

under: the Resource Management Act 1991

in the matter of: Applications by Sanford Limited to change the conditions of various resource consents that authorise the farming of salmon in Big Glory Bay, Stewart Island

by: **Sanford Limited**
Applicant

Summary of evidence by Dr Mark James on behalf of Sanford Limited

Dated: 25 March 2019

REFERENCE: J M Appleyard (jo.appleyard@chapmantripp.com)
A Hill (amy.hill@chapmantripp.com)

Chapman Tripp
T: +64 3 353 4130
F: +64 3 365 4587

60 Cashel Street
PO Box 2510, Christchurch 8140
New Zealand

www.chapmantripp.com
Auckland, Wellington,
Christchurch



SUMMARY OF EVIDENCE BY DR MARK JAMES ON BEHALF OF SANFORD LIMITED

- 1 My full name is Mark Richard James. I am an aquatic scientist with 40 years' experience in research and consulting and presently Director of Aquatic Environmental Sciences.
- 2 My full qualifications and experience, and agreement to comply with the Environment Court's Code of Conduct for Expert Witnesses, are set out in my statement of evidence dated 11 March 2019.
- 3 The key potential effects of Sanford's proposal on the receiving environment are from increased nitrogen inputs and changes in dissolved oxygen in the water column and, for the benthic environment, deposition of faecal material and waste feed which can impact on organic matter, DO, biochemical reactions including release of hydrogen sulphide, and changes to benthic communities.
- 4 There is no evidence that salmon farming to date has impacted on the overall water quality in Big Glory Bay. With the predicted increase in total ammonia-N levels, nitrogen will still remain below levels identified as potentially leading to increased risk of nuisance algal blooms or a change in trophic state.
- 5 Assuming all the increase in nitrogen is converted into phytoplankton biomass then chl-*a* could increase by up to 4 µg/L at times. However actual levels are expected to be significantly less than this as modelling does not take into account a number of other environmental factors which will limit algal growth and biomass. There is no evidence over the last 20 years that chl-*a* has changed in BGB as a result of the presence of salmon farms.
- 6 Oxygen levels can be reduced around salmon farms through respiration and breakdown of organic matter on the seabed. With increased stocking in the Bay dissolved oxygen levels are predicted to remain over 6 mg/L, a level that will maintain healthy salmon and naturally occurring biota.
- 7 Effects on the benthic environment as a result of salmon farms will depend on the history of the farm site, type of activity and state of the benthic environment. Monitoring shows that effects on grain size, organic matter, Cu and Zn levels, and benthic communities are restricted to within 50-100 m of the pen boundaries and are generally within the range of concentrations for these parameters at control sites and similar environments elsewhere.
- 8 Key considerations with the current proposal include that all activities will be within existing consent areas, BGB is the only area in Stewart Island in which aquaculture can occur and pens will occupy <0.3% of the Bay at any time.
- 9 Any adverse effects, if they were to occur, are reversible the management plan is followed. A key aspect of this proposal to avoid adverse effects is to undertake fallowing for at least 5 years after 2 years of occupation.

- 10 The Environmental Monitoring Plan is attached to my evidence outlines the monitoring processes and decision trees for the water column and benthic environments and gives details of the objectives, sites, parameters and associated methodologies to be used, frequency of sampling, standards to be met, and reporting frameworks.
- 11 I consider that the levels of nitrogen input proposed are sustainable. The comprehensive monitoring plan and set of standards that have been developed, and agreed with DoC, will ensure effects are acceptable and objectives met, and that any unexpected effects are detected and managed.
- 12 I am happy to answer any questions from the Panel.