

**BEFORE THE COMMISSIONERS APPOINTED BY
THE CANTERBURY REGIONAL COUNCIL**

IN THE MATTER of Proposed Plan Change 7 to the
Canterbury Land and Water
Regional Plan

SUBMITTER **MULLIGAN, M E & KERSE, I J &
KINGSTON N S**

Submitter 384

**SUPPLEMENTARY EVIDENCE OF IAN MCINDOE CORRECTING
ERRORS IN EVIDENCE IN CHIEF**

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STATEMENT OF EVIDENCE OF IAN MCINDOE

May it please the Commissioners:

Introduction

1. My name is Ian McIndoe, I am the Principal Water Resources Engineer and Managing Director at Aqualinc Research Limited. I set out my relevant qualifications and experience in my Statement of Evidence dated 17 July 2020.

2. In my evidence dated 17 July 2020, I inadvertently understated the irrigated area on the Mulligan farm by 37.5 hectares. While this has not impacted in any way on the conclusions in my evidence, it has changed the text in two paragraphs, and the numbers slightly in three tables, as follows.

3. Para 82 updated

The analysis has been based on six on-farm irrigation situations. It includes three on the Kerse farm, two on the Kingston farm and two¹ on the Mulligan farm, all with different parameters, as described in Table 2. Total irrigated area is 445² hectares.

4. Para 84 updated

The analysis shows that irrigation demand, taking into account the conditions occurring on each farm, is quite variable on a year by year basis. Average demand is about 78%³ of allocation. The 2015/16 irrigation season, which ECan used for the Recent Actual Scenario, ranks as about a 1 in 8 year event, so was a relatively high demand year.

5. The following tables replace the original tables in my 17 July 2020 evidence.

¹ Changed from one to two

² Changed from 407.5 to 445

³ Changed from 76% to 78%

Table 1: Farm irrigation scenarios

Farm	Area (hectares)	Soil PAW (mm)	Method	Application depth (mm)	Return interval (days)
Kerse	24	45	Rotary ¹ Boom	22.5	4
	24	80	Rotary ⁴ Boom	35	6
	80	80	Pivot ⁵	15	3
Kingston	115	45	Pivot	14	3
	29	80	Pivot	14	3
Mulligan	150	45	Pivot	12	3
	23	45	Gun/other	24	6

⁴ This is one irrigator running over two soil types. The return interval for the rotary boom irrigation is $4 + 6 = 10$ days.

⁵ This is actually a rotary boom irrigator applying small depths of water on fast runs.

Table 2: Rainfall, PET and irrigation demand for the three Submitters farms

Irrigation season	Irrigation Season Rainfall (mm)	Irrigation Season PET (mm)	Irrigation demand (%) of allocation
2006/07	564.6	527.1	44%
2007/08	399.0	603.6	98%
2008/09	452.8	619.2	91%
2009/10	712.0	588.4	42%
2010/11	411.7	597.1	100%
2011/12	567.0	547.7	63%
2012/13	475.3	596.7	87%
2013/14	467.7	566.0	83%
2014/15	635.8	599.8	65%
2015/16	365.2	609.4	90%
2016/17	366.9	550.8	78%
2017/18	376.9	620.0	95%

Table A3: Supply/demand reliability for Mulligan at SH72

Seaso	50 l/s	50 l/s	MALF	90%MA	50%MA	10 l/s
2006/0	95.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2007/0	67.1%	81.1%	87.7%	88.1%	90.9%	91.8%
2008/0	68.2%	81.4%	94.6%	95.0%	96.7%	97.1%
2009/1	81.8%	86.4%	88.4%	88.4%	88.4%	88.8%
2010/1	70.7%	90.9%	99.6%	100.0%	100.0%	100.0%
2011/1	86.4%	97.9%	100.0%	100.0%	100.0%	100.0%
2012/1	78.1%	88.4%	100.0%	100.0%	100.0%	100.0%
2013/1	75.2%	100.0%	100.0%	100.0%	100.0%	100.0%
2014/1	74.4%	71.1%	72.7%	73.1%	81.4%	82.2%
2015/1	65.4%	61.3%	72.0%	74.5%	91.8%	96.3%
2016/1	72.7%	75.2%	88.8%	89.7%	97.5%	100.0%
2017/1	81.0%	87.6%	88.8%	88.8%	90.9%	91.3%
Averag	76.3%	85.1%	91.1%	91.5%	94.8%	95.6%

Dated: 10 November 2020

Ian McIndoe