

**BEFORE THE COMMISSIONER ON BEHALF OF
THE OTAGO REGIONAL COUNCIL**

Application No. RM18.004

BETWEEN

PIONEER ENERGY LIMITED

Applicant

AND

OTAGO REGIONAL COUNCIL

Consent Authority

SUPPLEMENTARY EVIDENCE OF ROSS DUNGEY

**GALLAWAY COOK ALLAN
LAWYERS
DUNEDIN**

Solicitor to contact: Bridget Irving
P O Box 143, Dunedin 9054
Ph: (03) 477 7312
Fax: (03) 477 5564
Email: bridget.irving@gallowaycookallan.co.nz

SUPPLEMENTARY EVIDENCE OF ROSS DUNGEY

1. My full name is Ross Gordon Dungey
2. I am contracted as a Freshwater Ecologist by Pioneer Energy Ltd. My qualifications, experience, and acceptance of the Code of Conduct for Expert Witnesses are set out in my primary evidence. I confirm that this supplementary evidence is likewise prepared in accordance with the Code.
3. This evidence responds to the statement of evidence of Jayde Couper, received 28th June 2022.

Macrophytes

4. Para 20 of Mr Couper's evidence. There are two main plant groups at lake Onslow, the low level, ground hugging variety (turf community) and the larger emergent macrophytes. Recent surveys I have conducted show this latter group is highly variable in extent and distribution. For example there was a large assemblage of emergent macrophytes adjacent to the Boat Ramp during 2021 monitoring but this was largely absent during 2022 monitoring. Their contribution to fish habitat is highly variable and they are therefore less reliable as a monitoring tool. The main focus is therefore the turf community.

Monitoring

5. The comparison between the initial Cawthron study and the 2016 study and the idea of a response from a low lake/re-flooding scenario is different to the proposed monitoring (LOMP). Study design was inherited from the Cawthron study and used to formulate elements of the LOMP to allow reference to one of the few historic assessments of general lake ecology.
6. Para 37 of Mr Couper's evidence, the Cawthron study followed a period of very low lake level and recovery to nearly full and high densities of invertebrates in the recently re-flooded lake bed, whereas my 2016 and 2017 studies were post a period of relatively stable higher lake levels where invertebrate populations had reached an equilibrium.

7. Para 39 of Mr Couper's evidence, my best explanation of the difference in invertebrate density between the original Cawthron Study and the 2016 and 2017 studies, and considering other studies reported in the literature, was that the higher densities in the Cawthron Study were in response to re-flooding.
8. Para 43 of Mr Couper's evidence, I would interpret the higher invertebrate density coupled with an increase in the area of the lake (as re-flooding occurs) as representing an increase in overall productivity.
9. Para 89 of Mr Couper's evidence, as previously mentioned, obtaining accurate biological measurements is difficult because of inherent variability in biological systems, so direct measurements of defined biological parameters are sought when-ever possible. For example, species present, fish length, location of aquatic vegetation. The further one is removed from a direct measurement the less reliable is the data. Angling satisfaction and amenity value are personal opinions and these vary so widely that using these as a measure is un-likely to detect subtle changes as are expected from a change in the draw down rate. (The National Angler Surveys provide the best assessment of angler use and amenity values.) Hence I have focused on parameters that give me the best resolution and likelihood of detecting any changes relating to the proposed drawdown increase.
10. Para 91 of Mr Couper's evidence, the existing approach does allow different invertebrate groups and changes in relative abundance and diversity to be described. Consideration of different invertebrate groups is a means to check for subtle responses to aquatic habitat changes.

Date: 2 July 2022

A handwritten signature in blue ink, appearing to read 'Ross Dungey', is written over a light blue rectangular background.

Name: Ross Dungey