17 May 2023 from www.cbd.int/countries/profile/?country=nz. Note: The figure of 9.5% is yet to be confirmed. However this figure will increase if the Hauraki Gulf/Tikapa Moana Marine Protection Bill is passed later this year.

18. Relevant legislation and protections:

- Marine Mammals Protection Act 1978
 - The Department of Conservation Marine Mammal Action Plan 2005–2010
 - Marine Mammals Protection Regulations 1992
 - Hector's and Māui dolphin Threat Management Plan (TMP)
 - International Whaling Commission (IWC)
 - Kaikōura (Te Tai o Marokura) Marine Management Act 2014
 - Continental Shelf Act 1964
 - Territorial Sea and Exclusive Economic Zone Act 1977
 - United Nations Convention on the Law of the Sea (UNCLOS), done at Montego Bay, Jamaica, on 10 December 1982
19. Molloy, L. (2007, updated 2015). Marine protected areas. Te Ara – the Encyclopedia of New Zealand. Retrieved 30 May 2023 from www.teara.govt.nz/en/table/15240/marine-protected-areas
 20. Department of Conservation. (n.d.). Type 1 Marine Protected Areas: Marine reserves. Retrieved 1 June 2023 from www.doc.govt.nz/nature/habitats/marine/type-1-marine-protected-areas-marine-reserves
 21. Department of Conservation. (n.d.). Type 2 Marine Protected Areas. Retrieved 1 June 2023 from www.doc.govt.nz/nature/habitats/marine/type-2-marine-protected-areas/
 22. Department of Conservation. (n.d.). Other Marine Protection Tools. Retrieved 1 June 2023 from www.doc.govt.nz/nature/habitats/marine/other-marine-protection/

VI: Maritime boundary definitions illustrated

23. Ministry for the Environment. (December 2008). *Marine areas with legal protection: Environmental Report Card*. Retrieved 17 May 2023 from www.environment.govt.nz/assets/Publications/Files/Environmental-Report-Card-Marine-Areas-with-Legal-protection_0.pdf
24. Toitū Te Whenua Land Information New Zealand. (n.d.). Maritime boundary definitions. Retrieved 17 May 2023 from www.linz.govt.nz/guidance/marine-information/charts/maritime-boundary-definitions

Abbreviations	Definitions
CZ	Contiguous Zone (24 nm limit) 'is a belt of water adjacent to the territorial sea, the outer limits of which do not exceed 24 nautical miles from the territorial sea baseline'.
CS	Continental Shelf comprises 'the seabed and subsoil of those submarine areas that extend beyond the territorial limits of New Zealand, throughout the natural prolongation of the land territory of New Zealand, to the outer edge of the continental margin, or to a distance of 200 nautical miles from the baselines from which the breadth of the territorial sea is measured where the outer edge of the continental margin does not extend to that distance'.
IW	Internal Waters (landward of the TSB) includes any areas of the sea that are on the landward side of the territorial sea baseline. For example the Tory Channel/Kura Te Au, Queen Charlotte Sound/Tōtaranui and Pelorus Sound/Te Hoiere are classified as 'internal waters' (personal communication with LINZ, 18 May 2023).
EEZ	Exclusive Economic Zone (200 nm limit) comprises 'those areas of the sea, seabed, and subsoil that is beyond and adjacent to the territorial sea, being 200 nautical miles from the nearest point of the baseline'.
nm	A nautical mile (nm) 'is a unit of distance equal to 1,852 metres'.
TS	Territorial Sea (12 nm limit) is an area of water not exceeding 12 nautical miles in width which is measured seaward from the territorial sea baseline – also called the territorial waters.
TSB	Territorial Sea Baseline 'may be of various types depending upon the shape of the coastline in any given locality'.

25. Environment Guide. (6 February 2018). Areas. Retrieved 17 May 2023 from www.environmentguide.org.nz/issues/marine/marine-management/areas
26. Personal communication with LINZ, 18 May 2023.

Infographic 3 references

1. Ministry of Agriculture and Fisheries. (1981). *Proceedings of the Salmon Symposium*. Fisheries Research Division Occasional Publication No. 30, p. 5. Retrieved 27 April 2023 from docs.niwa.co.nz/library/public/FRDop30.pdf
 2. Marine Farming Act 1971, s 2(1).
See also Marine Farming Amendment Act 1983, s 2(1).
 3. Marine Farming Act 1971, s 3.
 4. Resource Management Act 1991 (1991, No. 69).
 5. Waitangi Tribunal. (2002). *Ahu Moana: The Aquaculture and Marine Farming Report*, p. 12. Retrieved 27 April 2023 from www.forms.justice.govt.nz/search/Documents/WT/wt_DOC_68004143/Ahu%20Moana.pdf
 6. Resource Management Act 1991 (1991, No. 69), s 123(c).
 7. Waitangi Tribunal. (2002). *Ahu Moana: The Aquaculture and Marine Farming Report*, p. 12. Retrieved 27 April 2023 from www.forms.justice.govt.nz/search/Documents/WT/wt_DOC_68004143/Ahu%20Moana.pdf
 8. Waitangi Tribunal. (2002). *Ahu Moana: The Aquaculture and Marine Farming Report*, p. 12. Retrieved 27 April 2023 from www.forms.justice.govt.nz/search/Documents/WT/wt_DOC_68004143/Ahu%20Moana.pdf
 9. Department of Conservation. (1994). *New Zealand Coastal Policy Statement 1994*, Preface. Retrieved 27 April 2023 from www.doc.govt.nz/globalassets/documents/conservation/marine-and-coastal/coastal-management/nz-coastal-policy-statement-1994-superseded.pdf
 10. Animal Welfare Act 1999, ss 10 and 11.
 11. Resource Management (Aquaculture Moratorium) Amendment Act 2002, s 3.
 12. Resource Management (Aquaculture Moratorium Extension) Amendment Act 2004, s 3.
 13. Aquaculture Reform (Repeals and Transitional Provisions) Act 2004, s 3.
 14. Aquaculture Reform (Repeals and Transitional Provisions) Act 2004, s 4 (c)(ii).
 15. Department of Conservation. (2010). *New Zealand Coastal Policy Statement 2010*. Retrieved 27 April 2023 from www.doc.govt.nz/globalassets/documents/conservation/marine-and-coastal/coastal-management/nz-coastal-policy-statement-2010.pdf
 16. Ministry for Primary Industries. (October 2012). *Aquaculture Legislative Reforms 2011: Guidance Overview*. Retrieved 27 April 2023 from www.mpi.govt.nz/dmsdocument/15889-Aquaculture-legislative-reforms-2011-Guidance-overview-An-overview
 17. Resource Management Amendment Act (No. 2) 2011, ss 31 and 33.
 18. Ministry for Primary Industries. (October 2012). *Aquaculture Legislative Reforms 2011: Guidance Overview*. Retrieved 27 April 2023 from www.mpi.govt.nz/dmsdocument/15889-Aquaculture-legislative-reforms-2011-Guidance-overview-An-overview
 19. Resource Management (National Environmental Standards for Marine Aquaculture) Regulations 2020. These regulations only apply to the replacement of coastal permits for existing marine farms and existing offshore marine farms (the five offshore marine farms, none of which include NZKS, are listed in Schedule 2). Therefore these regulations did not apply to the Blue Endeavour proposal or any new offshore marine farms constructed after the commencement of these regulations where the final location was not confirmed.
Clause 20: Additional matters over which discretion is restricted for [replacement coastal permits of] offshore marine farms
1. For replacement coastal permits for offshore marine farms under this Part, an additional matter of discretion is the adverse effects of the entanglement of large whales. Under the Regulation, large whale means 'a sperm whale (*Physeter macrocephalus*) and any baleen whale (suborder Mysticeti) except a pygmy right whale (*Caperea marginata*).
- Clause 20 supplements clause 14. Clause 14 makes replacement of coastal permits for certain marine farms a restricted discretionary activity – meaning the discretion of the decision maker is limited ('restricted') to the specified matters, such as the entanglement of large whales specified in clause 20.
- By comparison, the activity status for a coastal permit for a new marine farm is not prescribed in national regulations. It will depend instead on the provisions of the relevant regional coastal plan. In most cases the relevant plans will make such activities either fully discretionary or non-complying, which means the decision-maker must take account of all effects that are relevant (i.e. the discretion is not restricted). For example, Blue Endeavour was a 'non-complying' activity, so the decision-maker was obliged to take account of all effects. Personal communication with Morgan Slyfield, 13 June 2023.
20. Natural and Built Environment Bill (186–1). See Ministry for the Environment. (16 December 2022). *Te Pūnaha Whakahaere Rauemi o Anamata: Tirowhānui: Our Future Resource Management System: Overview*, p. 42. Retrieved 27 April 2023 from www.environment.govt.nz/publications/our-future-resource-management-system-overview/
 21. New Zealand Parliament. (11 May 2023). Natural and Built Environment Bill. Retrieved 27 April 2023 from <https://bills.parliament.nz/v/6/267f6032-6ceb-482a-ac45-0c02dd1edc60>

Infographic 4 references

1. For all establishing dates of existing consents see Taylor Baines & Associates. (December 2016). *Potential Salmon Farm Relocation In Marlborough: Social Impact Assessment*, p. 8. Ministry for Primary Industries. Retrieved 18 April 2023 from www.mpi.govt.nz/dmsdocument/16144-Potential-salmon-farm-relocation-in-Marlborough-Social-Impact-Assessment-prepared-by-Taylor-Baines-Associates
2. For all expiration dates for the resource consents see NZKS. (2022). *FY22 Results and Equity Raising Presentation*, p. 35. Retrieved 18 April 2023 from www.kingsalmon.co.nz/wp-content/uploads/2022/04/FY22-Investor-Presentation.pdf
See also Marlborough District Council. (10 November 2022). Decision of Marlborough District Council: Resource Consent: U190438. Retrieved 13 June 2023 from eservices.marlborough.govt.nz/programmes/ListProgrammeEvents?id=3516198
3. NZKS. (n.d.). *New Zealand King Salmon Annual Report FY23*, pp. 5, 20. Retrieved 19 May 2023 from www.nzx.com/announcements/409109
See also Radio New Zealand (RNZ). (22 May 2022). NZ King Salmon to close Pelorus Sound farms due to rising sea temperatures. Retrieved 15 May 2023 from www.nzherald.co.nz/the-country/news/nz-king-salmon-to-close-pelorus-sound-farms-due-to-rising-sea-temperatures/SDXHXPWNIUZNDJNSHI3EGIAI4/
4. NZKS. (2023). *New Zealand King Salmon Annual Report FY23*, p. 20. Retrieved 17 April 2023 from www.kingsalmon.co.nz/wp-content/uploads/2023/03/NZKS-Annual-Report-FY2023.pdf
5. 'If Blue Endeavour is approved, the three fallowed farms in the Pelorus Sound will be used as nursery sites for nine months of the year ...' See NZKS. (n.d.). *New Zealand King Salmon Annual Report FY22*, p. 4. Retrieved 17 April 2023 from www.kingsalmon.co.nz/wp-content/uploads/2022/05/NZKS-Annual-Report-FY22-WEB-FINAL-2.pdf
6. The New Zealand King Salmon Co. Limited. (2011). *Sustainably Growing King Salmon - A Proposal Of National Significance*. Retrieved 17 April 2023 from epa.govt.nz/assets/FileAPI/proposal/NSP000002/Applicants-proposal-documents/cda422603a/Application-Attachment-Report-on-National-Significance.pdf
7. Board of Inquiry. (22 February 2013). *New Zealand King Salmon Requests For Plan Changes And Applications For Resource Consents. Final Report And Decision Of The Board Of Inquiry*. Retrieved 17 April 2023 from www.mcguinnessinstitute.org/wp-content/uploads/2021/12/Board-of-Inquiry-Final-Decision.pdf
8. *Environmental Defence Society Incorporated v The New Zealand King Salmon Company Limited* [2014] NZSC 38 [17 April 2014]. Retrieved 17 April 2023 from www.courtsofnz.govt.nz/assets/cases/2014/sc-82-2013-eds-v-king-salmon-civil-appeal.pdf
9. Board of Inquiry. (22 February 2013). *New Zealand King Salmon Requests For Plan Changes And Applications For Resource Consents. Final Report And Decision Of The Board Of Inquiry*. Retrieved 17 April 2023 from www.mcguinnessinstitute.org/wp-content/uploads/2021/12/Board-of-Inquiry-Final-Decision.pdf
10. Adapted from McGuinness Institute. (2017). *Working Paper 2017/02 – Letter to the Minister on New Zealand King Salmon*. Retrieved 2 June 2023 from www.mcguinnessinstitute.org/wp-content/uploads/2023/05/20170523-Working-Paper-2017%E2%80%A2-as-at-20230510.pdf

Table 4.1 definitions

King salmon/Chinook salmon

King salmon/Chinook salmon, *Oncorhynchus tshawytscha*, is part of the Salmonidae family.

Marine farming licence (MFL)

These were issued by the Ministry of Agriculture and Fisheries under the Marine Farming Act 1971 and then became 'deemed coastal permits' under the Aquaculture Reform (Repeals and Transitional Provisions) Act 2004. Feed discharge limits are not specified in the conditions on MFLs. The size of net pens is sometimes specified. Under the Act, MDC was able to (and did) carry out a review of the conditions on all the original MFLs. Those reviews were intended to and largely did align the consent conditions between MFLs and the related resource consent(s). For NZKS sites, invariably the original MFL has been augmented by one or more later resource consents which cover the structures and/or the discharge of feed and/or additional species and/or other ancillary activities.

Marine farming permit (MPE)

These were issued by the Ministry of Fisheries, now MPI, under the Fisheries Act 1983 and then became 'deemed coastal permits' under the Aquaculture Reform (Repeals and Transitional Provisions) Act 2004.

Permit area/permitted areas

There are several types of permitted areas mentioned in a resource consent:

- Pen surface area (minimum):
The actual surface structure of the pen and/or cages permitted under the consent (i.e. usually the smallest area mentioned in a resource consent).
- Pen boundary area:
The boundary that a pen or cage, or a group of pens or cages, can be placed within.
- Marine farm boundary area:
The area able to be used to undertake the business of salmon farming (including accommodation, barges etc). Sometimes this is called the licence area.
- Overall consent area (maximum):
The extreme outer area covered by the consent (i.e. it includes the area between navigation markers in the consent). The distinction is best understood in that if NZKS (or indeed any other MPI-registered salmon farming organisation) wished to add a third farm into the Blue Endeavour navigational area of 1000 ha it would trigger a public consultation process. Personal communication with Marlborough District Council, 25 May 2023.

Importantly, the RMA requires consent authorities to evaluate the proposals in front of them, not second-guess changes that may/may not occur in the future. If the present proposal is consented, and the consent holder seeks a change in the future (such as to increase permitted feed or the pen boundary area), then the RMA provides direction on the process to be followed (s 127). The same notification provisions that governed the initial application are in play – but the focus is on the extent of the change (i.e. not a re-litigation of the original consent). Plus, the consent authority must consider every person who made a submission the first time around, or who may be affected by the change. Personal communication with Morgan Slyfield, 13 June 2023.

Permitted feed discharge

The conversion of salmon to feed was 1:1.66 as at 2023 (see FY2023, p. 10). The permitted feed discharge is the maximum consented feed discharge, and may differ from actual feed discharged.

For feed discharged at all the salmon farms see McGuinness Institute. (4 May 2017). *Workings to support the Letter to the Minister on the MPI Proposal*. Retrieved 18 April 2023 from www.mcguinnessinstitute.org/wp-content/uploads/2017/05/20170508-McGuinness-Institute-%E2%80%93-Letter-to-the-minister-%E2%80%93-Figures-1-2-and-3.pdf

For permitted feed discharged see the relevant resource consents on the Marlborough District Council website (each farm has a site number, an application number and related consents, see table on infographic 5 in this series). However, some resource consent applications, particularly marine farm licences, are buried within the marine farm licence history. 'There is often a lot of superfluous associated information in these files ... In most MPE instances we do not hold a record of the original application because that was a process managed by the Ministry of Fisheries under the Fisheries Act 1983, and not by MDC' (personal communication with Marlborough District Council, 31 May 2023). See also McGuinness Institute. (4 May 2017). *Workings to support the Letter to the Minister on the MPI Proposal*. Retrieved 18 April 2023 from www.mcguinnessinstitute.org/wp-content/uploads/2017/05/20170508-McGuinness-Institute-%E2%80%93-Letter-to-the-minister-%E2%80%93-Figures-1-2-and-3.pdf

Related resource consents

All consents other than the existing resource consents that relate or have related to the site.

U# (the number given by MDC)

This denotes a resource consent application made to the Marlborough District Council under the Resource Management Act 1991.

Table 4.1 references

1. Number of pages

The MDC Property Files Online website includes a number of links for each resource consent, namely 'decision document', 'resource consent monitoring', 'working papers', 'planners report', 'processing' and 'application'.

The Institute's key interest is in the decision that enables the permitted activity (e.g. area, feed discharge, expiry date, etc). This is usually found in the decision document. Where the MDC uses the term 'decision document' twice for a single consent (see example from MDC website below), we have combined both documents into one PDF and added them to our website table: www.mcguinnessinstitute.org/nzks-submissions/

Note: There are a few older consents where key information can be found in the working papers.

MDC has stated that when the resource consent files were digitised, significant time and effort was expended to ensure the decision document was true and complete. That said, there is no guarantee that those records are completely free from error (personal communication with Marlborough District Council, 29 June 2023).

The page numbers in the Institute's table refer to the PDF that we have created so that pages can be easily found and cited.

Resource Consent Number

MFL001

Keyword (optional)

SEARCH

^ **Marine farm licence 001 for a marine farm of 4.5ha in Ruakaka Bay for the purpose of marine farming chinook salmon (*Oncorhynchus tshawytscha*), snapper (*Chrysophrys auratus*) and green shell mussels (*Perna canaliculus*).** 07 Nov 2008
 MFL001

∨ **Resource Consent Monitoring** 27 Jul 2009
 MFL001M

∨ **Working Papers** 11 Sep 2009
 MFL001WP

Planners report (116KB) 28 Jan 2009
 Record: 095023

Decision Document (2MB) 19 Jan 2012
 Record: 1214853

Section 127 Application (48MB) 20 Mar 2020
 Record: 2052760

Section 127 Decision Document (158KB) 19 May 2020
 Record: 2081126

2. Site 1: Otanerau (site 8396)

U040217 and MPE763 resource consents are part of a dual permit regime. Importantly MPE763 has not been surrendered, expired or cancelled. See *MDC Planners Report (2007)*, file number MPE763, para 5 & 6, p. 1. MPE763 was not found, but the key information is generally found in U040217.

6. To clarify, the following approvals are currently active:		
MFL446	3.25ha	Marine farm licence: for occupation, structures and activity.
U040217	7.55ha	Resource consent: for occupation, structures, activity and discharge to the coastal marine area.
MPE763	7.55ha	Marine farming permit: for activity.

Note 1: A MAF planner's report (letter dated 2 Nov 1989) implies the farm was originally established on this site under a 'temporary marine farming licence' granted to Regal Salmon Ltd. Importantly, MDC has no evidence of a vary/add/delete of a previous MFL446 consent, so the oldest active resource consent date for this site is 11 July 1990. See Table 3: Copies of active NZKS resource consents by site on the Institute's website for a copy of the 1989 planners report.

Note 2: MPE763 contains a proposed site plan (dated June 1995) building on the MFL446 consent, granted on 11 July 1990. The proposed site plan is for the creation of a 7.55ha mooring area around the salmon cages. U950635 was granted on 19 February 1996 and expired in 2004. This led to a new application and resource consent called U040217 which is active today.

3. Site 2: Ruakaka (site 8274)

(a). History of the site

1975: 'Marine farm licence MFL001 was issued to the original consent holders in October 1975. Prior to this there had been a limited amount of farming under a special marine farming permit. The licence was initially for a 0.4046ha site in Crail Bay but was then transferred to Ruakaka Bay and taken over by Regal Salmon. In October 1991 a variation to the licence extended the area to 4.50ha. The licence was issued under the Marine Farming Act 1971.

'In the following years three resource consents were issued — for extensions to the site, for structures, and for discharge of feed.

'Resource consent U950656 was for a 6.803ha extension to the licence area, to allow for an enlarged anchorage zone; this made a total site of 11.303ha.' See 2007 review of consent conditions on MFL001, completed 16 October 2007.

2011: See excerpt from *New Zealand King Salmon Report* (2011), p. 13. Retrieved 29 May 2023 from epa.govt.nz/assets/FileAPI/proposal/NSP000002/Applicants-proposal-documents/6e18a60c5b/Appendix-2-NZ-King-Salmon-Report.pdf

There are three full-time permanent employees located at Waiau.

31. Ruakaka farm:

The Ruakaka Bay farm, in Queen Charlotte Sound was established in 1985 as a small research based, one-acre farm by the South Island Salmon Partnership (the precursor to Regal Salmon). It is located on the site of the first registered mussel farm in New Zealand and still retains Marine Farm Number 1 status. Previously the South Island Salmon Partnership had operated salmon sea pens in Elie Bay however the elevated water temperature at this site meant that smolt survival was low and stock losses due to scale loss were high. The site, the oldest of NZ King Salmon's farms, is characterised by water depths of around 35m and low current flows (average mid-water flow of 3.7 cm/s). Over an annual period, water temperatures at this site range from ~11-18°C. Salmon are raised in 20 steel sea pens (20x20m) at this site. As at early 2011 the site produces some 1000 metric tonne (mt) of salmon per annum.

NZ King Salmon Report

13 August 2011

2023: NZKS has indicated in its annual report (FY2023) that results outperformed expectations (see p. 22). 'In a supplementary strategy, we have implemented a seasonal harvest, whereby we harvest smaller fish as additional volume prior to the summer months. Towards the end of FY23, we successfully completed the first seasonal harvest from Ruakaka farm in the Queen Charlotte Sound, resulting in an approximate increase of 750 tonnes of biomass' (p. 5).

(b). Resource consent history

Impact of the Aquaculture Reform (Repeals and Transitional Provisions) Act 2004 (ARA):

The ARA commenced on 1 January 2005. It granted all existing farms (as at 1 January 2005) 20-year extensions, to 31 December 2024 (see s 10 (8)). Under s 10 (9)(c) of the ARA, a 'deemed coastal permit' is to be treated as if it 'includes all the coastal permits that would otherwise have been required under section 15 of the Resource Management Act 1991 to undertake those activities to the extent that they were being undertaken at the commencement of this Act [the ARA]'.

MFL001 is a 'deemed coastal permit' under the ARA, as it was granted by the Ministry of Fisheries on 29 September 1975 and issued under the Marine Farming Act 1971 (see s 8 (1) of the ARA). Importantly, the discharge of feed and size of net pens were not specified in the original 1975 decision for MFL001.

U021247 is not a 'deemed coastal permit' under the ARA, as it was issued under the RMA, not the Marine Farming Act 1971. As a result of processes outlined in Table 4.2 it was, over time, split into two parts, both using the same reference number: U021247 granted on 12 December 2005 applied to the farm discharges, and U021247 granted on 26 November 2007 related to occupancy of the site by structures, and use of the site generally for marine farming activity. The latter, relating to occupancy and use, expired on 21 May 2021. The former, relating to discharges, seems to have been relied on for some period of time, but by 19 May 2020 both NZKS and MDC shared the view that the discharges associated with Ruakaka were not in any way governed by U021247, but rather governed by the MFL001 'deemed coastal permit'.

This means that if NZKS wanted to increase the feed discharge above the amount discharged in 2004, it needed to seek a change to MFL001 to authorise that. This has not happened.

As an example of how significant changes operate in practice, a new condition was needed to increase the overall consent area (see U200301 (granted 15 October 2020)).

U200301 was granted on 15 October 2020 'renewing U021247 in part' (see pp. 1, 10 of U200301). U200301 only concerns the anchoring structures in a 6.8 ha area and in no way authorises a discharge of feed. Therefore the consent conditions in U200301 only concern some of the anchoring structures and not the surface net pens. Those net pens are covered under MFL001. MDC explains that if NZKS could only use the smaller area of MFL001 the cages would have to be much smaller and/or anchored quite differently than they are now (personal communication with Marlborough District Council, 15 June 2023). This resource consent (U200301) does not mention any species (see for example p. 7 of U200301).

Disagreements over the maximum feed discharge limit

Institute's perspective: The limit is 1850 tonnes. As no condition existed on the maximum feed discharge under either MFL001 or U950656, the ARA reforms come into play, therefore the actual 2004 discharge prevails as the limit. This was about 1850 t in 2004 (see Cawthron Report, March 2012, Figure 2).

NZKS's perspective: The max feed discharge is 4000 t (Personal communication with NZKS, 18 August 2023).

MDC's perspective: The max feed discharge is about 2000 t. However, given the current discharge is below 2000 t (last year it was 1301 t, see Figure 17 in the SLR May 2023 report), MDC is not worried about the current situation (Personal communication with Marlborough District Council, 21 August 2023).

Table 4.2: History of Site 2: Ruakaka (site 8274) by feed discharge

Date	Permit	Event	Relevance to duration	Relevance to discharge
29 September 1975	MFL001	MFL001 issued under Marine Farming Act.		No specific approval of discharge, no specific limit on discharge
February 1996	U950656	U950656 issued under RMA, coastal permit to occupy space and disturb seabed for moorings.	Expiry date set: 24 May 2003.	No specific approval of discharge, no specific limit on discharge
3 March 1999	U980543	U980543 issued under RMA to install cages and barges of specific dimensions.	Expiry linked to U950656.	No specific approval of discharge, no specific limit on discharge
25 November 2002	U021247 (structures and discharges)	NZKS applies for consent to replace and modify U950656 and U980543. This application is for both structures and discharges.	20-year term sought. Pending determination of application, NZKS can continue to act under U950656 and U980543 (RMA, s 124).	Application requests: An allowance to discharge up to 4000 t pa. States the extant farm does not have a specified maximum discharge. Increase in area of occupation from 1.2786 ha to 2 ha.
19 March 2004	U021247 (structures and discharges)	MDC grants application, for less than NZKS sought.	To expire 15 years after the date of issue of a fisheries permit under the Fisheries Act.	MDC declines 4000 t pa allowance, and authorises discharge up to 3200 t pa. MDC declines to increase occupation area to 2 ha.
Unidentified	U021247 (structures and discharges)	NZKS appeals MDC decision.		
1 January 2005	MFL001	Aquaculture Reform (Repeals and Transitional Provisions) Act 2004 (ARA) comes into force. Under s 10(1), MFL001 is deemed to be a coastal permit.	Under s 10(8) MFL001 is due to expire on 31 December 2024.	Under s 9(c) MFL001 is to be treated as if it includes all coastal permits for discharge that would have been required under s 15, RMA to the extent those discharges were being undertaken as at 1 January 2005. For the 12 months prior to 1 January 2005 records show a discharge slightly less than 2000 t pa. NB. On 1 January 2005, NZKS was not authorised to occupy 2 ha at Ruakaka. Under U980543 and U950656 it was authorised to occupy up to 1.2786 ha within the approved 11.303 ha area.

Table 4.2: History of Site 2: Ruakaka (site 8274) by feed discharge

Date	Permit	Event	Relevance to duration	Relevance to discharge
12 December 2005	U021247 (structures and discharges)	Consent orders issued by Environment Court resolving NZKS appeal by agreement between all parties. NB. U980543 and U950656 expire, under s 124, RMA.	The consent orders replicate the MDC decision: permit expires 15 years after the date of issue of a fisheries permit under the Fisheries Act.	The consent orders provide for discharge to be increased (in stages) up to 4000 t pa. Occupation up to 2 ha.
26 November 2007	U021247 (occupancy and use)	MDC grants to NZKS a variation of conditions under s 128, RMA. NB. This splits U021247 into two approvals, both with the same reference number: in relation to discharge the 12 December 2005 U021247 provisions apply; and in relation to structures and marine farming activity, this variation on U021247 applies.	Expires on 7 May 2021. NB. Because of the splitting of U021247, this expiry applies only to the occupancy and use, not the discharge.	Condition 3 states that the current discharge permit is U021247 (meaning the 12 December 2005 permit). Condition 5 incorporates an allowance to occupy up to 2 ha.
26 November 2007	MFL001	MDC decides to vary conditions under s 10(4), ARA (review under this section being for making conditions consistent with the RMA) NB. This does not purport to be a permit for discharge. It is for 'Structures' and for 'Occupancy and Activity'.	To expire on 31 December 2024.	Condition 3 states that the current discharge permit is U021247 (meaning the 12 December 2005 permit). Condition 5 incorporates an allowance to occupy up to 2 ha.
19 May 2020	MFL001	MDC grants NZKS application to vary condition 3 on the basis that condition 3 invalidates part of the deemed coastal permit established by s 10(9)(c), ARA.		Removes from condition 3 the reference that the discharge is permitted under U021247, leaving the discharge governed by s 10(9)(c).

4. Site 4: Crail Bay (site 8515)

This is a second adjoining farm that has two overlapping consents held by different entities. Together they enable farming of a mix of species, including salmon.

Each of the two consent holders are responsible for compliance with their respective consents – Crail Bay Trust for MFL032, and NZKS for U090634 (the latter holds the consent for salmon farming). At present, the site is used solely by Crail Bay Trust and has not been used for salmon farming for many years. No monitoring reports are provided for the site.

Although MFL032 enables the farming of king salmon, the consent itself is held by Crail Bay Trust. And more importantly, MFL032 appears to be essentially worthless in terms of enabling salmon farming at the site. This is because (i) condition 3 of MFL032 says there can be no discharge of feed unless a specific coastal permit is gained for such, and (ii) when the ARA commenced on 1 January 2005 there was no salmon farming being carried out at the site. Contrast this with the Ruakaka farm, which is entitled to discharge feed under MFL001 because it was farming salmon on 1 January 2005 and thereby benefits from section 10(9)(c) of the ARA. Personal communication with Marlborough District Council, 15 June 2023.

Resource consent history can only be found in two parts: (i) www.property.marlborough.govt.nz/trim/api/trim/11257059 and (ii) www.property.marlborough.govt.nz/trim/api/trim/11258485. Personal communication with Marlborough District Council, 15 June 2023.

5. Site 5: Forsyth Bay (site 8110)

(a). MDC advised that MFL239 has not been surrendered, expired or cancelled.

(b). The Institute found the marine farm boundary area was 150 m x 450 m = 6.75 ha on p. 2 of U040412 (and MDC agrees). However, there is an inconsistency between the drawings on p. 2, with another drawing on MDC's file, which shows the boundary measuring 150 m x 400 m = 6.0 ha (see p. 24 of U040412). However, MDC considers it is sufficiently clear overall that the current consents are only for a 6.0 ha area. The Institute agrees.

(c). Permitted feed discharge can be found in MFL239 on p. 3 (out of 46). Condition 2 states that 'any feed artificially introduced into the marine farm shall comply with the terms of discharge consent U040412 and any subsequent approval thereafter'.

6. Site 7: Waihinou Bay (site 8085)

Resource consent history:

U000956 was granted on 18 October 2000, p. 11. However, we also note a second granted date of 2 December 2003 is mentioned in para 10, p. 3 of the High Court Judgement, 11 May 2012. Although the 18 October 2000 resource consent does not state a specific feed discharge condition, it does state on the front page '[t]o discharge up to 3000 metric tonnes of salmon feed annually'. U000956 expired on 31 October 2010 and has not been replaced.

MFL456 is considered a 'deemed coastal permit' under The Aquaculture Reform (Repeals and Transitional Provisions) Act 2004 (ARA) commenced on 1 January 2005. It granted all existing farms (as at 1 January 2005) a 20-year extension, to 31 December 2024 (see s 10 (8)). See Waihinou Bay High Court decision (11 May 2012) for a thorough explanation regarding the discharge consent. 'It would appear from the file that NZKS is relying on MFL456 to enable the discharge of feed at the site, much in the same way as the feed discharge is carried out at Ruakaka' (personal communication with Marlborough District Council, 15 June 2023).

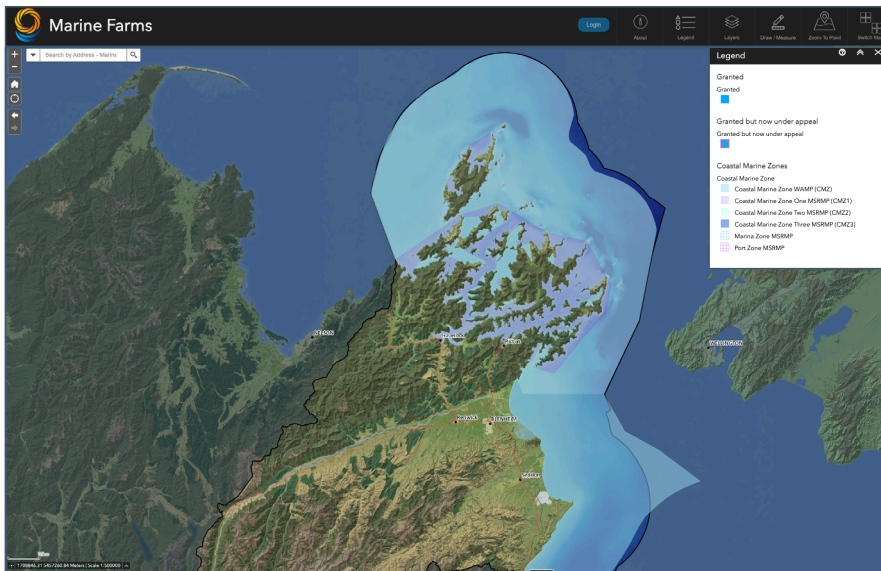
7. Site 11: Te Pangu (site 8408)

New Zealand King Salmon had asked the Marlborough District Council in 2018 to extend a farm further into the waters of Te Pangu Bay, in Tory Channel/Kura Te Au. 'To get consent for the farm, NZ King Salmon also had to ask for the marine farming zone be extended to include its farm, which required an alteration to the Marlborough Sounds Resource Management Plan. Councillors agreed to process the plan change in October 2018. The Marlborough Sounds Resource Management Plan had since been merged with two others to become the Proposed Marlborough Environment Plan, changing aquaculture rules in the region. The proposed new aquaculture rules came into effect on 2 December [2020], preventing clashes with the Government's marine farming rules, which came into effect a day earlier, but were still subject to public consultation.' NZ King Salmon withdrew its plan change request in December 2020. See Radio New Zealand (RNZ). (23 February 2021). King Salmon withdraws farm extension to 'do right' by Marlborough. Retrieved 17 April 2023 from www.rnz.co.nz/news/country/436996/king-salmon-withdraws-farm-extension-to-do-right-by-marlborough

8. Site 12: Blue Endeavour (site number to be allocated)

For 12 hectares figure for Blue Endeavour, see NZKS. (n.d.). Blue Endeavour. Retrieved 19 May 2023 from www.kingsalmon.co.nz/open-ocean-blue-endeavour/

Below is an image of all existing farms and the Blue Endeavour site, showing a range of coastal zones determined and managed by MDC. See Marlborough District Council. (n.d.). Marine Farms. Smart Maps. Retrieved 30 May 2023 from www.smartmaps.marlborough.govt.nz/smapviewer/?map=6af1f32120314f569f780dafba2647cf



9. Personal communication with Marlborough District Council, 31 May 2023. See also Marlborough District Council. (n.d.). Marine Farms. Smart Maps. Retrieved 30 May 2023 from www.smartmaps.marlborough.govt.nz

10. Before 2011 a dual permit regime was in operation, whereby a marine farm required both a resource consent from MDC (e.g. U040217) and a marine farming permit under the Fisheries Act 1983 from the Ministry of Fisheries (e.g. MPE763). The old regime prior to the RMA 1991 is explained in a Cawthron Report 1208 (2006), *Factors controlling the development of the aquaculture industry in New Zealand: legislative reform and Social Carrying Capacity* (see part 2.2).

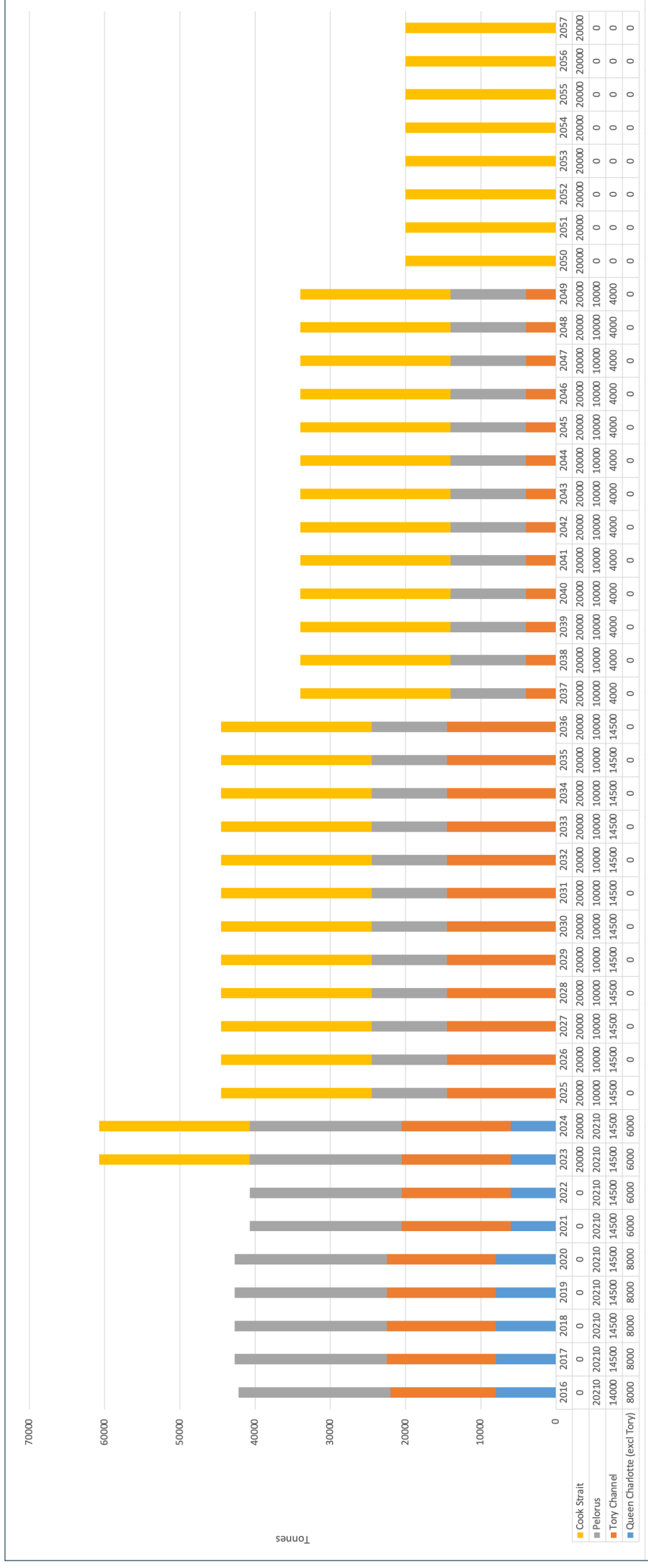
While the 2011 reforms shifted most of the management onto regional councils, any new aquaculture space requires: (i) MPI approval in the form of an aquaculture decision, known as the undue adverse effects test, and (ii) MPI to maintain a Fish Farm Register. For details on the undue adverse effects test and for registering as a marine farmer, see Ministry for Primary Industries. (n.d.). Undue adverse effects test for marine farms. Retrieved 12 June 2023 from www.mpi.govt.nz/fishing-aquaculture/aquaculture-fish-and-shellfish-farming/setting-up-a-marine-farm/undue-adverse-effects-test-for-marine-farms and Ministry for Primary Industries. (n.d.). Setting up a marine farm. Retrieved 12 June 2023 from www.mpi.govt.nz/fishing-aquaculture/aquaculture-fish-and-shellfish-farming/setting-up-a-marine-farm

Infographic 6: An overview of NZKS's operations – By the numbers, Graph 1

A. Permitted feed discharge

Graph 1. Max feed discharge permitted (by condition, or in the case of MFLO01, implied under the ARA)

Note: Ruakaka's feed discharge is shown as 2000 t for the years 2021–2024. This is due to the MFLO01 decision dated 19 May 2020, which removed U021247 as the discharge permit, leaving the discharge governed by s 10(9)(c) of the ARA. See Table 4.2 for more detail.



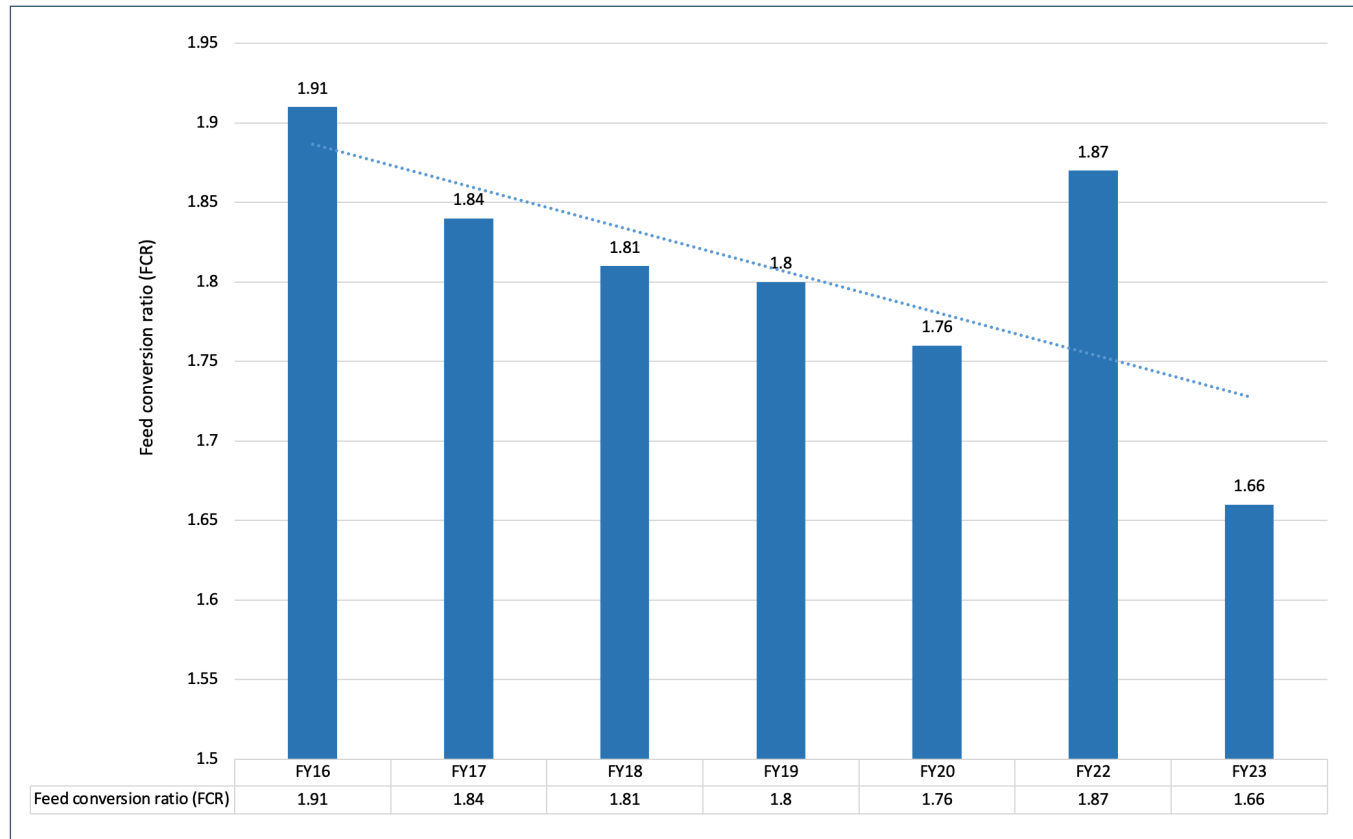
Infographic 6: An overview of NZKS's operations

– By the numbers, Graph 2

B. Feed conversion ratio

Graph 2: Feed conversion ratio (FCR) by 12-month financial year

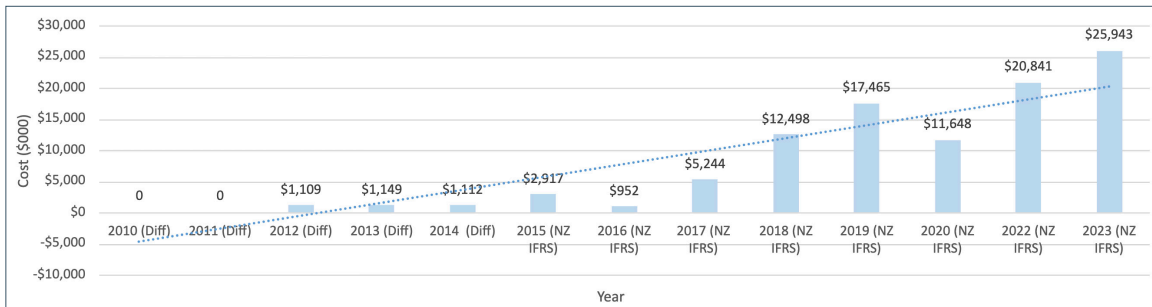
Note: 2021 was a seven-month financial year. As this is not comparable to the other financial years (i.e. 12 months), we have removed the 2021 financial year from graphs 2, 3a, 4, 8, 9, 10, 11, 12, 14, 15, 16, 17, 18 and 19 below.



Infographic 6: An overview of NZKS's operations – By the numbers, Graphs 3–4

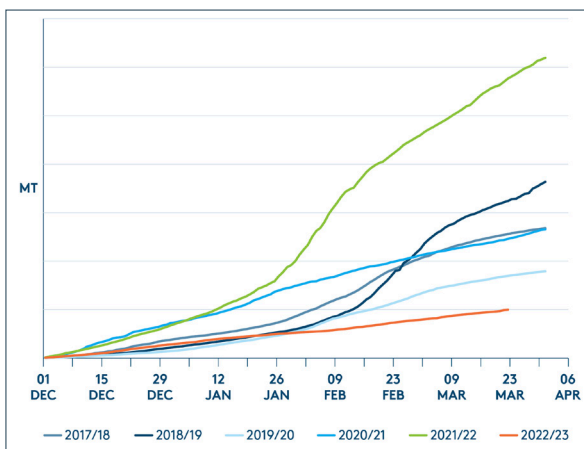
C. Mortality

Graph 3a: Fish health events (mortalities) net of insurance proceeds



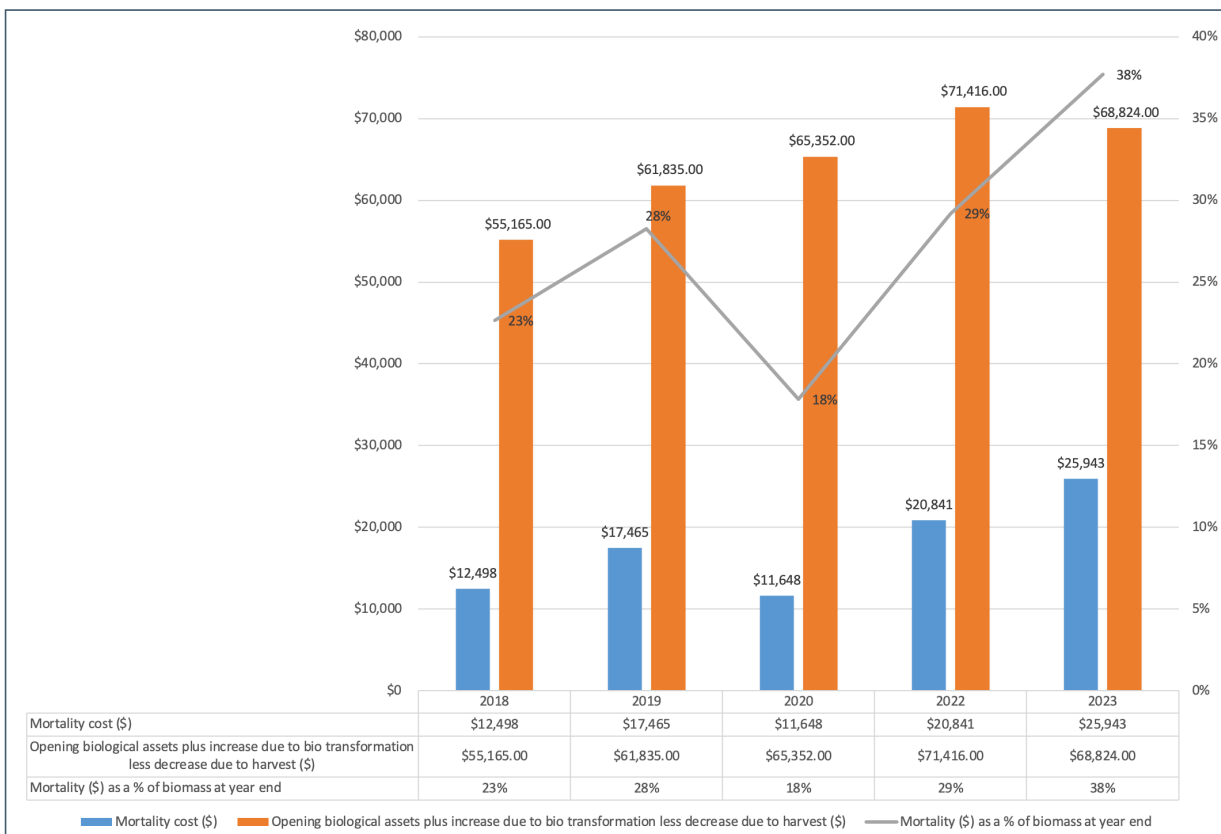
Graph 3b: Summer mortality, 2017–23

Note: This graph is found on p. 5 of the NZKS annual report FY23



Graph 4: Mortality as a percentage of biomass at year end

The percentage of mortalities is calculated by dividing mortalities into the total of (i) biological assets (opening balance), (ii) bio transformation over the 12-month period and (iii) harvest over the 12-month period.

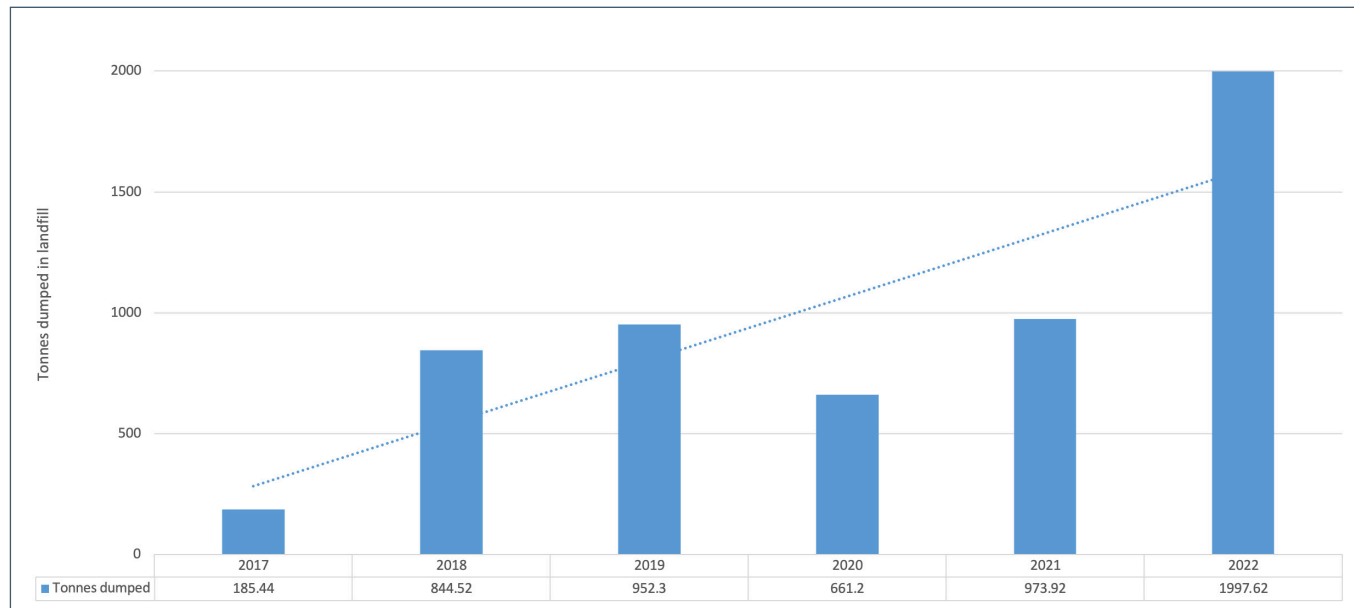


Infographic 6: An overview of NZKS's operations

– By the numbers, Graph 5

Graph 5: Salmon to Blenheim landfill by calendar year

Note: This data was provided by Ms Hanneke Kroon M.Sc.Eng (committee member of the Kenepuru and Central Sounds Residents' Organisation), who requested this data from MDC. See more detail in Graph 6.

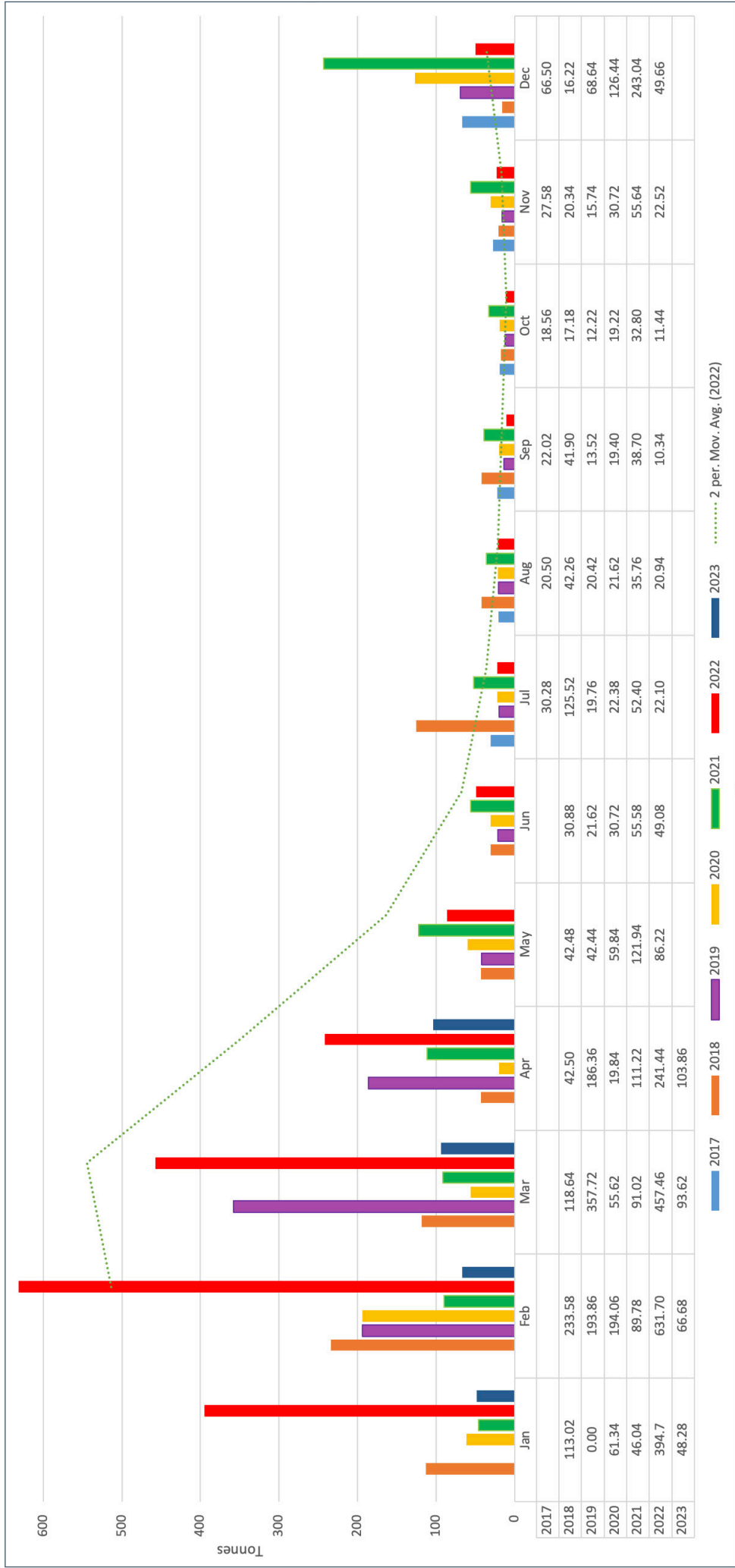


Infographic 6: An overview of NZKS's operations – By the numbers, Graph 6

D. Salmon dumped in Blenheim

Graph 6: Salmon dumped at landfill in Blenheim, July 2017–April 2023

Note: This data was provided by Ms Hanneke Kroon M.Sc.Eng (committee member of the Kenepuru and Central Sounds Residents' Organisation), who requested this data from MDC.



Infographic 6: An overview of NZKS's operations

– By the numbers, Graph 7a

Graph 7a: Comparing water temperature with cost of mortality

Note: Data supplied in Graph 7a on water temperatures is from MDC and NZKS and has been collated by Ms Hanneke Kroon M.Sc.Eng (committee member of the Kenepuru and Central Sounds Residents' Organisation). Water temperatures are at 12 selected sites close to NZKS farms (see Graphs 7b–7d overleaf) and are taken at various depths (e.g. 1.5 m and 5 m) but they are recorded at the same depth over time (see Figure 1, p. 29). This means that the number of months is out of 48, being 12 coastal water monitoring sites times four months. For example, in 2016/2017, 8 out of 48 months were above 17°C. The cost of mortality is from the NZKS annual reports (Note: 2020/2021 is a 7 month FY, see p. 6, Annual Report FY21). This graph indicates that the cost of mortality per tonne has increased significantly in the 2022/2023 year (see also Graph 3b). We are unsure why the 2017/2018 and 2018/2019 cost of mortality is so low given that the number of months above 17°C over that same time period was so high. We have assumed that it is the length of time the water exceeds 17°C that determines the tonnes and therefore the cost of mortality. However, there may be other factors at play.

The actual cause/s of fish mortalities is the responsibility of MPI. Fish mortalities fall within the remit of MPI (rather than MDC). Currently MDC does not require or collect any records concerning mortalities at any of the NZKS farms. From an 'effects' perspective under the RMA, the only MDC requirement is that the odour from the temporary storage of dead fish is managed properly; however, this condition only relates to three of the twelve farms (see condition 48 on consents U140294 (Waitata); U140295 (Kopāua/Richmond); and U140296 (Ngāmāhau)).

The 2012–2015 mortality event

An MPI Intelligence Report (MPI Technical Paper No. 2017/39) (pp. 17–18) indicated that stocking densities along with several other factors could have contributed to the unusual level of mortalities in 2015. From 2012 to 2015, only the Waihinu Bay and Forsyth Bay sites experienced periods of excessively high mortality in the summer months (February to May). MPI notes that '[d]uring the largest mortality peak at the Waihinu Bay, daily mortality rates reached over 320 deaths per 10,000 fish per day causing the overall loss of almost 70% of fish on the site'. MPI concluded:

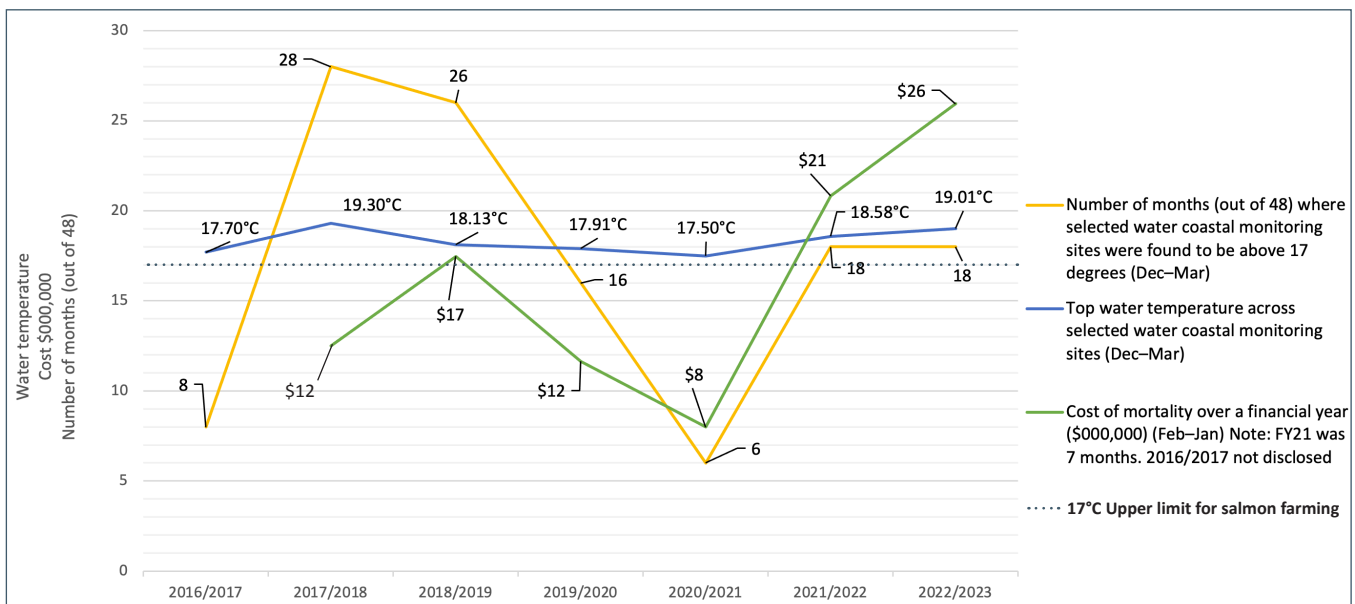
'Although the organisms isolated from moribund fish [very sick fish] have previously been associated with mortality, we cannot establish a direct causative relationship based on the historical data alone. This leads to several biologically plausible, but not mutually exclusive hypotheses:

- 1) The organisms may be acting synergistically and initial infection with *T. maritimum* may have increased susceptibility to NZ-RLOs by creating breaches in the skin barrier,
- 2) The organisms may be acting independently and only one may be responsible for the excessive mortality,
- 3) Thermal stress, nutritional stress, or stocking density may have predisposed fish to developing clinical disease following exposure to one or both organisms and/or,
- 4) The mortality was caused or enabled by other unmeasured environmental or management factors, perhaps unrelated to either organism.'

The 2018/2019, 2021/2022 and 2022/2023 mortality events

The Institute has requested further information from MPI on more recent mortalities, given the cost of mortalities as illustrated in the graph below and the mortality shown in the NZKS annual report, copied in Graph 3b: Summer mortality, 2017–23, p. 24.

Fischer, J. & Appleby, J. (May 2017). *Intelligence Report: NZ-RLO & T. maritimum 2015 response*. Ministry for Primary Industries (MPI), pp. 17–18. Retrieved 1 September 2023 from www.mpi.govt.nz/dmsdocument/18253-NZ-RLO-T-maritimum-2015-Intelligence-Report

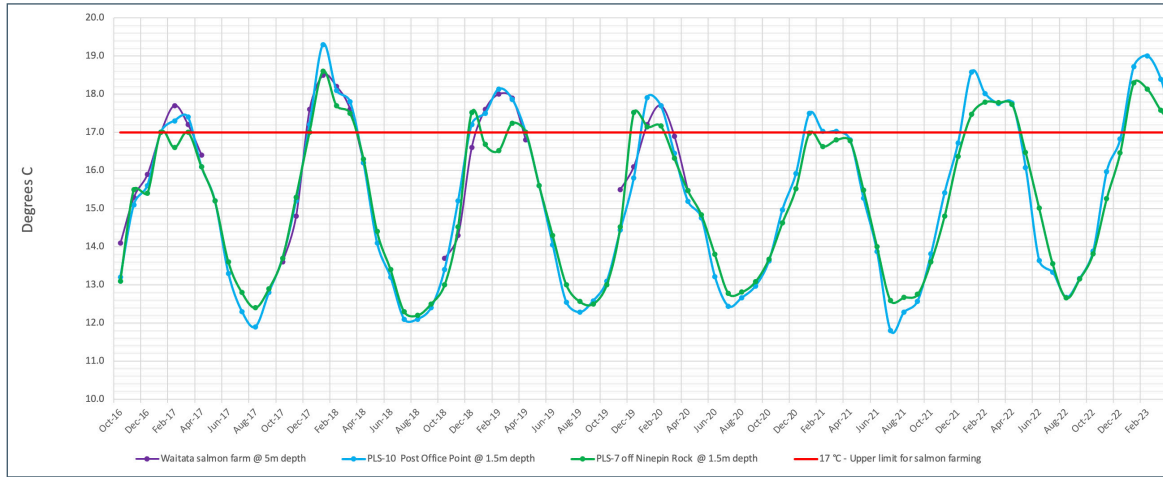


Infographic 6: An overview of NZKS's operations – By the numbers, Graphs 7b–7d

E. Temperature records close to NZKS farms

Graph 7b: Temperature, Pelorus Entrance and Waitata salmon farm, 2016–2023

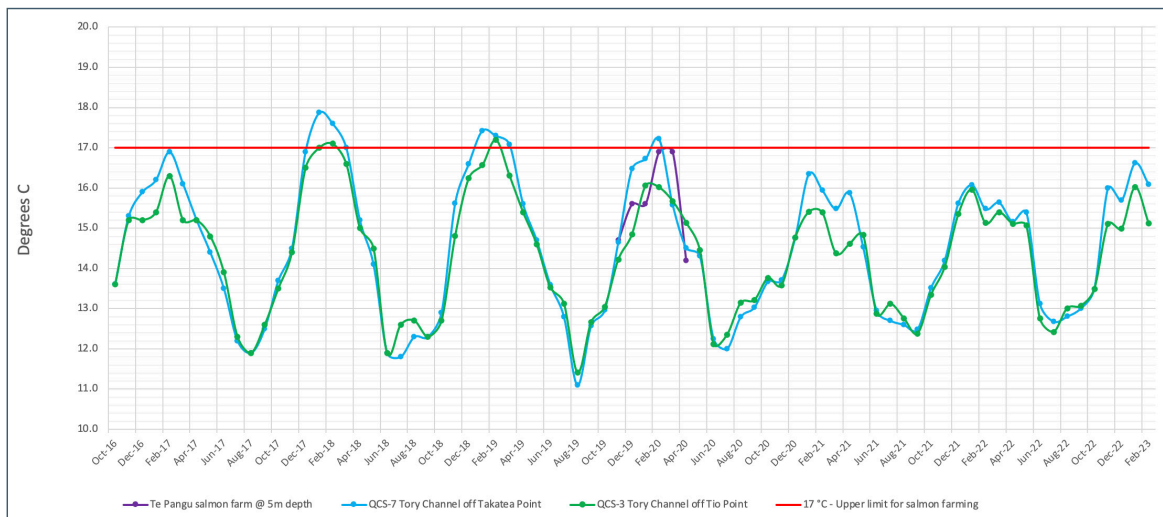
Note: Data supplied for these three figures is from MDC and NZKS and has been collated by Ms Hanneke Kroon M.Sc.Eng (committee member of the Kenepuru and Central Sounds Residents' Organisation).



Selected sites

- Waitata salmon farm @ 5m depth
- PLS-10 Post Office Point @ 1.5m depth
- PLS-7 off Ninepin Rock @ 1.5m depth

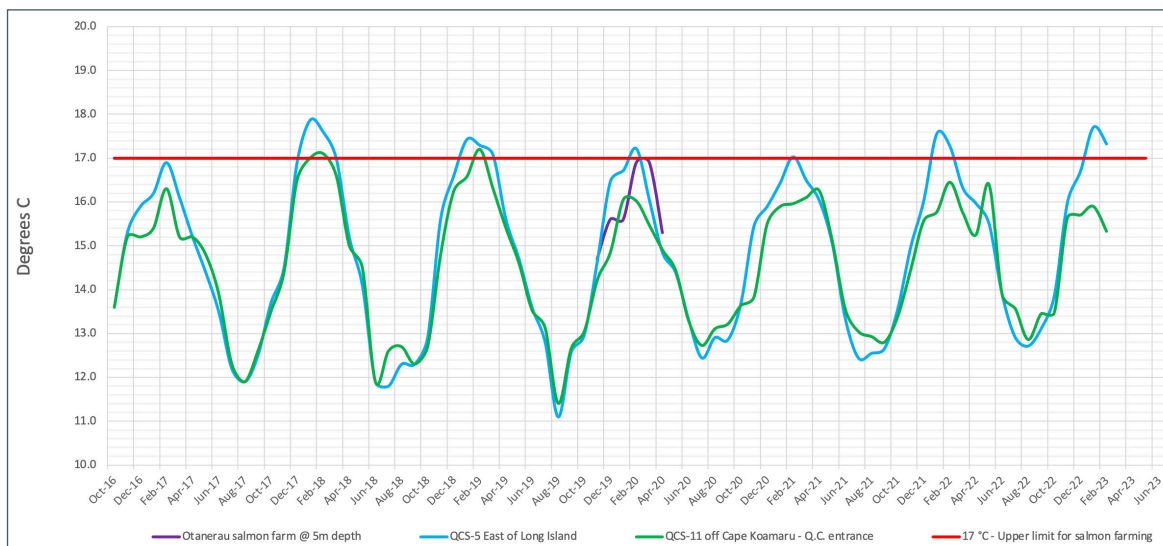
Graph 7c: Temperature, Queen Charlotte Entrance and Otanerau salmon farm, 2016–2023



Selected sites

- Otanerau salmon farm @ 5m depth
- QCS-5 East of Long Island
- QCS-11 off Cape Koamaru - Q.C. entrance

Graph 7d: Temperature, Tory Channel and Te Pangu salmon farm, 2016–2023



Selected sites

- Te Pangu salmon farm @ 5m depth
- QCS-7 Tory Channel off Takatea Point
- QCS-3 Tory Channel off Tio Point
- Waitata salmon farm @ 5m depth
- PLS-10 Post Office Point @ 1.5m depth
- PLS-7 off Ninepin Rock @ 1.5m depth

Infographic 6: An overview of NZKS's operations – By the numbers, Graph 8

Figure 1: Coastal monitoring sites

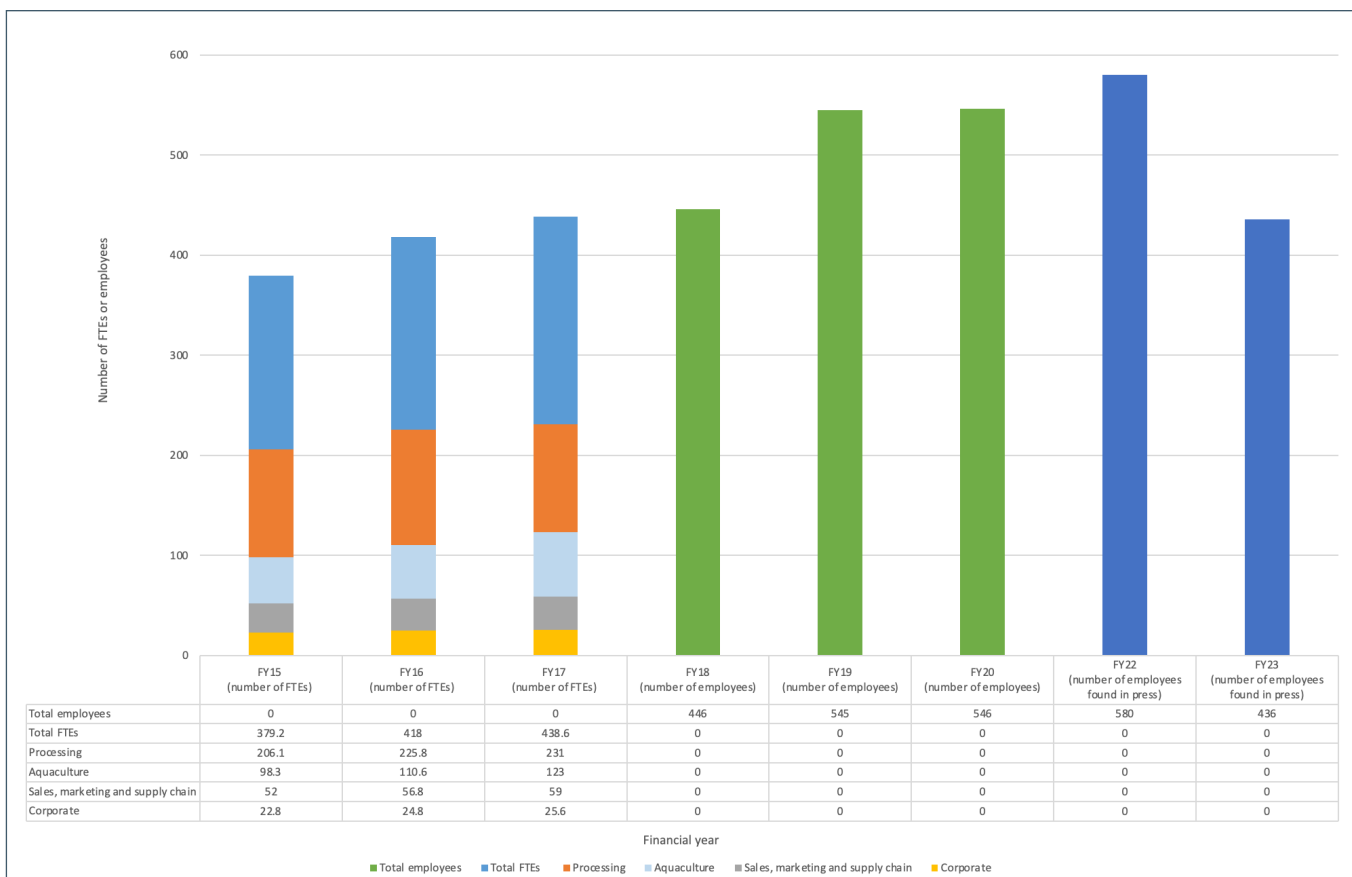
Source: MDC. Yellow stars represent water temperature monitoring sites.



F. Employment data

Graph 8: NZKS full-time equivalents or employees (FTEs) by financial year

1. FY22: Phillips, V. (24 May 2022). New Zealand King Salmon reduces workforce by 139. Stuff. Retrieved 13 June 2023 from www.stuff.co.nz/business/farming/aquaculture/128728620/new-zealand-king-salmon-reduces-workforce-by-139
2. FY23: Morrison, T. (29 March 2023). NZ King Salmon returns to profit after cutting back farms, staffing. Stuff. Retrieved 13 June 2023 from www.stuff.co.nz/business/farming/aquaculture/131633576/nz-king-salmon-returns-to-profit-after-cutting-back-farms-staffing

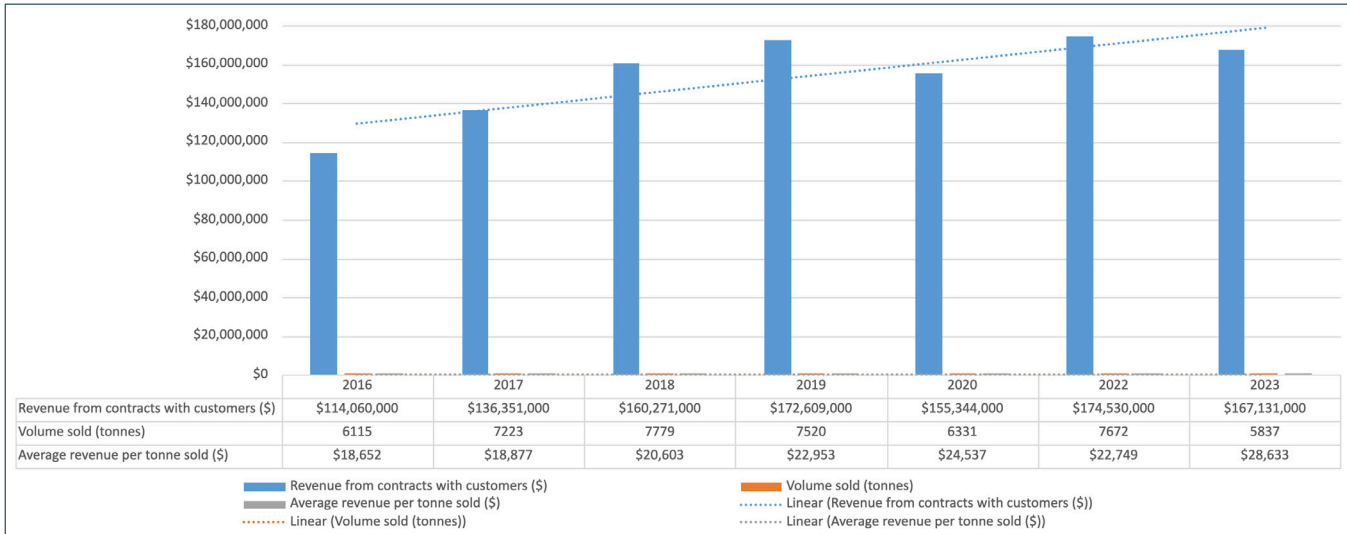


Infographic 6: An overview of NZKS's operations

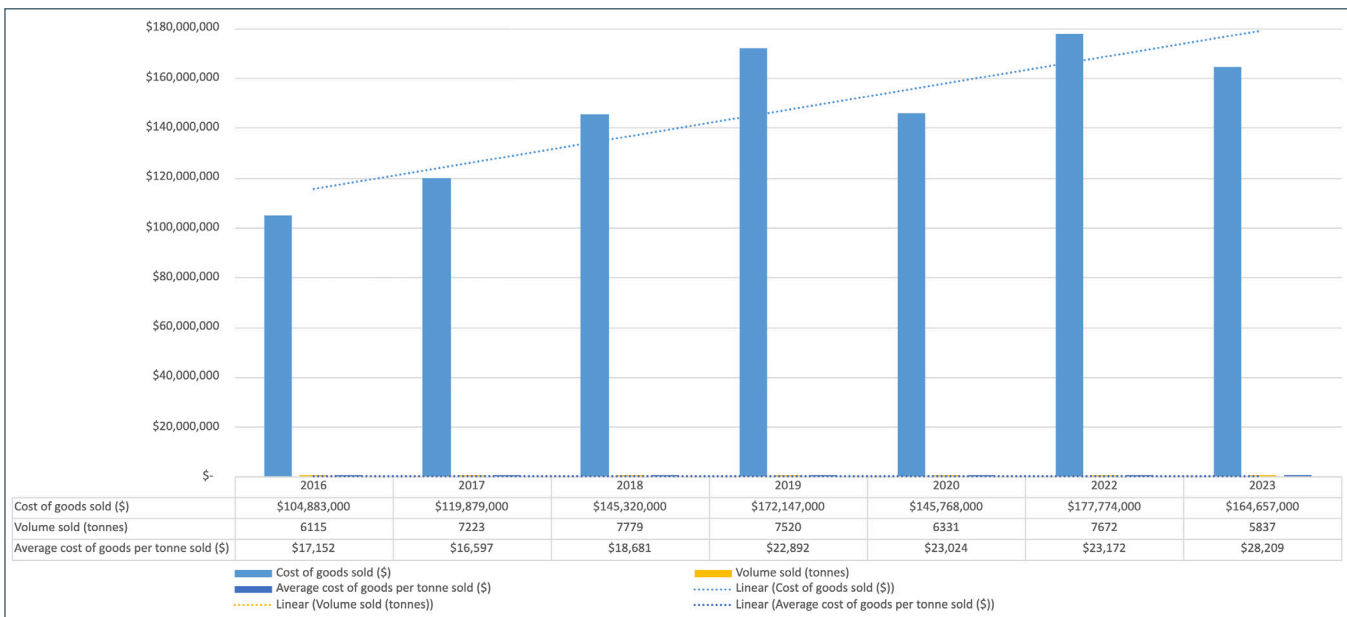
– By the numbers, Graphs 9–11

G. Statement of comprehensive income

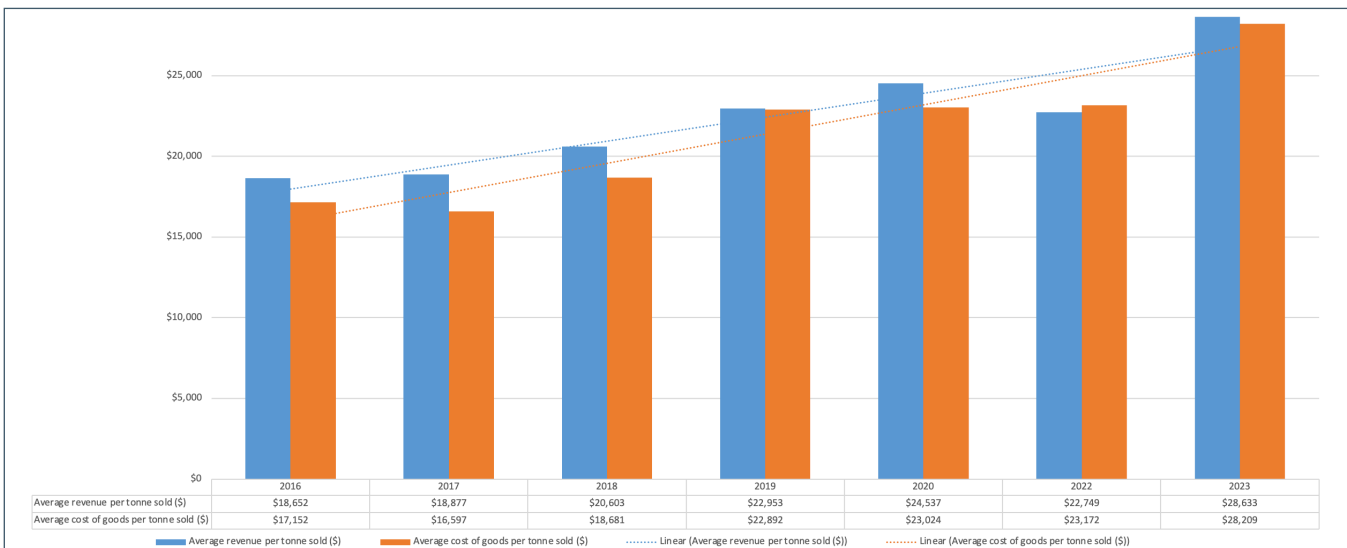
Graph 9: Average revenue per tonne sold



Graph 10: Average cost of goods sold per tonne



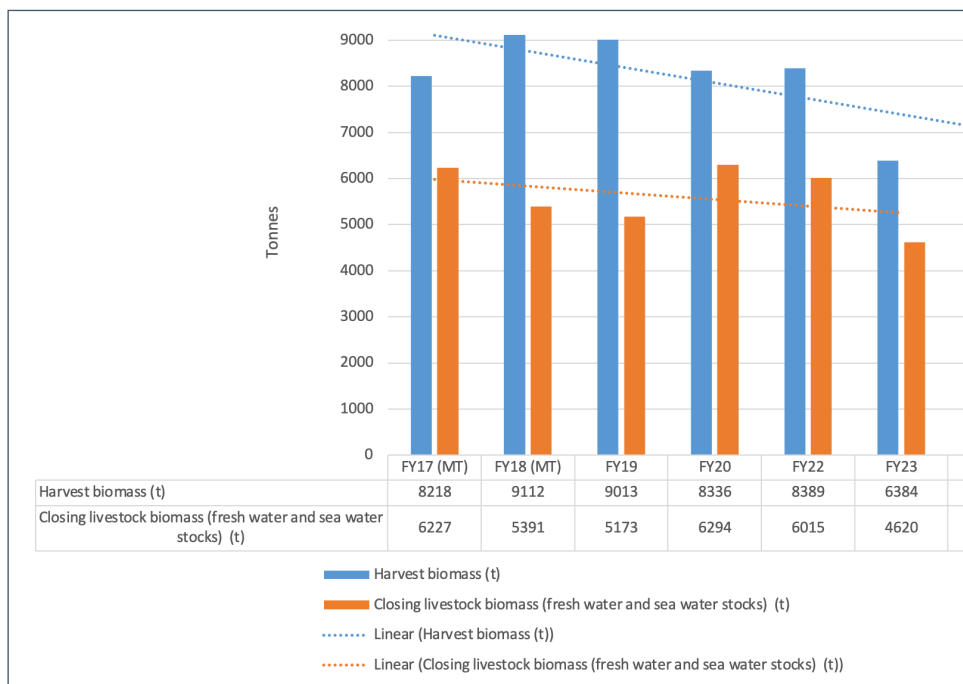
Graph 11: Average revenue and cost of goods sold per tonne



Infographic 6: An overview of NZKS's operations

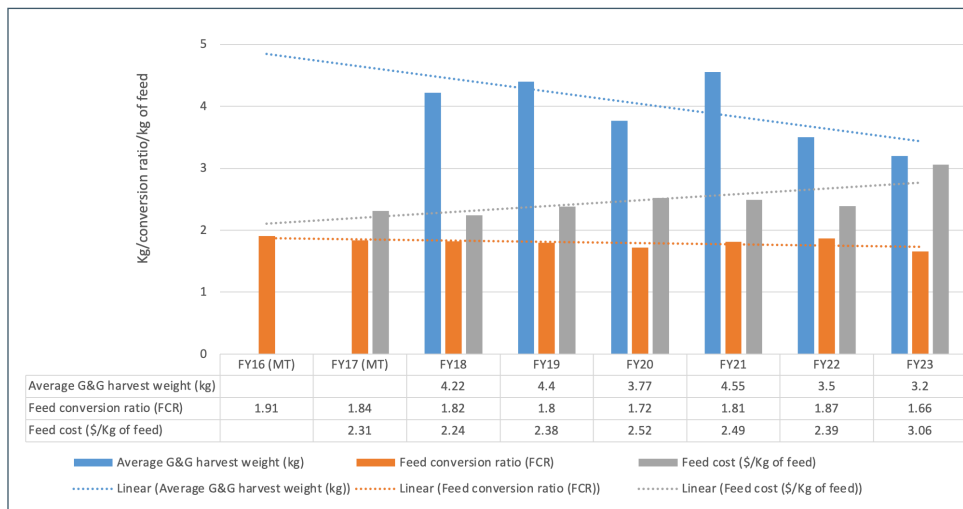
– By the numbers, Graphs 12–14

Graph 12: Harvest volumes and closing livestock biomass (fresh water and seawater)



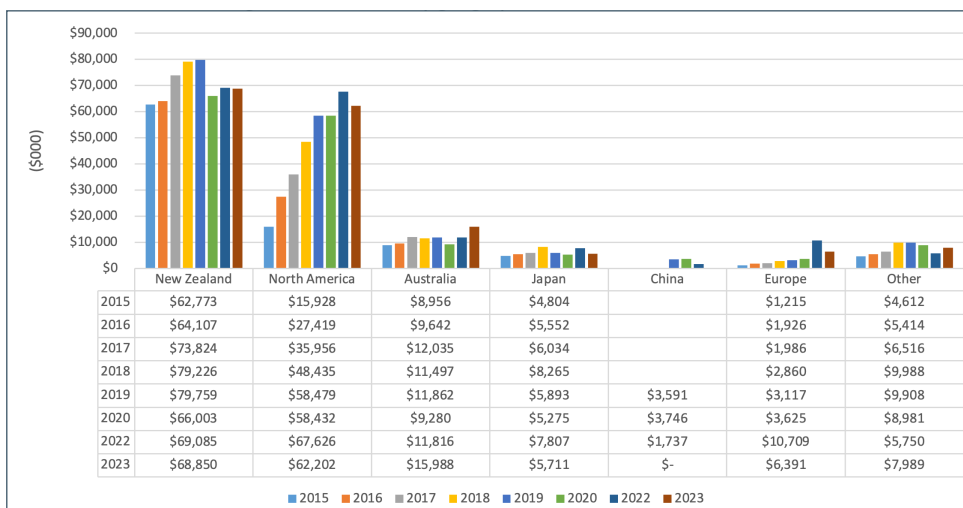
1. Restated to 12 months, 1 February to 31 January, 2022 *Investor Report*, p. 10.
2. There is a difference between the metrics contained in the FY2022 financial statements and the annual report (the management commentary). For example, the FY2022 harvest biomass volume is 8389 (t) (p. 54) while the management commentary is 7382 (t) (p. 9). Given this difference, we have opted to use the metrics contained in the financial statements.

Graph 13: Harvest weight and feed cost



1. Restated to 12 months, 1 February to 31 January, 2022 *Investor Report*, p. 10.
2. The FY2020 annual report shows the FCR as 1.76, whereas the FY2022 annual report and 2022 *Investor Report* shows 1.72. We have used 1.72.

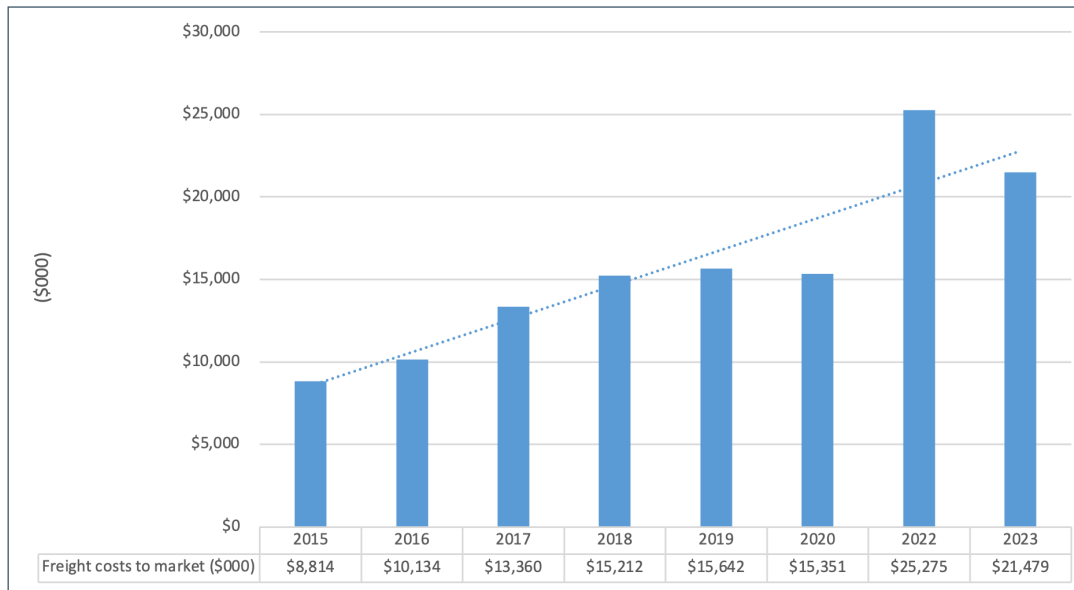
Graph 14: Revenue by geographical location of customers



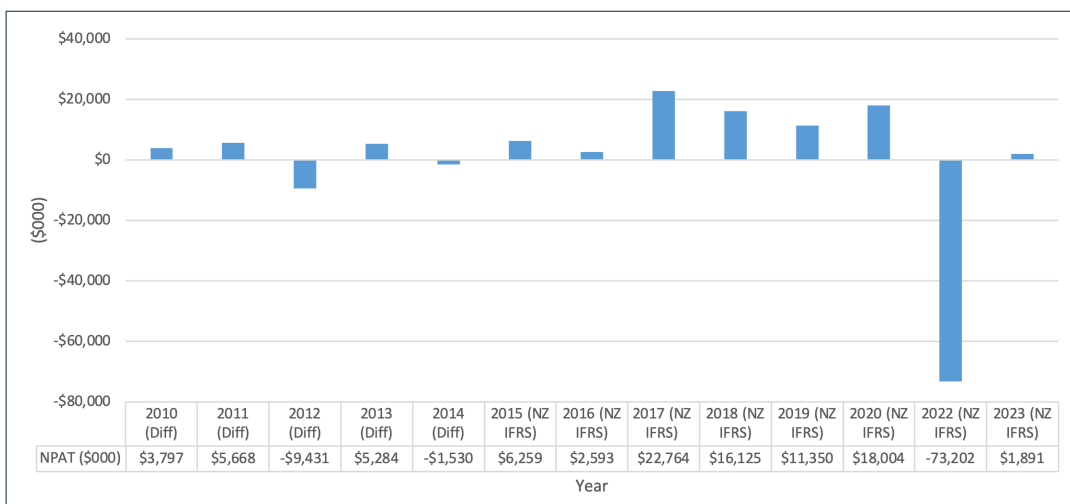
Infographic 6: An overview of NZKS's operations

– By the numbers, Graphs 15–17

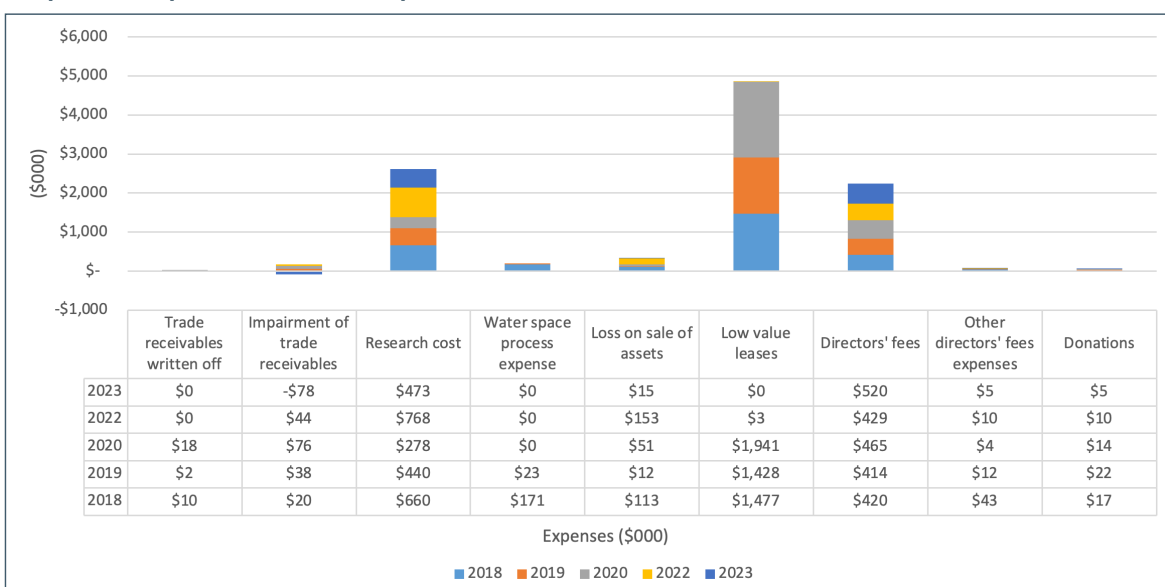
Graph 15: Freight costs to market



Graph 16: Net profit/loss after tax (NPAT/NLAT)



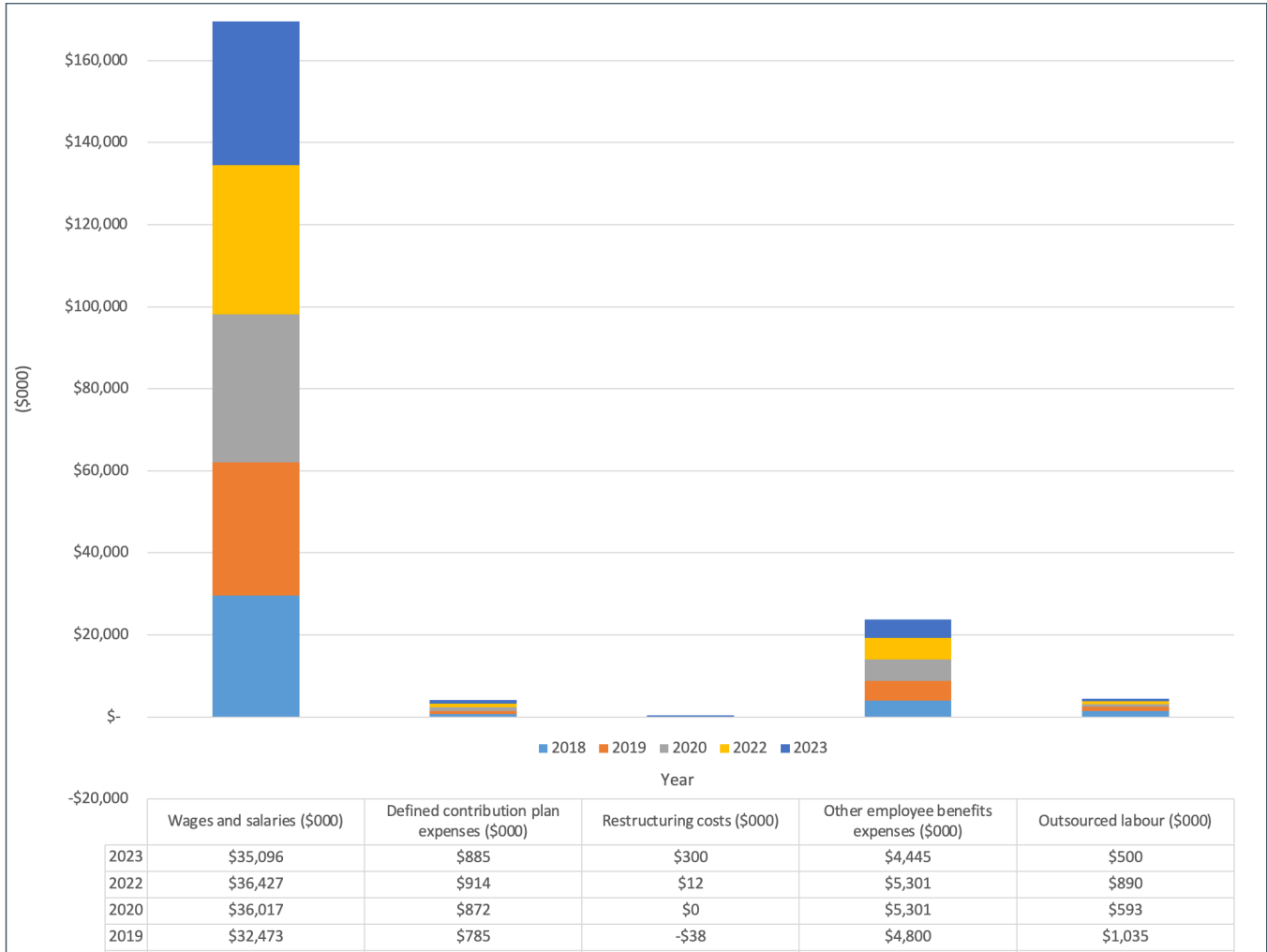
Graph 17: Corporate and other expenses



Infographic 6: An overview of NZKS's operations

– By the numbers, Graph 18

Graph 18: Employee benefit expenses

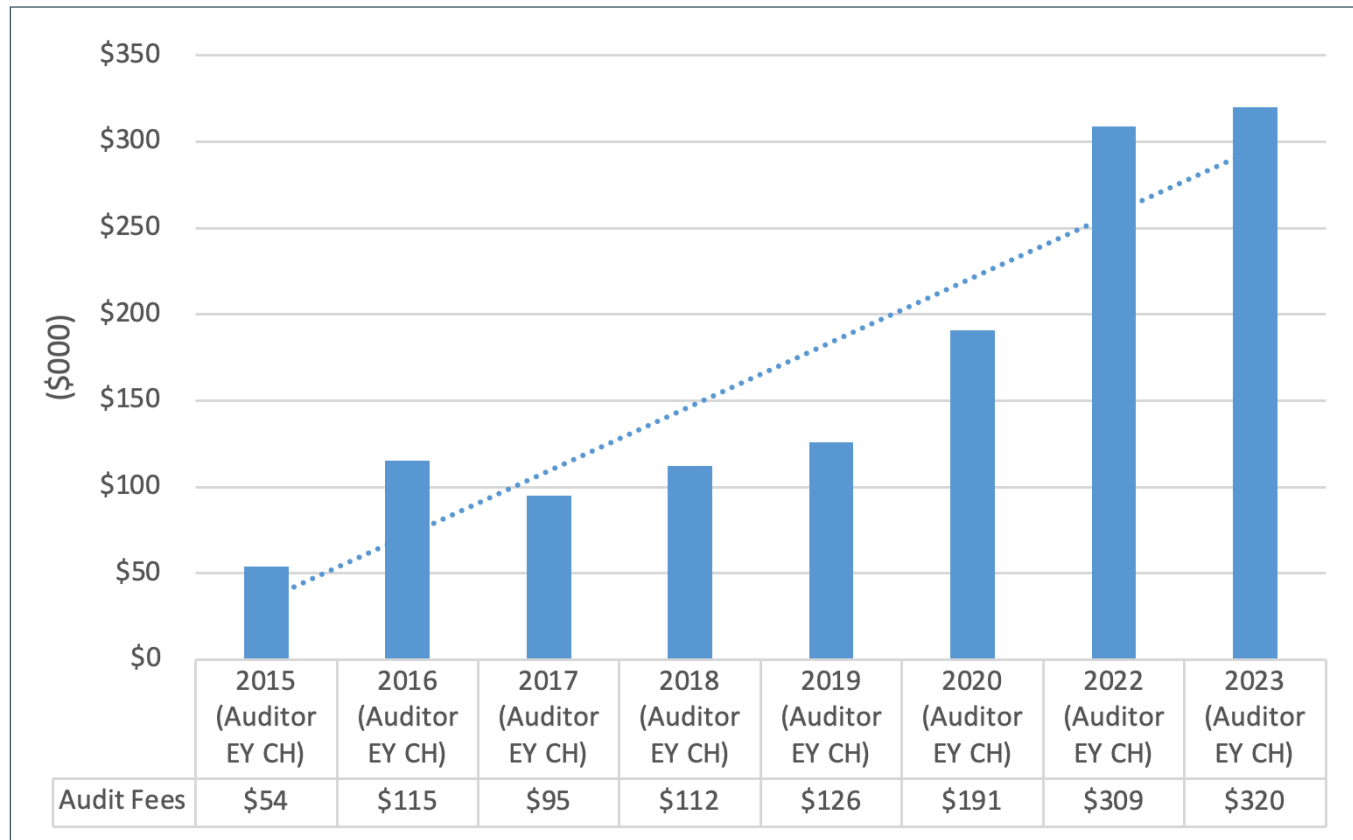


Infographic 6: An overview of NZKS's operations

– By the numbers, Graph 19

H. Audit report fees and auditor

Graph 19: Auditor fees and name of auditor

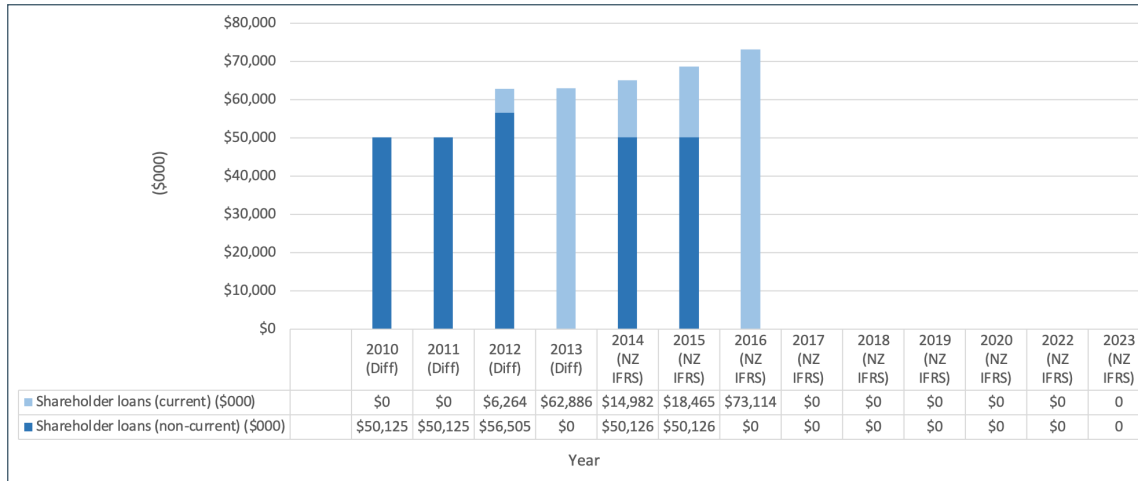


Infographic 6: An overview of NZKS's operations – By the numbers, Graphs 20–22

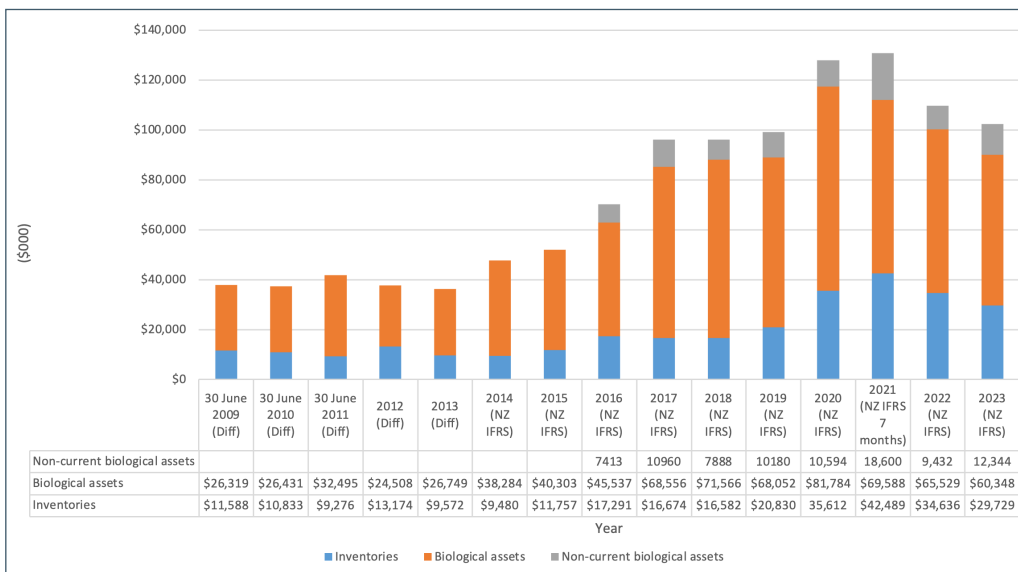
I. Statement of financial position

Graph 20: Shareholder loans

Note: See Note 28 Related Party Disclosures in the 2017 financial statements: 'On 19 September 2016, shareholder loans of \$70,202k were converted to shares with one share issued for each \$2.6058 of shareholder loan converted.'

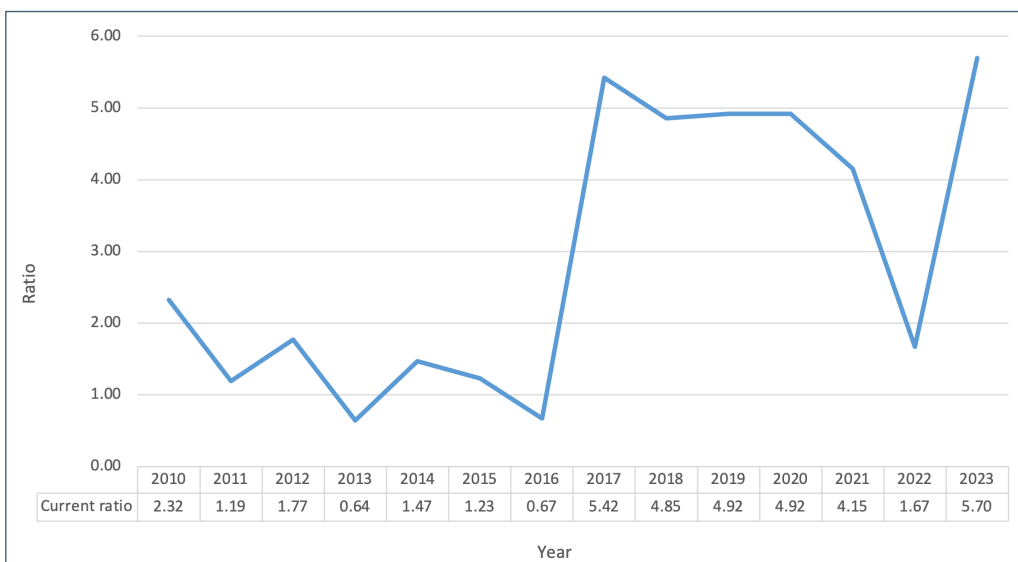


Graph 21: Inventories, biological and non-current biological assets



Graph 22: Current ratio (current assets divided by current liabilities)

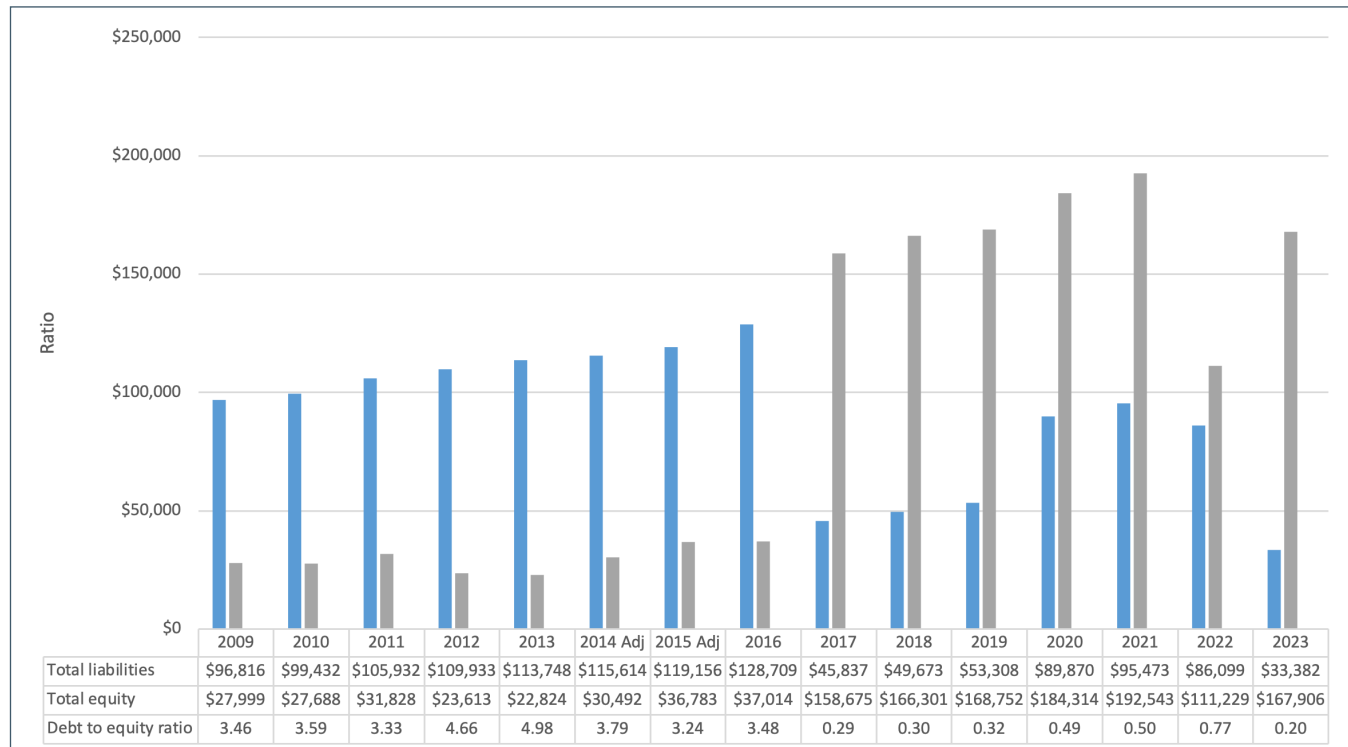
Note: This indicates the ratio is decreasing, largely due to the shareholders' loans (e.g. 2009 was better at 2.64).



Infographic 6: An overview of NZKS's operations

– By the numbers, Graph 23

Graph 23: Debt to equity ratio



Graph 24: NZX price history

Source: NZX (as at 29 August 2023)



Infographic 7 references

1. Recirculating aquaculture systems (RAS)

Mt Cook Alpine is looking to build a land-based RAS king salmon (Chinook) farm in Twizel. Mt Cook Alpine Salmon. (n.d.). Mt Cook Alpine Salmon to build innovative land-based salmon farm in Twizel region. Retrieved 12 June 2023 from www.alpinesalmon.co.nz/2022/10/13/mt-cook-alpine-salmon-to-build-innovative-land-based-salmon-farm-in-twizel-region

'Queenstown-based Mt Cook Alpine Salmon's USD 9.7 million (EUR 9.7 million) recirculating aquaculture system (RAS) project, which has received significant government financial support, aims to create a 1000 metric ton (MT) "hybrid" facility that partially emulates its existing glacial-fed canal system for farming salmon, according to a company press release.' Samoglu, E. (28 October 2022). New Zealand company planning 1,000-MT king salmon RAS. SeafoodSource. Retrieved 12 June 2023 from www.seafoodsource.com/news/premium/aquaculture/new-zealand-company-planning-1-000-metric-ton-salmon-ras

2. Flow-through systems (RTS)

(a). NIWA kingfish example

NIWA has an RTS system for kingfish: 'What we learned was that a land-based system is best at producing superior fish that could be grown sustainably and supplied all year round. Our land-based recirculating aquaculture system works a lot like an aquarium – just bigger. Up to 99 percent of the water can be recirculated and reused after being filtered and treated to eliminate any impurities. As the demand is growing for high-quality and sustainable fish, we are expanding our farm and currently building a recirculating aquaculture system that can produce 600 tonnes of Kingfish a year.' NIWA. (n.d.). Our Facilities. Retrieved 12 June 2023 from www.niwa.co.nz/aquaculture/our-services/our-facilities

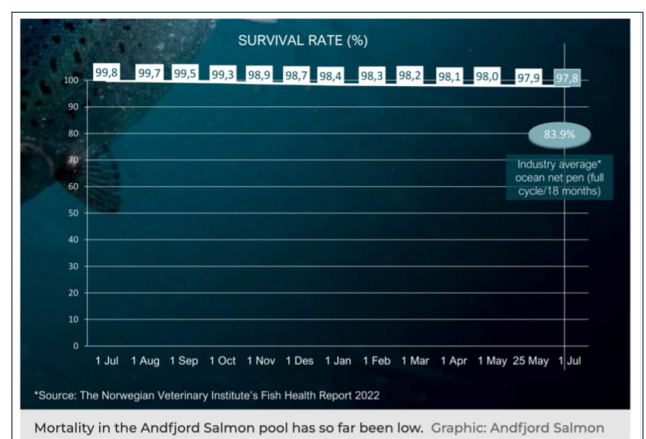
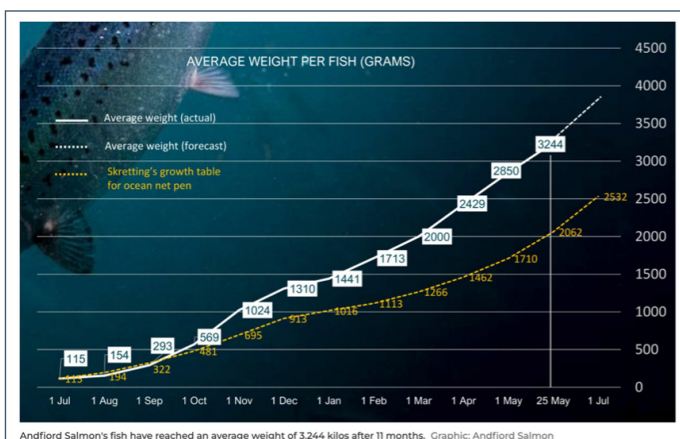
(b). RTS king salmon in Patagonia

'The first phase of Patagonia King Salmon's recirculating aquaculture system (RAS) facility has a capacity of 100 tonnes per year and will be expanded to produce 500 tonnes annually by 2024.' Fishfarmingexpert. (15 September 2021). Chilean RAS farmer making first king salmon harvest. Retrieved 12 June 2023 from www.fishfarmingexpert.com/chile-chinook-patagonia-king-salmon/chilean-ras-farmer-making-first-king-salmon-harvest/1178462

(c). RTS salmon in Norway

'As of yesterday, 24 May [2023], the average weight of the salmon in the pool at Kvalnes, in the southeast of Andøya, was 3.244 kilos after 11 months of operations. This is 40% ahead of the development stage of salmon farmed in the sea, according to a comparison with feed manufacturer Skretting's growth table for net pens.

'In its report for the first quarter of 2023, Andfjord Salmon said the growth has been achieved with an accumulated feed conversion ratio of 0.95, which means that each fish requires 0.95 kilos of feed to grow 1 kilo.



'Monthly mortality of 0.1%

'As of yesterday, the accumulated survival rate stood at 97.9%, showing a stable average mortality rate of approximately 0.1% per month. The company expects to conduct its first harvest at the turn of June/July 2023. Andfjord Salmon is in the middle of its first production cycle, which means that the company does not yet have income.

'The company made an operating loss of NOK 13.9 million (£1.02m) in Q1 2023, compared to a loss of NOK 9.9m in the same quarter last year. ... The company has the capacity to produce 1,000 gutted weight tonnes of salmon annually in the pool it currently operates and intends to excavate more pools to increase capacity to 19,000 gwt.' Fishfarmingexpert. (25 May 2023). Land-based farmer's salmon 'are 40% ahead of net pen fish'. Retrieved 12 June 2023 from www.fishfarmingexpert.com/andfjord-salmon-feed-conversion-ratio-q1-2023/land-based-farmers-salmon-are-40-ahead-of-net-pen-fish/1525433

3. **Higher sea surface temperatures and concerns over biodiversity. This is likely to mean that companies will need to revisit their social licence to operate**

(a). NZKS observations on impacts and changes in sea surface temperature over time

NZKS advised in 2016 that '[t]he optimum water temperature range for King salmon is 6-17°C, with maximum growth achieved in temperatures between 12-17°C. Rapid changes in temperature within this range can cause death, and most fish adapt to a narrow temperature and salinity range.' New Zealand King Salmon. (2016). *New Zealand King Salmon Operations Report*, p. 13. Retrieved 12 June 2023 from www.mpi.govt.nz/dmsdocument/16102-New-Zealand-King-Salmon-Operations-report

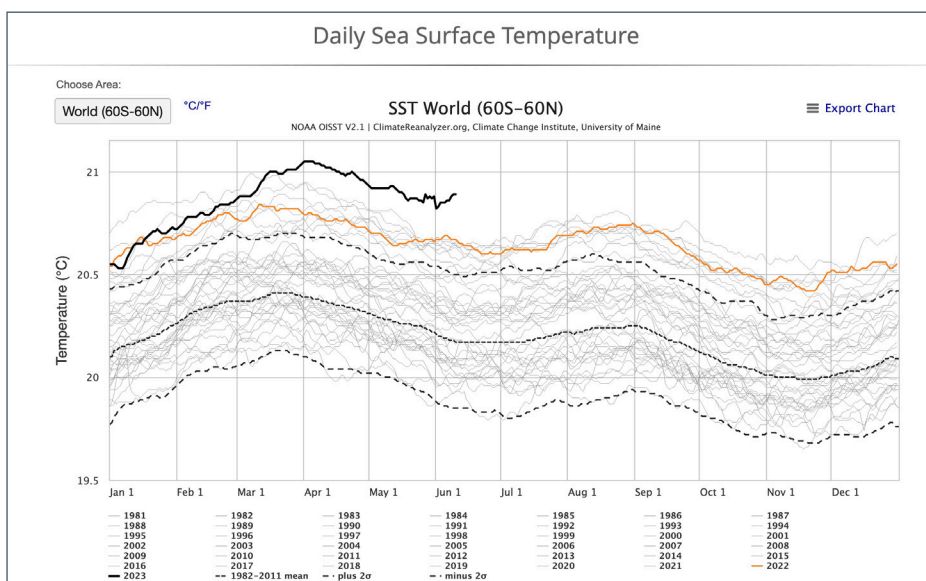
NZKS has recorded historic water temperatures which have been collated in the table below by the Institute. For the table and references see McGuinness Institute. (2022). *Discussion Paper 2022/02 – New Zealand King Salmon Case Study: A financial reporting perspective*, p. 25. Retrieved 13 June 2023 from www.mcguinnessinstitute.org/wp-content/uploads/2023/03/20230321-DP-2022-02-NZKS.pdf

Table 5: Farm site temperatures (2016 or earlier)⁵³

Farm site name	Excerpt on water temperature range
Waihinau Farm (Pelorus Sound)	'Over an annual period, water temperature generally ranges from ~12–17.5°C (but can exceed 18°C for an extended period).'
Forsyth Bay Farm (Pelorus Sound)	'Average water temperatures range from ~12–17.5°C (but can exceed 18°C for an extended period).'
Waitata Farm (Pelorus Sound, new 2013 BOI Decision)	'Water temperatures range between ~12–18.0°C.'
Kopāua Farm (Pelorus Sound, new 2013 BOI Decision)	'Water temperatures range between ~12–18.0°C.'
Ruakaka Farm (Queen Charlotte Sound)	'Water temperatures at this site generally range from ~11–18°C (however can peak at up to 20°C).'
Otanerau Farm (Queen Charlotte Sound)	'Water temperature generally ranges from ~11.5–18°C (but can exceed 18°C for an extended period), but due to the consistently higher warmer temperatures in summer at this site, salmon are only grown here for nine months of the year (April to January).'
Te Pangu Farm (Tory Channel)	'Water temperatures generally range from ~11.5–16.5 °C.'
Clay Point Farm (Tory Channel)	'It has cooler water temperatures (~10.5–16.5°C) compared to farms in Pelorus and Queen Charlotte Sounds, making this site ideal for growing salmon.'
Ngamahau Farm (Tory Channel, new 2013 BOI Decision)	'Water temperatures range between 10.5–16.5°C.'

(b). International observations on changes in sea surface temperature over time

Birkel, S. D. (2023). Daily Sea Surface Temperature. Climate Reanalyzer. Retrieved 12 June 2023 from www.climateanalyzer.org/clim/sst_daily/



4. More applications for ocean farming, and land-based farming using water from the ocean

NZKS is looking to expand fish farming further along the coast from North Marlborough to Stewart Island.

2012: Brief of evidence of Mark John Gillard in relation to site selection and consultation for the New Zealand King Salmon Co. Limited, June 2012, pp. 10–11. Retrieved 17 April 2023 from www.epa.govt.nz/assets/FileAPI/proposal/NSP000002/Evidence-Applicants-evidence/5545dd4011/2-Mark-Gillard-Site-Selection-and-Consultation-v1.pdf

Key matters for consideration in selecting possible salmon farm sites

20. Based on my experience, there are two overarching critical matters to consider in determining whether it is *feasible* to farm salmon productively:

a. The **first critical matters** are the key appraisals of the physical characteristic required for salmon to successfully grow (rather than perform poorly or possibly die). These are primarily:

- i. Water **temperature** - salmon prefer cooler waters and usually grow best in water temperatures between approximately 12 to 17°C;
- ii. Water depth - which preferably should be at least 30 metres and ideally 40 metres or more;
- iii. High current - it is generally preferable to grow salmon in areas of high current.

Water depth and current can impact on temperature, but are also important in terms of "flushing" by-products from the farm area. It is not an exact science. For example, some warm sites that are at the marginal temperature of 17°C (or even just over in the summer), can be managed if they are for example stocked at times to avoid warm temperatures especially with smolt during their first year in seawater. Our existing site at Waihinau Bay falls into this category, although we have farmed this site for over 20 years

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we do still experience difficulties with our autumn mortality event. Mr Mark Preece in his evidence explains the difficulties we experience on that site.

b. The **second critical matter** is that farms cannot be exposed to open water wave conditions - they will fail. The technology, in terms of anchoring, ability to withstand open ocean swells, storms, and to reliably service farms means they cannot be too exposed. In the future this might be technically possible and there are efforts world wide to try and develop this technology. However, it will be years away and would probably also be prohibitively expensive.

2016: Move to Tory Channel/Kura Te Au

Simpson, H. (10 May 2016). New Zealand King Salmon says failing farms should be moved to Tory Channel. Stuff. Retrieved 17 April 2023 from www.stuff.co.nz/business/farming/aquaculture/79637662/new-zealand-king-salmon-says-failing-farms-should-be-moved-to-tory-channel

2019: Move to open waters

It was reported: 'NZ King Salmon has applied for 13 research positions from North Marlborough to Stewart Island to monitor waves and currents in a bid to expand fish farming further into New Zealand's open waters. Testing had been completed on the most northern side of Cook Strait with conditions "more benign" than NZ King Salmon anticipated ... [NZ King Salmon chief executive Grant Rosewarne] said he predicted the technology to open ocean farm at "benign" sites like this one would be available ahead of obtaining the required resource consents. The technology to handle sites further down the coast, and close to Stewart Island, where weather was more challenging, was more like 10 years away, he said. ... Rosewarne said this summer had not been as hot as last, where tonnes of fish died after overheating in warmer than usual Marlborough Sounds farms. But it was still "too warm for our fish", Rosewarne said. Anything above 16 degrees Celsius could be a problem.' Angeloni, A. (8 April 2019). NZKS to test waters down SI's east coast after Cook Strait trial. Stuff. Retrieved 17 April 2023 from www.stuff.co.nz/business/109625032/nzks-to-test-waters-down-sis-east-coast-after-cook-strait-trial

Home > Database search > Resource Management Act (RMA) applications

New Zealand King Salmon offshore monitoring sites - call in request

Proposal overview ×

Proposal number: NSP000043

Proposal name: New Zealand King Salmon offshore monitoring sites - call in request

Primary organisation: New Zealand King Salmon Company

Proposal type: Resource consent application

Proposal state: Lodgement

Application decision: Decision not yet made

Date decision notified:

Proposal description: New Zealand King Salmon (NZKS) have applied for resource consents for coastal permits, for the monitoring of offshore sites within the Coastal Marine Area (CMA) within Marlborough District Council and Southland Regional Council. Both councils have requested that the Minister of Conservation call in these applications from NZKS as a National Significant Proposal. NZKS lodged similar applications with the Canterbury and Otago Regional Councils.

Latest website update on proposal:

Source: EPA. (nd.). New Zealand King Salmon offshore monitoring sites - call in request. Retrieved 19 June 2023 from [epa.govt.nz/database-search/rma-applications/view/NSP000043](https://www.epa.govt.nz/database-search/rma-applications/view/NSP000043)

The New Zealand King Salmon (NZKS) salmon farm north of Cape Lambert, Marlborough

Proposal overview ×

Proposal number: NSP000044

Proposal name: The New Zealand King Salmon (NZKS) salmon farm north of Cape Lambert, Marlborough

Primary organisation: New Zealand King Salmon Company

Proposal type: Resource consent application

Proposal state: Proposal Close-Out

Application decision: Decision to be made by Local Authority

Date decision notified:

Proposal description: The New Zealand King Salmon Co. Limited (NZKS) has lodged a resource consent application with Marlborough District Council (U190438) to establish and operate salmon farms within a 1,792 hectare site (approximately 3.3km wide by 5.4km long) located between 6 km and 12 km due north of Cape Lambert, Marlborough. Two blocks of pens are proposed within the application area. The development of the site will be staged. The Minister of Conservation received correspondence from Friends of Nelson Haven, Kenepuru and Central Sounds Residents Association, Marlborough Environment Centre and Guardians of the Sounds regarding the resource consent application lodged by NZKS (the applicant) to establish and operate a salmon farm north of Cape Lambert, Marlborough, asking the Minister to call in the matter under section 142 of the Resource Management Act 1991 (RMA). The Minister has the power under section 142 of RMA to make a direction to call in the application on the Minister's own initiative or at the request of the applicant or the local authority.

Latest website update on proposal:

Source: EPA. (nd.). The New Zealand King Salmon (NZKS) salmon farm north of Cape Lambert, Marlborough. Retrieved 19 June 2023 from www.epa.govt.nz/database-search/rma-applications/view/NSP000044

2023: NZKS 14 June AGM

At the AGM, the acting Chairman, Paul Steere, noted that: 'Blue Endeavour was the largest, most expensive application under the RMA ever in any form of NZ Aquaculture.

It was first lodged in July 2019 after some 18 months of preparatory work by your company in scoping the needs, monitoring the proposed and other possible sites for their conditions and suitability, studying the technology already being used in the northern hemisphere and engaging with interested 3rd parties both supportive and some, maybe a little concerned.

The three learned Commissioners appointed by the Marlborough District Council called for public submissions on the 18th October 2019 – 56 were received, of which 39 supported the application, 14 were opposed and 3 neutral.

The commissioners had 5 periods of meetings totalling 11 days – a significant amount of work was done by correspondence between the commission with the parties involved. Some 26 witnesses gave evidence from the company and of the submitters, 26 also gave evidence, as did 9 council officers. We are very grateful to the company team, especially to Grant, Mark Preece, Mark Gillard and Zac Waddington plus the legal team of Gascoigne Wicks led by Quentin Davis, for their combined diligence, application and aptitude in seeing this through to a positive conclusion.

Approval of the application was released by the commissioners on behalf of the Council on the 10th of November 2022 – the decision runs to 199 pages including appendices.

So over 5 years in the making, \$7million in fees and research by your company to say nothing of the distraction from the teams day jobs, and subject to the formal lodgement, we now have the resource consent for two farms under acceptable conditions, within an area of 1,000 hectares just 5km north of point Lambert in the north Marlborough Sounds.'

At the AGM, the acting Chief Executive, Graeme Tregidga, noted that 'Blue Endeavour has the potential to add up to 10,000MT of harvest volume in conjunction with our nursery sites when fully developed' [and] 'Future full capacity of existing sites plus a fully developed Blue Endeavour is ~17,000MT.'

NZKS. (14 June 2023). New Zealand King Salmon Investments Limited Annual Shareholders' Meeting – Chair and CEO's Address. Retrieved 19 June 2023 from www.nzx.com/announcements/413033 See also NZKS. (14 June 2023). New Zealand King Salmon Investments Limited Annual Shareholders' Meeting – Presentation. Retrieved 19 June 2023 from www.nzx.com/announcements/413033

5. **More compliance costs for marine-based farming**

The MDC can recover direct costs of compliance from marine farms. There are 4.5 FTE compliance officers in the MDC compliance monitoring team. Officers' roles are varied and there is not one dedicated marine compliance officer as workloads change with demand at different times of the year. Compliance officers come from a range of backgrounds with qualifications in a number of different disciplines including legal, enforcement and science. All compliance officers are trained in local government compliance monitoring. When specific science knowledge is required Council calls on marine scientists to provide technical advice to compliance officers. Compliance charges recovered for marine finfish farming are as follows: 1 Jan–31 Dec 2020: \$7422.50; 1 Jan–31 Dec 2021: \$7101.75 and 1 Jan–31 Dec 2022: \$9015.47. Personal communication with Marlborough District Council, 26 May 2023.

6. **Coastal charges/resource rent tax applied uniformly across all marine-based farms**

Currently NZKS, or indeed any other finfish farmers, are not charged by councils for occupying public water space. MDC did attempt to implement a charging system. However, NZKS 'successfully challenged the Marlborough District Council's proposal to charge companies for occupying coastal waters for finfish farming. The Environmental Protection Authority's Board of Inquiry has determined the council cannot introduce new coastal charges on finfish farmers at this point in the process examining King Salmon's application to farm in areas of the Marlborough Sounds where marine farming is prohibited. King Salmon has indicated to the Marlborough Express, however, that it will consider paying charges under certain conditions'. Bell, C. (13 April 2012). EPA knocks back fish farm charge. Stuff. Retrieved 17 April 2023 from www.stuff.co.nz/marlborough-express/news/salmon-farms/6636530/EPA-knocks-back-fish-farm-charge

In 2014 the MDC prepared a report: *Reviewing Marlborough's Regional Policy Statement and Resource Management Plans* (1 July 2014). The level of proposed charges were very low. Of note, the intention was that the actual charges would reside within the Annual Plan rather than in the plan (see p. 6).

In 2021:

The potential delivery of government intervention in the aquaculture space is discussed in para. 221 of the MPI report *Open Ocean Salmon Farming in New Zealand* (October 2021). Retrieved 30 June 2023 from www.mpi.govt.nz/dmsdocument/50131-Open-Ocean-Salmon-Farming-in-New-Zealand-Aquaculture-Strategy

The report notes on p. 56:

Para. 221: Any changes from the RMA reform and/or the work being undertaken by the Ministry on resource consenting that might impact on the interface between government, in its widest sense and participants is unlikely to warrant the establishment of new entity. However, there are some options for changes that will involve new activities. For example, there are options for how consented water space might be allocated to participants and charges levied for access to water space.

In June 2023:

MDC has sought to impose coastal occupation charges through the Proposed Marlborough Environment Plan (PMEP). The PMEP is in progress, see in particular policies 13.20.4–13.20.8 and methods 13.M.33 and 13.M.34 in the Coastal Environment chapter. Retrieved 30 June 2023 from www.marlborough.govt.nz

Personal communication with Marlborough District Council, 27 June 2023.

Resource rent tax on aquaculture (Norway)

The production/use of natural resources can sometimes generate a high return through using a public area. This is often referred to as resource rent. A resource rent tax on aquaculture recognises that the public are disadvantaged through the exploitation of water spaces (through, for instance, visual or environmental pollution). By introducing a resource rent tax, a government can return the benefit to the public, often through distributing a share of the tax take to both the state and the local community.

'The rationale behind the new tax is based on the sector's use of public resources, and already applies to sectors such as hydroelectric power stations that profit from state assets. Previously proposed in 2019, it is back on the agenda following the rise in the costs of the provision of public services that is affecting all of Europe as a result of the Russia-Ukraine war.

'Municipalities close to the farms are likely to benefit the most, as Norway's Finance Ministry explained in a statement. "A key element of the proposal is that the local communities which make natural resources available should be guaranteed a share of the resource rent. The tax revenues are estimated to be between NOK 3.65 and 3.8 billion [\$347 million to 361 million] and the government is planning for half of this to go to the municipal sector."

'The government said those farms operating under the development licence initiative, which are testing new technology, will be immune from the new resource rent tax.'

TheFishSite. (28 September 2022). Norway moots 40 percent tax for the country's largest trout and salmon farms. Retrieved 14 June 2023 from www.thefishsite.com/articles/norway-moots-40-percent-tax-for-the-countrys-largest-trout-and-salmon-farms

'The Norwegian Parliament has passed an additional resource rent tax on aquaculture in Norway, with a tax rate of 25%. This is in addition to the regular corporate tax and means that the marginal tax rate on aquaculture will increase by over 100%, from 22% to 47%. The new tax will apply retroactively from January 1, 2023, and is being implemented without the involvement of stakeholders and broad political consensus that traditionally characterize major changes in the tax system and framework for Norwegian businesses.' SalMar. (31 May 2023). SalMar – Resource rent tax on aquaculture in Norway. Retrieved 14 June 2023 from www.globenewswire.com/news-release/2023/05/31/2679636/0/en/SalMar-Resource-rent-tax-on-aquaculture-in-Norway.html

7. Feed costs and supply issues increase, solution is to produce feed in New Zealand

2012: Statement of Evidence of Ben Armour Wybourne in relation to feed discharge for the New Zealand King Salmon Co. Limited, June 2012, pp. 12–13. Retrieved 2 June 2023 from www.epa.govt.nz/assets/FileAPI/proposal/NSP000002/Evidence-Applicants-evidence/7256335586/15-Ben-Wybourne-Salmon-Feed-v1.pdf

Summary of Ingredients Used in NZ King Salmon Diets	
<i>Protein Sources</i>	
38.	The proteins contained in fish food are a mixture of fishmeal, land animal proteins and vegetable proteins.
39.	Fish require an appropriate mix of digestible amino acids (the building blocks of protein) as opposed to raw protein material (such as fishmeal) <i>per se</i> . The same necessary mix of amino acids can derive from various combinations of different raw materials. Understanding the amino acid availability from specific raw materials is an important topic of research at fish feed companies.
40.	The choice of protein source varies with cost and availability, and within Skretting this varies around the world according to local conditions. Protein in New Zealand diets supplied from Skretting Australia typically derives from: <ol style="list-style-type: none"> Fishmeal; primarily Peruvian anchovy Poultry meals (bloodmeal, meatmeal, feathermeal); these rendered products are a by-product of poultry slaughtered for human consumption in Australia. These products are excellent nutritional materials for carnivorous fish. Mammalian meals; these rendered products are a by-product of cattle, sheep and pigs slaughtered for human consumption in Australia. Currently only mammalian bloodmeal (and not mammalian meatmeal) is included in New Zealand diets due to New Zealand import restrictions. Plant protein meals; Fabia bean meal, lupin meal, corn gluten, wheat gluten and soya protein concentrate
41.	Concerns around the presence of antibiotics and banned substances (e.g. growth hormones) in poultry products included in salmon diets have been raised.
	<ol style="list-style-type: none"> Poultry by-products used in NZ King Salmon diets derive from poultry slaughtered for human consumption in Australia. As such they are subject to strict controls on residues and a comprehensive residue monitoring program. For example, the Australian Government's National Residue Survey (NRS) for 2009-10 tested 330 commercial poultry samples (9570 analyses) and found no residues (including antibiotics) or environmental contaminants above the Limits of Reporting for products for human consumption.
<i>Oils</i>	
42.	It was traditionally thought that fish required fish oil. We now understand that fish have a digestible fatty acid requirement that can be met from a variety of oil sources. Fish oil is still used extensively in salmon diets, but primarily to introduce long chain omega-3 fatty acids (mostly EPA and DHA) into the salmon fillet. The fatty acid composition of a salmon fillet is strongly influenced (and to an extent mirrors) the fatty acid composition of the diet. At present fish oil is the only practical source of EPA and DHA.
43.	Fish oil is a by-product of fishmeal production, although now is considered a valuable commodity in its own right
44.	Poultry oil, a by-product of poultry slaughtered for human consumption, is used to replace fish oil in New Zealand salmon diets. This poultry oil is sourced from Australian poultry. Poultry oil acts as an energy source for the fish and has the same saturated fat content as fish oil.
45.	The principal reason poultry oil is used in New Zealand is because of price and quality. In both Australasia and North America poultry oil is less expensive than the available vegetable oils. In some parts of the

2023: 'Significant increases in feed prices throughout FY23 due to raw materials constraints (impact of global pandemic and Russian/Ukraine war)'. NZKS. (n.d.). *New Zealand King Salmon Annual Report FY23*, p. 10. Retrieved 17 April 2023 from www.kingsalmon.co.nz/wp-content/uploads/2023/03/NZKS-Annual-Report-FY2023.pdf

8. Cost of salmon farming infrastructure increase

The October 2021 report *Open Ocean Salmon Farming in New Zealand* begins by quoting the *Salmon Farming Industry Handbook 2021*: 'The salmon farming industry is capital-intensive and volatile. This is a result of a long production cycle, a fragmented industry, market conditions and a biological production process which is affected by many external factors.'

The report notes on p. 31:

Para 195: The cost of establishing an entire value chain for an open ocean salmon farm will be considerable. Preliminary analysis prepared by MPI suggests that the cost of consenting, onshore facilities and plant (hatchery and processing plant) and offshore infrastructure (pens) and supporting assets (vessels etc.) for an operation that can produce 10,000 tonnes of salmon per annum could be \$150 million or more. In addition, there will be operating losses that will need to be financed in the initial years as production increases. Smolt will need to be produced, salmon grown to market weight and marketing and market development undertaken before there is revenue of any substance.

Para 203: Findings from the analysis include:

The total capital required to finance the purchase/construction of assets and to finance initial operating losses could be in the region of \$250 million.

It could be seven years from the start of the consenting process to the first year of positive operating cash flow. The projected price per kilogram received from export sales is derived by escalating the current average export revenue per kilogram of \$21.50. The projections are sensitive to the assumed escalation rate.

Revenue in the first year that full production (10,000 tonnes) is available for sale is approximately \$285 million. Another four to five farms of the same size (five to six in total) and developed at the same time will be required to achieve industry sales revenue of \$1.5 billion by 2030.

Wattie, B. (October 2021). *Open Ocean Salmon Farming in New Zealand*. Retrieved 14 June 2023 from www.mpi.govt.nz/dmsdocument/50131-Open-Ocean-Salmon-Farming-in-New-Zealand-Aquaculture-Strategy

In 2023, the *Handbook* reaffirms: 'The salmon farming industry is capital-intensive and volatile. This is a result of a long production cycle, a fragmented industry, market conditions and a biological production process which is affected by many external factors. Over time, production costs have been reduced and productivity has increased on the back of new technology and improved techniques. In recent years, costs have trended upwards due to several factors including rising feed costs, biological costs and more stringent regulatory compliance procedures'. Mowi. (2023). *Salmon Farming Industry Handbook 2023*, p. 59. Retrieved 12 June 2023 from www.ml-eu.globenewswire.com/Resource/Download/c56557de-ebbc-4f78-be7b-b167a0d5a279

9. Increased legislation of marine space and protected areas

Background to the Marine Reserves Bill

'In September 2000 the Department of Conservation released a discussion document which reviewed the way in which marine reserves are established and managed ...

A draft new Marine Reserves Bill was introduced to Parliament on Friday 7 June 2002.' Department of Conservation. (May 2001). Review of the Marine Reserves Act 1971. Retrieved 12 June 2023 from www.doc.govt.nz/about-us/science-publications/conservation-publications/marine-and-coastal/marine-protected-areas/review-of-the-marine-reserves-act-1971

It is noted that the final report was presented on 12 December 2012 and the first reading was terminated.

New Zealand Parliament. (2023). Marine Reserves Bill. Retrieved 12 June 2023 from www.bills.parliament.nz/v/6/cfa3a510-592b-4866-b30b-cbaa9e9ab94c

The Institute has asked in an OIA for a copy of the 2012 report and any progress on this or similar bills. The 2012 report is no longer available on the Parliamentary website.

'The government would create a huge marine sanctuary in the wild waters of the South Island, protecting 1267sq km of ocean, about the size of Auckland. But after nearly a decade of arguing, millions of dollars, three terms of Parliament and six conservation ministers, the marine mammals, birds, fish and invertebrates that live between Timaru in South Canterbury and Waipapa Point in Southland are still without sanctuary from harmful human behaviour. And with ministers yet to receive advice on the proposal – and no timeline for a decision by the Government – the marine protection network seems unlikely to progress before next year's election.' Vance, A. (29 October 2022). A decade of wrangling, but dolphins and seabirds off the South Island's east coast remains unprotected. Stuff. Retrieved 14 June 2023 from www.stuff.co.nz/national/politics/130147040/a-decade-of-wrangling-but-dolphins-and-seabirds-off-the-south-islands-east-coast-remain-unprotected

'Iwi organisations with interests around the Kermadec Islands have almost unanimously voted to reject the Government's latest proposal for an ocean sanctuary, a decision Environment Minister David Parker says is unexpected and disappointing. It is another major setback in fraught attempts by the government to set up the 620,000sq km Ocean Sanctuary since it was first announced at the UN in New York by former prime minister John Key in 2015.' Trevett, C. (13 June 2023). Major setback for Kermadec Ocean Sanctuary as iwi reject latest Government proposal. *NZ Herald*. Retrieved 14 June 2023 from www.nzherald.co.nz/nz/politics/major-setback-for-kermadec-ocean-sanctuary-as-iwi-reject-latest-government-proposal/WVFWIFW2ZNCWDBMSI3KYMBUOM/

Note: The Chief Executive of the McGuinness Institute owns a small shareholding in NZKS and a property at Umuwheke Bay in Queen Charlotte Sound.