

**BEFORE INDEPENDENT HEARING COMMISSIONERS**

**IN THE MATTER** of the Resource Management Act 1991

**AND**

**IN THE MATTER** of the hearing of submissions on Proposed Variation 2 (Hinds Plain) to the Proposed Canterbury Land and Water Regional Plan

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**BRIEF OF EVIDENCE OF WYVERN ARTHUR JONES**

**Dated: 15 May 2015**

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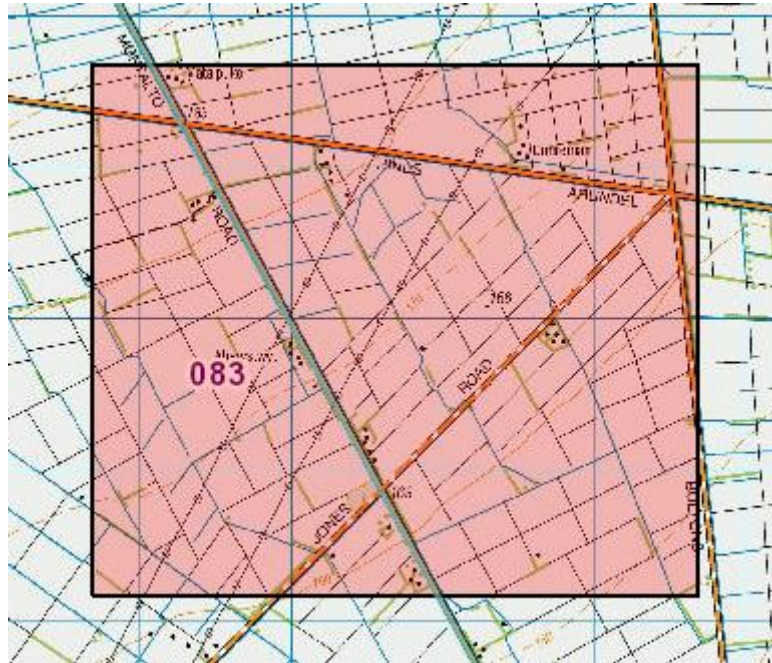
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## BRIEF OF EVIDENCE OF WYVERN ARTHUR JONES

### Introduction

- 1 My wife and I are the partners of Clontarf Farm, 350ha located at 1491 Hinds-Arundel Road which is farmed on a mixed cropping/dairy support model. I also own a 300ha Dairy Platform called Aberystwyth Dairies in an equity partnership across the road from my cropping operation. The approximate location of my properties is shown below.



- 2 My family has lived in Carew for the last 100 years and I have been farming on Clontarf for the last 45 years. I initially farmed in partnership with my father but took over Clontarf in partnership with my wife in 1983. We purchased 208ha of Aberystwyth Dairies in 1995 and added a further 90ha in 2010.
- 3 Both Clontarf Farm and Aberystwyth Dairies are irrigated with Mayfield Hinds Irrigation Scheme (MHIS) water. We have a long history with the scheme, my father was the chairman of MHIS for 17 years and I was on the board for 10 years.

### *Clontarf*

- 4 Clontarf is run as a mixed cropping /dairy support unit. Formerly there were many mixed crop units in our area but most have now been converted to dairy platforms. We carry a mixture of stock, for example lambs or dairy cows, and a mix of crop.

- 5 We have traditionally been very flexible regarding the proportions of stock and crop that we run, for example, currently Clontarf Farm grows a mix of wheat and barley, ryegrass for seed, kale and rape for winter feed, green feedoats, maize for silage and pasture for grazing and silage. However, this may change depending on what is in demand from season to season.
- 6 Clontarf Farm is run as a completely separate business from Aberystwyth Dairies and the feed that it produces, such as maize, wheat or barley, is sold to Aberystwyth Dairies at commercial rates.
- 7 The amount of pasture I keep for grazing varies from year to year, depending on feed available in the area and how profitable it is likely to be. For example, last winter I wintered 2 ½ thousand lambs whereas this winter, because MHIS is a very reliable scheme and Clontarf farm did not greatly feel the effects of the drought, we have more feed available than other areas in the region. This will probably affect the amount of grazing we offer to dairy farmers in Canterbury.

#### *Aberystwyth Dairies*

- 8 I also jointly own (in equity partnership) a 300 hectare dairy platform located across the road from Clontarf Farm. It carries approximately 1130 cows and contains one milking shed, a 630 stall cow barn which we installed in 2012 and a smaller 'loafing' barn for cows to calve in. Cows graze on grass in the paddock and all supplementary feed is fed in the barn. We do not operate a 'cut and carry' system with the Aberystwyth barn.
- 9 Aberystwyth Dairies participated in the Ballance Farm Environment Awards in 2014 and won the Farm Stewardship Award. This was awarded in recognition of "The creation of special places on farm, and may include the protection or enhancement of wetlands, landscape features or historic places. There is also a need to demonstrate management systems that improve productivity and sustainability".
- 10 Aberystwyth Dairies has also hosted a number of field days for interested groups, who typically wish to visit our barn. The most recent field day was a Barnsmart Open Day, looking at "Good decisions: Build it right, Manage it well," run by Dairy NZ on May 19<sup>th</sup>.
- 11 The dairy platform is completely spray irrigated with water from MHIS. Water from the scheme is stored in a 5ha pond constructed in 2004. Effluent from the dairy shed and feed barn is diverted into a 2 stage effluent pond then applied to the entire dairy platform.

#### **Irrigation**

- 12 Clontarf Farm has been irrigated since the 1950s using only MHIS water. Our allocation is a flow of 230 l/s with a full unrestricted season allocation of 847 mm/ha. In the 2014/15 season

we used 32% of our allocation. This water is stored in two ponds with a combined capacity of approximately 130,000m<sup>3</sup>.

- 13 My father and I have worked continuously to improve the efficiency of use of our allocation, with one particular paddock having 5 different forms of irrigation since the 1950's. I do not draw water for irrigation from any other source and stockwater on Clontarf is provided from MHIS and stock water races.
- 14 I continue to adopt new technology where it provides on-farm benefits. In the past 6 years we have installed 2 crossflow turbines on Clontarf and these are powered by a flow of water diverted from a MHIS race. These two turbines each drive a pump drawing water from the two ponds and delivering all the water to irrigate Clontarf and as a result, no electricity is used to pump irrigation water on Clontarf. A photo of one of the turbines is included below.



- 15 Currently Clontarf is irrigated with 3 centre pivots and a hard hose gun, however we are shortly upgrading the hard hose gun to two small centre pivots. This will mean the farm will contain 5 centre pivots, 2,400m laterals and a hard hose gun. Aberystwyth Dairies contains 5 centre pivots. In the course of development we have increased paddock size, reducing the number of paddocks from 42, down to 10 at present and removing 85km of fence-lines.
- 16 Although we have worked hard to improve efficiency of irrigation on the farm and industry best practice recommends its use, we do not use variable rate irrigation (VRI). This is due to the type of soil the farm contains – it is all Lismore stony silt loam with very few variations in type. Successful VRI depends on having variations in soil type within command areas so we would not realise the same level of efficiency gains as someone with more variable soil within their farm. This makes the cost of a VRI system hard to justify.

- 17 Because we group types of crops together according to the swing of the irrigator, there is also little variability in water demands based on crop type. We do not carry Aquaflex on Clontarf, although they are a suggested 'best practice' technology, because cultivation of the soil will disturb them. Instead, I apply water based on personal experience and excavation in paddocks to assess soil moisture, the moisture demands of particular crops at different growth stages and a small amount of comparison with Aberystwyth Dairies, although Aberystwyth's ability to hold moisture is probably greater as it carries more organic matter. We have four Aquaflex monitors installed on Aberystwyth.
- 18 The change to spray irrigation from border dyke allows me to efficiently manage application of water on the farm, moving from 'just in case' application to 'just in time'. The mixed cropping farming model also gives me more flexibility in timing of water use, for example, although currently Aberystwyth carries some crops, if it is all in grass pasture it requires irrigation to the same amount all the time. On Clontarf, because crops need varying amounts of water at different times this gives us the opportunity to pass water to Aberystwyth – which we did this summer when water on the dairy platform was a bit tighter.
- 19 The supply of water on Clontarf is very reliable now. Reliability has improved over time due to the swap from border dyke, although this carried significant cost. Spray irrigation has allowed the same amount of water to go a lot further and produce more.

### **Nutrient Management**

- 20 The farm consists of 350 hectares of Lismore very stony silt loam, which is 'leaky' or free draining. However, over time with the use of irrigation I have noticed the soil structure has changed considerably.
- 21 My equity partner on Aberystwyth and I have discussed the increased water holding capacity of our soils over time, due to the build-up of organic matter. He has noticed when checking Aquaflex data on Aberystwyth that moisture spikes, caused by rainfall events, appear to hold on longer in the soil profile.
- 22 Dairy effluent from Aberystwyth can be spread on the entire effective dairy platform (280ha) and wood chip from the 'loafing barn' is spread as a solid on Aberystwyth as a fertiliser pre-crop. We have our own fertiliser spreader, GPS tracked, purchased from an ex-fertiliser contractor, which we use on both Aberystwyth and Clontarf farms.
- 23 The installation of an anaerobic digester on Aberystwyth Dairies is planned for the next 12 months. This plant will process all the effluent from the dairy and barn and potentially supply us with electricity, diesel, heat, cooling, and pelleted soil amendment for use as fertiliser.

- 24 Although we have tried to use OVERSEER on Clontarf, we have been unable to make it work for a mixed cropping model due to the number and variability of inputs. MHIS has attempted to run our model and it crashed their system, even after consulting with OVERSEER advisors.
- 25 Although we have been unable to generate an Overseer figure for Clontarf we manage inputs carefully with consideration being given to -
- 25.1 Soil tests.
  - 25.2 Projected yield.
  - 25.3 Knowledge of the plant requirements at various growth stages and then applying the correct amount of fertiliser at these stages.
  - 25.4 Seeking independent advice from our consultant.
  - 25.5 Previous personal experience.
- 26 Water application is also monitored closely and this along with the judicious use of fertiliser has enabled us to increase yields and we now see 8 tonne crops of wheat regularly replaced with 10 tonne yields.
- 27 We have recently generated an OVERSEER figure of 42kgN/ha for the 2014/2015 season on Aberystwyth. I am concerned that even on the currently high level of mitigation that we have installed on Aberystwyth, at considerable cost, we are likely to still be required to make additional reductions.
- 28 I believe I work to good management practice standards on Clontarf and Aberystwyth, by monitoring the farm environment and applying inputs mindfully. A farm consultant assists me in this and I also discuss best practice with peers and review industry guidance through agents and at field days. The truth is, it is difficult to judge whether I am operating at the 'GMP' referred to in Variation 2 until the guidance about what GMP comprises is inserted in the Land and Water Regional Plan. This uncertainty makes assessing the cost of reductions problematic.

## **Variation 2**

- 29 On Clontarf I expect the proposed reductions will directly affect our ability to winter cows. This is not only because of potential nutrient loads, but also, if herd sizes reduce, then there are fewer cows to be wintered. Fortunately, the mixed cropping model on Clontarf gives me the ability to change to another crop or stock option, or move out of dairy support altogether, although that may not be as profitable as has previously been the case. Because of these variables I have great difficulty putting a figure on any of the ramifications of Variation 2 as they relate to Clontarf Farm.

- 30 As a dairy unit Aberystwyth has a large capital investment in dairy infrastructure, which locks it into milking cows and removes its flexibility to change its model. Even with our barn system and good management, it appears we still need to make changes. To this end we are now growing crops for silage and alkalage on the platform to use the nutrient from the effluent and reduce the need to "import" as much feed. Since the installation of the barn we have not increased cow numbers but we are producing more of our supplements on farm. Even so, I do not think these changes will achieve the significant reductions required in Variation 2.
- 31 I do not agree there is considerable scope for improvement in the nutrient management performance of dairy and dairy support. There are always those who are tardy, but bearing in mind that water is a scarce and valuable commodity and that fertiliser is expensive, it is not in a farmer's best interest to be imprudent in their use. I believe that I and my peers are already committed to best practice, which is an evolving target, always leaving room for some but not 'considerable' improvements.
- 32 My difficulty with Variation 2, particularly in the context of Clontarf Farm, arises from a double uncertainty. I know some reductions are possible, but I am unable to judge how big these will be because of my flexible farm system. Equally, because of the complicated nature of my farming system, current modelling means I am unable to measure how effective the mitigation measures are.
- 33 I am a willing adopter of new, proven technology and feel confident that if I was given more time to comply with the new nutrient limits, the potential scientific advances and knowledge developed in the interim would assist me to achieve better reductions.

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W A Jones