

*Tabled @ Hearings
11.11.2015 Synlait Milk*

BEFORE THE CANTERBURY REGIONAL COUNCIL HEARINGS PANEL

In the matter of the Proposed Canterbury Regional Air Plan

Between Environment Canterbury

And Synlait Milk Limited

**STATEMENT BY PETER CAREY IN RESPONSE TO QUESTIONS
BY COMMISSIONERS**

6 November 2015

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Introduction

- 1 My name is Peter Carey. I provided a brief of evidence with respect to clauses 4 and 5 of rule 7.68 of the Proposed Canterbury Air Plan dated 18 September 2015.
- 2 Counsel for Synlait Milk Limited requested that I be excused from attending the hearing in the event that the Commissioners had no questions for me. The Commissioners responded with two questions which I have answered below.

Does the Dairy NZ Effluent Technical Note envisage that dairy farmers would undertake testing for pH and dissolved oxygen as part of routine monitoring of effluent pond performance?

- 3 The technical note does not envisage that dairy farmers would undertake testing for pH and dissolved oxygen as part of routine monitoring of effluent pond performance.
- 4 From my reading of the technical note this does not state that regular pH and dissolved oxygen testing will identify if you have a problem, but testing for these parameters may help a diagnosis if there is an odour problem.
- 5 If there is an odour issue a number of mitigating interventions are suggested and, in the first instance, the most likely cause of odour issues is likely to be hydrogen sulphide. This is always being produced under anaerobic conditions but the lack of oxygen in upper layers means that aerobic bacteria that could normally oxidise hydrogen sulphide are not present in sufficient numbers to do so effectively. The cause of an odorous pond is likely to be a confluence of several factors and just measuring pH and/or dissolved oxygen will not necessarily pre-empt this. Making sure the pond is not shock-loaded and/or too small for the load it is receiving is more likely to prevent issues. The technical note outlines a number of mitigating measures and making sure that farmers have treatments, such as agricultural lime or calcium nitrate readily available plus some means of stirring these in, could be more useful in remedying any issue.

Would dairy farmers typically have the equipment to test for pH and dissolved oxygen, or ready access to service providers to do this testing for them?

- 6 pH can be relatively easily tested for with a cheap commercially brought unit or even a colour indicator method using a solution or strip. Measuring dissolved oxygen requires a specialist meter that are relatively expensive (~\$500-\$1500) and would require some technical knowledge of how to use and maintain it. I do not envisage that there are many service providers who would have a portable dissolved oxygen meter currently.
- 7 However, my key concern is not whether dairy farmers can measure pH or dissolved oxygen, but how they measure it. Even if the equipment was readily available and users were instructed in their use, the results obtained would be almost entirely dependent on how the samples were obtained. Low dissolved oxygen could be obtained in a variety of circumstances that would not necessarily be correlated with odour problems. If the pond was agitated using some type of mechanical stirrer or aerator it would use almost all the dissolved oxygen available and consequently, low dissolved oxygen readings will invariably be obtained. This does not mean the pond is not working correctly, in fact the opposite is more likely to be true. The more aerated the pond, the faster the breakdown and the less anaerobic it will be (the source of odour issues) but it will typically have low dissolved oxygen. Conversely, a reading could be taken in the very near surface water of a problem pond which could result in an acceptable dissolved oxygen reading.
- 8 I am therefore of the view that without a standardised measurement protocol these measurements will not be able to differentiate sufficiently between a problem pond and a well-functioning one.