

IN THE MATTER

of the Resource Management Act 1991

AND

IN THE MATTER

submissions by the Greenstreet Irrigation Society Ltd on
the proposed Canterbury Land and Water Regional Plan (August 2012)

**STATEMENT OF EVIDENCE OF BRYAN JAMES LAWN
ON BEHALF OF GREENSTREET IRRIGATION SOCIETY LIMITED
HEARING THREE ASHBURTON RIVER (SECTION 13)**

29 May 2013

1. Introduction

- 1.1** My name is Bryan James Lawn. I have been farming for 55 years including on my present property at Greenstreet since 1992.
- 1.2** I am Chairman of the Greenstreet Irrigation Society Ltd (“GISL”).
- 1.3** We have employed Richard de Joux and Hugh Eaton as expert witnesses.

2. Scope of Evidence

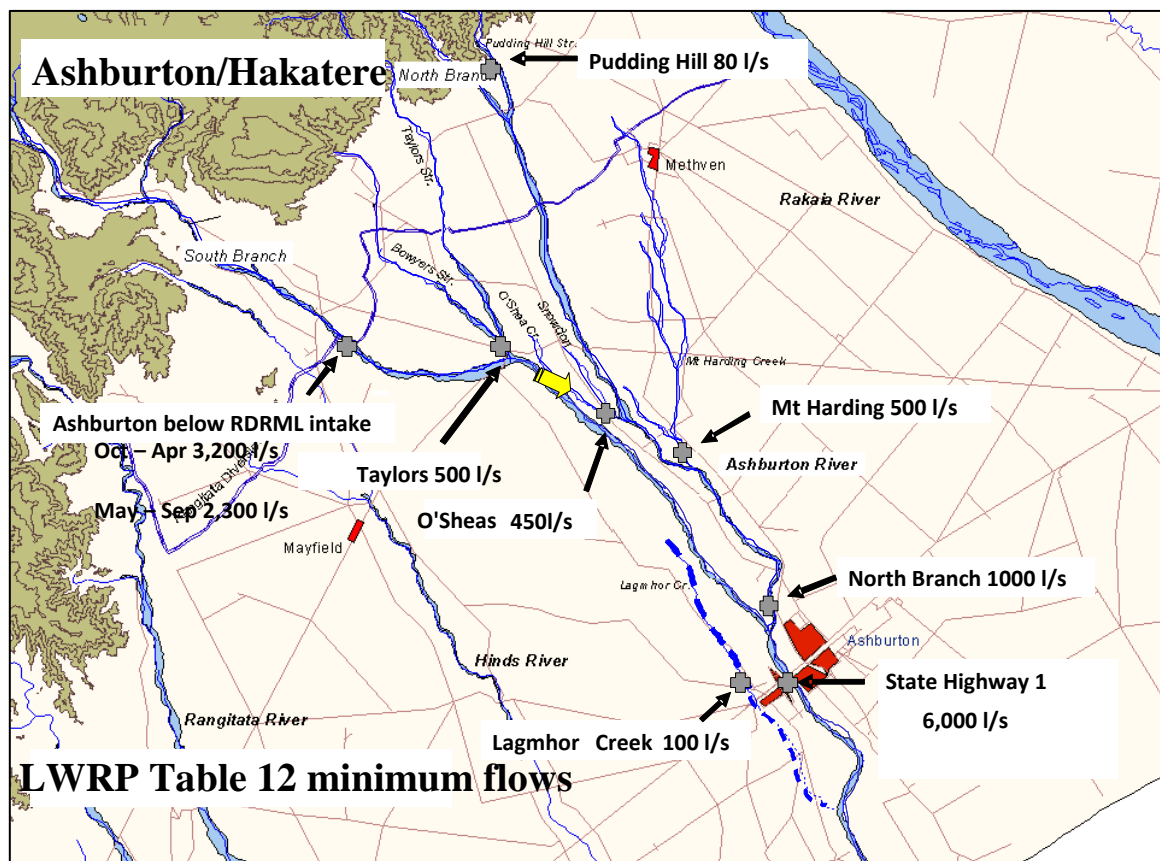
- 2.1** Overview of the Greenstreet Irrigation scheme.
- 2.2** Historic irrigation restrictions
- 2.3** Measures to improve efficiency
- 2.4** Example of North Branch running dry despite full flow at O’Shea Creek
- 2.5** Increased disturbance of the bed of the South Branch
- 2.6** Historic evidence of the unreliability of the North Branch.
- 2.7** RDR discharges into the North Branch
- 2.8** Ashburton District Council stock water take.
- 2.9** Practical proof of the catchment model required and phasing of the new allocation limits.

3. Summary of our submissions

- 3.1** That an increase in minimum flows will have a significant impact on the reliability of the Greenstreet Irrigation scheme.
- 3.2** That the North Branch runs dry even when receiving flows from O'Shea and Mt Harding Creeks higher than proposed in the LWRP.
- 3.3** That moving the entire take of the GISL to the South Branch will create unnecessary disturbance to the river bed.
- 3.4** That historic structures and consents show that the flow in the North Branch has been unreliable for over a century and that this is a natural occurrence not the sole result of irrigation takes.
- 3.5** That flood irrigation since 1974 is not the primary cause of the North Branch running dry.
- 3.6** That the North Branch has run dry despite being supplemented from the RDR since 1945.
- 3.7** That Section 13 needs to be amended to make it clear that the increase in minimum flow will only come into effect after the reduction in the Ashburton District Council stock water take; and it is essential that the ADC stock water races are piped.
- 3.8** That more time and work is needed to test the catchment model, contingency measures are needed, and Table 12 minimum flows should not come into effect before August 2017
- 3.9** In conclusion we also submit that:
 - 3.9.1** Greenstreet Irrigation Society Ltd should retain its consented points of take from O'Shea and Snowden's creeks.
 - 3.9.2** The current take from the South Branch of the Ashburton River should remain unchanged.
 - 3.9.3** The minimum flow levels of the Ashburton River at State Highway One should remain as set in 1983 without increase.

4. Overview of Greenstreet Irrigation Scheme.

- 4.1 The Greenstreet Scheme opened in 1974.
- 4.2 The Scheme irrigates an area of 2,347 hectares of land with surface water under a consent for 960L/s.
- 4.3 An additional 322 hectares is irrigated using five ground water consents making a total of 2,669 hectares irrigated.
- 4.4 The scheme we operate is located between the North and South Branches of the Ashburton-River. It stretches for a distance of approximately 20km, starting with the intake from the South Branch and ending at the confluence of the North Branch.
- 4.5 We have 28 members representing dairy, dairy support, sheep, beef, cropping and deer farmers.
- 4.6 The main sources of our water are O'Shea and Snowden's creeks. Both are spring fed tributaries of the North Branch.
- 4.7 To make up our total take of 960L/s water can be diverted from the South Branch using O'Sheas Creek as a carrier to our pond. The take from the South Branch depends on the season. This year we only needed 190L/S from January to the end of April.



5. Historic irrigation restrictions

- 5.1** Under the water management plan implemented 1983 our water became less reliable due to restrictions based on minimum river flows (appendix i).
- 5.2** The chart (appendix ii) shows actual restrictions based on the 1983 Plan including 74 days of 50% restrictions in 1989/90 and 57 days of 100% restrictions in 1991/92.
- 5.3** The second chart from our records (appendix iii) shows actual irrigation restrictions from 1993 to 2011 with up to 87 days of 100% restrictions and 26 days of 50% restrictions, both in 2007/08.
- 5.4** G Horrell quoted in R T de Joux's evidence on our behalf estimates a drop in reliability of full abstraction for irrigation from 93% of the time to 68% of the time.
- 5.5** We submit that an increase in the minimum flows and change in point of take will have a significant impact on the reliability of the Greenstreet Irrigation scheme. Even under the 1983 regime irrigators have experienced up to 87 days of 100% restrictions in recent years.

6. GISL Measures to improve efficiency

- 6.1** The Board of Directors of the Greenstreet Irrigation Society Ltd (GISL) supports Activity Policy 4.48 anticipating improvements in the efficiency of water use and conveyance. The Board has been proactive in making the scheme more efficient and reliable.
- 6.2** The Scheme contributed to the Ashburton River Enhancement Study of water storage potential in the Ashburton Catchment.
- 6.3** The Scheme is a member of the Ashburton Water Users Group, which endeavours to manage the river flows to keep within the minimum levels.
- 6.4** Within the Scheme we have investigated water storage ponds but the three sites tested were unsuitable.
- 6.5** We have also investigated piping the scheme, joining the Barrhill Chertsey Scheme, joining with the RDR piped Scheme through Lyndhurst. Due to the high cost and unreliability these proposals are not affordable.
- 6.6** If storage at Klondyke goes ahead, we have been invited to become shareholders.

7. North Branch runs dry during periods of full flow

- 7.1** GISL is extremely disappointed that the Water Strategy Committee did not accept the evidence we presented on 24th April 2012.
- 7.2** We submit that the North Branch runs dry even when receiving flows from O'Shea and Mt Harding Creeks higher than proposed in the LWRP.
- 7.3** For example on 16 March 2009 Boraman Consultants measured and photographed flows in the catchment. See photographs below.
- 7.4** Flow from O'Shea Creek (801L/s) and Mt Harding Creek (283L/s) totalled 1,084L/s. This was 134L/s more than their proposed combined minimum flows of 950L/s. Flow in the North Branch at Walkham's Road was 1,889L/s but the riverbed at Digby's Bridge was entirely dry.
- 7.5** Richard de Joux's measurement 21st March 2002 had a very similar result, the only difference being that 2009 was a wet year and the GISL scheme was not operating due to a malfunction of the fish-screen. 2002 was a drier year and GSIL was under total restrictions.
- 7.6** Photographic evidence of dry riverbed (Boraman Consultants 16 March 2009):



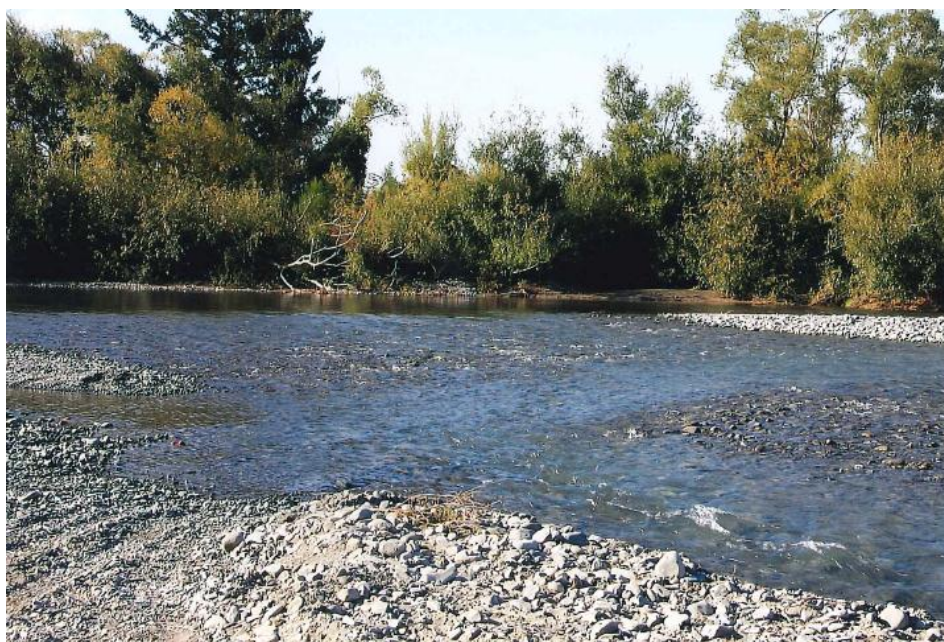
7.6.1 O'Shea Creek spillway



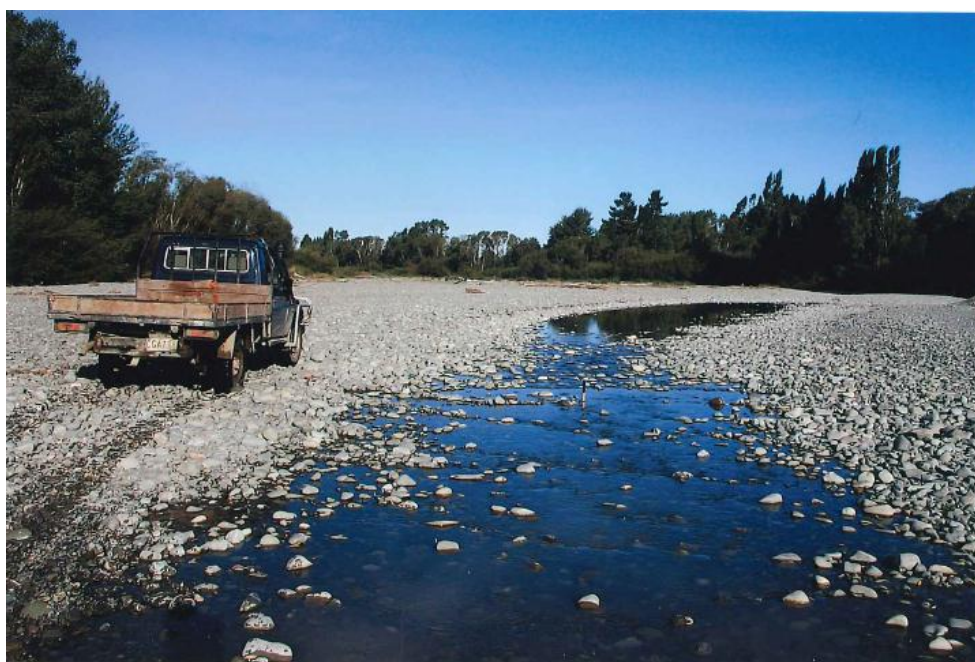
7.6.2 O'Shea Creek below spillway – 801 L/s



7.6.3 North Branch at Walkham's Road ford – 1,889 L/s



7.6.4 North Branch at Oliver's Road ford – 949 L/s



7.6.5 North Branch at Wakelin's Road ford



7.6.6 North Branch at Digby's Bridge – nil flow

8. Increased disturbance of the bed of the South Branch

- 8.1** We submit that moving the entire take of the GISL to the South Branch will create unnecessary disturbance in the riverbed.



UPSTREAM WALL AND INLET.
South Branch

- 8.2** Upstream wall and inlet South Branch with a take of approximately 250L/s

9. Historic evidence of the unreliability of the North Branch

- 9.1** We submit that historic structures and consents show that the flow in the North Branch has been unreliable for over a century and that this is a natural occurrence not the sole result of irrigation takes.



- 9.2** Intake gates on the South Branch constructed 1894.
- 9.3** History shows that the water intake shown in the above photograph was installed in 1894 by the Ashburton County Council under a stock water right of 4.2 cumec for the purpose of supplementing the Winchmore intake. Water from this point was conveyed across Greenstreet and under the North Branch in a culvert removed by the South Canterbury Catchment Board in 1978 without the District Council's knowledge.
- 9.4** An application for the above water-take was made in 1890 by the NZ Alford Estate for reasons of prolonged drought in the area.
- 9.5** This proves that historically North Branch has always had prolonged dry periods and needed to be supplemented from the South Branch.

10. Further example – Ashburton Zone Committee visit June 2012

- 10.1** On 11th June 2012 we met with the Zone Committee and showed them the Scheme. All of O'Shea Creek was going into the North Branch, 33mm of rain and 100mm of snow had fallen. Despite an estimated flow of 2.5 to 3 cumec at Walkham's Road the river was dry at Digby's Bridge.

11. G Horrell's statements about the North Branch are not correct.

- 11.1** O'shea and Snowden Creeks have been the main source of Greenstreet Irrigation water.
- 11.2** Graham Horrell's claim to a meeting of the Ashburton Zone Committee in 2012 that "there have been only three known reportings of the North Branch going dry up until 1974, and the cause of the river going dry was mainly due to GISL abstraction", is wrong.
- 11.3** The Greenstreet Scheme started formally in 1974 but anecdotal evidence from Lyndon Webb (Board Member) states that flood irrigation has been used by Greenstreet farmers for many years prior to 1974 possibly back as far as World War II.
- 11.4** I submit that flood irrigation since 1974 is not the primary cause of the North Branch running dry.

12. Rangitata Diversion Race discharge into the North Branch

- 12.1** Spillage from RDR overflows and some borderdyke irrigation occurred in the early years and still occurs to this day. This provides for a temporary artificial flow in the North Branch of the Ashburton River.
- 12.2** The enclosed letter (Appendix iv) from Mike Burns (Ashburton/Lyndhurst Irrigation Scheme) written in 2008 confirms that after 1945 the RDR was under manual control and limited to daylight hours. He states that as the Ashburton Lyndhurst Scheme expanded additional water was taken from the Rangitata at 2am each day. Close down would start from mid-afternoon. During the irrigation season (September to April) ponded water would spill from the RDR into the North Branch. This continued till the RDR was fully automated for 24 hour watering.
- 12.3** A second letter (Appendix v) from Tommy Goodwin, works overseer South Canterbury Catchment Board (deceased) states that the Ministry of Works would spill water from the RDR into the North and South Branches. He says in the late 1950's MOW preferred the North Branch as "berm plantings were extremely hard to establish because of lack of moisture in the berm area".
- 12.4** With Richard de Joux's evidence of measured RDR water into the North Branch you will understand our concerns of relinquishing O'Sheas water into a dry North Branch Riverbed.
- 12.5** We submit that the North Branch has run dry despite being supplemented from the RDR since 1945 and that it will continue to run dry even if the full flow of O'Shea Creek is run into it.

13. Ashburton District Council stock water scheme.

- 13.1** Another concern for GISL is that the model relies heavily upon the Ashburton District Council (ADC) reducing their take from the river for stock water supplies. Indeed, this is a prerequisite for achieving the proposed minimum flows whilst maintaining supply reliability. However, there is no clear indication from the ADC that they will reduce their takes to the levels assumed within the model.
- 13.2** We submit that Section 13 needs to be amended to make it clear that the increase in minimum flow will only come into effect after the reduction in the Ashburton District Council stock water take.
- 13.3** We submit that to enhance flows in the Ashburton River it is essential that the Ashburton District Council stock water races are piped.

14. Practical proof of the catchment model required

- 14.1** Because of the uncertainties with the modelling, more work and time is required to confirm the modelling results and if necessary, to investigate alternative solutions for delivering the proposed minimum flows whilst maintaining reliability of supply to existing users.
- 14.2** For this reason the GISL supports the submission by RDML that the increase in minimum flows detailed in Table 12 (Environmental Flow and Allocation Limits) should not come into effect before August 2017.
- 14.3** In addition to an extended timeframe, GISL also requires clarification of contingency measures that may be required in order to ensure that all of the collaboratively agreed recommendations are achieved. Essentially, if the model is wrong, what then?
- 14.4** This is particularly important to GISL because if the model is wrong, and there is no mechanism for review of the proposed management regime, then GISL will be carrying more than their equitable share of the consequences for achieving community stated aspirations for the river.

Appendix (i) – Minimum flows (cume) in the Ashburton River at State Highway 1

	Pre 1983	Post 1983	pLWRP 2012
September	7.0	8.0	6.0
October	7.0	8.0	
November	6.0	6.5	
December	4.5	5.0	
January	4.5	4.5	
February	3.4	3.5	
March	3.4	3.5	
April	3.4	5.0	

Appendix (ii)

“Ashburton Catchment actual restrictions imposed on individual abstractions under the 1983 plan”.

ASHBURTON CATCHMENT - IRRIGATION RESTRICTIONS

SCENARIO:

Actual restrictions imposed on individual abstractions under the 1983 Plan.

		NUMBER OF DAYS OF RESTRICTIONS									
SEASON	RESTRICTION	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	TOTAL
1982/83	50%	0	0	0	0	0	0	5	0	0	5
	100%	0	0	0	0	0	0	0	0	0	0
1983/84	50%	0	0	0	0	0	0	0	0	0	0
	100%	0	0	0	0	0	0	0	0	0	0
1984/85	50%	0	0	5	0	0	16	12	7	17	40
	100%	0	0	0	0	0	0	19	21	0	40
1985/86	50%	0	0	0	0	0	0	0	0	0	0
	100%	0	0	0	0	0	0	0	0	0	0
1986/87	50%	0	0	0	0	6	0	0	0	0	6
	100%	0	0	0	0	0	0	0	0	0	0
1987/88	50%	0	0	0	0	2	15	6	30	18	53
	100%	0	0	0	0	0	0	0	0	0	0
1988/89	50%	0	0	0	0	6	0	0	0	0	6
	100%	0	0	0	0	0	0	0	0	0	0
1989/90	50%	0	0	0	0	0	25	30	19	0	74
	100%	0	0	0	0	0	0	0	9	0	9
1990/91	50%	0	0	0	0	2	0	7	19	0	28
	100%	0	0	0	0	0	0	0	0	0	0
1991/92	50%	0	0	0	0	3	23	10	0	0	36
	100%	0	0	0	0	0	6	21	30	0	57

Appendix (iii) – Greenstreet irrigation restriction records

Days Irrigation Restricted 1993-2011

Season	Total Cessation	50% Restricted	25% Restricted
1993/94	4	0	3
1994/95	0	5	0
1995/96	no record	?	?
1996/97	no record	?	?
1997/98	10	20	0
1998/99	11	2	9
1999/00	2	3	
2000/01	29	21	
2001/02	4	7	
2002/03	4	18	
2003/04	6	21	
2004/05	no record	?	
2005/06	54	22	
2006/07	17	15	
2007/08	87	26	
2008/09	16	13	
2009/10	22	15	
2010/11	3	1	

41 Butler Street
Christchurch 8023
10 June 08

Mr Lydon Webb,
Speenstreet I.S.

Dear Lydon,

Ashburton - Lyndhurst Irrigation Scheme
Operations

Area: 66,000 acres
Main Race Capacity: 400 Cusecs
Water Supply: Rangitata Diversion Race
Commissioned 1945
Methods of Irrigation: Border Dyke & Wheel Flood.
all manual control and limited to
daylight hours.

As the scheme developed more water was
required on-farm. A major problem arose.
The scheme had limited waste facilities and
irrigator was a daylight operator.

To overcome this problem additional water
required for the day would be taken ~~from~~ from
the RDR at 2am. and the close down
would start ~~from~~ mid-afternoon. Water
would pond in the RDR and eventually flow
over the gravity overflow weir and into the
North branch of the Ashburton River.

This system was regular throughout the irrigation
season (1 Sept - 30 April). As far as I am aware
this method continued until on-farm systems
were fully automated for 24 hr watering.

Yours faithfully,
Mike Burns

To Whom it May Concern

**Spillage into the Ashburton River System from the Rangitata Diversion
Race**

There are two sites for spillage from the Rangitata Diversion Race (RDR) into the Ashburton River System - at the South Branch of the Ashburton River (SCAR) and the North Branch of the Ashburton River (NBAR). The NBAR was the site preferred by the Ministry of Works (MOW) because of the time factor in reduction and back to full flow again - these spillages were a frequent occurrence.

At the commencement of the Lower Ashburton River Improvement Scheme (LARIS) in the late 1950's, these spillages created delays and minor damage to channel and training works that were under construction. The South Canterbury Catchment Board (SCCB) met with the MOW to establish some form of control on spillage into the NBAR. A decision was reached from the RDR Head Raceman (MOW) to give the work overseer (L Ash SCCB) 24 hours notice of intended spillages. The SCCB Overseer would indicate at which site it would take place. On completion of channel and training works, the NBAR site was preferred by SCCB, as Berm Plantings were extremely hard to establish because of lack of moisture in the Berm area. The arrangement for site spillage was discontinued with the demise of the SCCB.

Signed



Tommy Goodwin
Works Overseer SCCB - E-Can (Rtd)