

**IN THE MATTER OF** The Resource Management Act  
1991

**AND**

**IN THE MATTER OF** submissions by the Greenstreet  
Irrigation Society Ltd

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**EVIDENCE OF HUGH DUFF EATON**  
**On behalf of Greenstreet Irrigation Society Ltd**

**HEARING THREE ASHBURTON RIVER (Section 13)**

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## **1. INTRODUCTION**

- 1.1** My full name is Hugh Duff Eaton
- 1.2** My qualifications include a Bachelor of Arts Degree from Otago University (1976), Bachelor of Agriculture degree from Massey University (1981) and a Post Graduate Diploma of Agricultural Science (1988). I am a registered member of the NZ Institute of Primary Industry Management and a registered valuer with the NZ Property Institute.
- 1.3** I commenced work as a farm advisory officer with MAF in 1989 and have practiced in the Ashburton District as a consultant, valuer and rural banker for the past 24 years. I am a director of Macfarlane Rural Business Ltd and farm a 172ha dairy support property adjoining Taylor's Stream on my own account.
- 1.4** My experience relevant to this proceeding:
- (a) Wide experience of Canterbury farm systems working as a consultant to individual clients, corporates, discussion groups and Monitor Farms
  - (b) Analysis of farm profitability as a rural banker and contributor to the annual MAF/MPI Farm Monitoring publication.
  - (c) Financial analysis and modelling of farm systems under irrigation for a series of new schemes, including Central Plains and the Ruataniwha Plains scheme in Hawkes Bay.
- 1.5** Although this is a Regional Council plan hearing, I have complied with the code of conduct for expert witnesses contained in the Environment Court's Practice Note dated 1 November 2011 when preparing this evidence.

## **2. SCOPE OF EVIDENCE**

- 2.1** I have been asked to provide evidence and opinion on the impact of the proposals for the Ashburton catchment contained in the Proposed Land & Water Regional Plan (pLWRP) on shareholders in the Greenstreet Irrigation Society Ltd (GISL).
- 2.2** We submit that the proposed change of point of take from O'Shea Creek to the Ashburton River South Branch will not achieve the desired effect of a continuous flow in the North Branch. Further it will have detrimental practical and financial effects on Greenstreet irrigators.

### **3. PROPOSED L&WRP MEASURES AFFECTING GREENSTREET**

- 3.1** A combination of measures is proposed in the Ashburton catchment to achieve the aims of improved river flows.
- 3.2** The specific proposals affecting GISL are to move their consented take from O'Shea Creek to the South Branch of the Ashburton River. The sole purpose of this change is to achieve a continuous flow in the North Branch of the Ashburton River which is often dry.
- 3.3** Evidence provided by Graham Horrell on behalf of Ecan states that a combination of measures will result in no net effect on the volume or reliability of the GISL irrigation take. These measures include
- (a) Lifting the minimum flow for the Rangitata Diversion Race (RDR) take in the South Branch at Mt Somers from 2.3cumec to 3.2cumec.
  - (b) Increasing the minimum flow in O'Shea Creek from 50L/s to 450L/s at the North Branch.
  - (c) GISL to abstract all of their 1200L/s from the South Branch foregoing their use of O'Shea and Snowden Creeks.
  - (d) Setting a new minimum flow in the North Branch at the confluence of the North and South Branches to 1 cumec
  - (e) Lifting the minimum flow in the Ashburton River at SH1 from 3.5cumec to 6cumec.
  - (f) Reducing the Ashburton District Council stock water take to the summer mean.
  - (g) Reducing the RDR "A" permit from 7.1 to 5.1 cumec.
- 3.4** As a result GISL will be required to move their entire take from O'Shea Creek to the South Branch. In theory this will allow an additional 400L/s to flow into the North Branch during the irrigation season and help to create a continuous flow.

### **4. ASSURANCES CONTAINED IN THE L&WRP**

- 4.1** Policy 4.48 in the pLWRP states that "Existing hydro-generation and irrigation schemes are recognised as a part of the existing environment."
- 4.2** The introduction to Chapter 13 of pLWRP states that "In achieving these outcomes changes are to occur over time so as to have minimal impact on existing activities".

- 4.3** Commissioner David Caygill, supported by Ecan staff, assured a meeting at the Greenstreet Hall on 11 June 2012 that the combined strategies detailed in the plan would result in no net change to GISL irrigators' volume or reliability of irrigation water supply.
- 4.4** We submit that there will be a significant impact in terms of production, profitability and capital investment on farms.

## **5. EVIDENCE OF R T de JOUX**

- 5.1** Richard de Joux's evidence to this hearing gives a series of examples of the North Ashburton River running dry and states that:
- (a) Many of the reaches lose surface flow to the surrounding groundwater (para 8). Hence not all the take from the Ashburton returned to the river will result in increased flow.
  - (b) Piezometric contours prepared by Ecan show a strong flow of groundwater away from the North Ashburton (para 9).
  - (c) The requirement for GISL to move their take to the South Branch will increase abstraction from the South Branch from 990L/s to 1200L/s and will be subject to minimum flows at SH1. (para 15)
  - (d) "I do not believe that permanent continuous flow can be achieved within the North Ashburton River" (para 16).
  - (e) Modelling results are an amalgam of the entire record period, are averages and do not show what impact the changed flow regime will have in specific years (para 22).
  - (f) Moving the GISL take to the South Branch will only add more pressure on the flow without providing the modelled improvement in flow in the North Ashburton. This will result in the SH1 minimum flow being triggered earlier and the reliability to irrigators will be less than modelled. (para 31)
  - (g) The proposal to require GISL to take all of their water from the South Branch "increases the time when GISL are on partial restriction from 2% (Scenario 2) to 30% of the time, and reduces the reliability of full restriction from 93% of the time (Scenario 2) to 68% of the time". (para 34)
- 5.2** In contrast G Horrell's 2012 report indicates that the increase in flows will work to maintain or in some cases improve the existing reliability (de Joux para 33).

- 5.3** We submit that based on R de Joux's evidence and G Horrells Sec 34A report:
- (a) The proposal will not achieve the stated aim of a continuous flow in the North Ashburton River.
  - (b) There will be a significant reduction in reliability of the GISL irrigation take as a result.

## **6. IMPACTS ON GREENSTREET IRRIGATORS**

- 6.1** An appendix to G Horrell's Section 42A report estimates a drop in reliability of full abstraction for irrigation from 93% of the time to 68% of the time ie 25% or on average 52.5 days of partial restrictions during an irrigation season of 210 days.
- 6.2** For comparison A Macfarlane (pers comm) states that the optimum reliability "sought by irrigators in the Ashburton District has increased into the band between 95% and 100%". High reliability results in decreased water volume used, higher value risker crops, deficit irrigation practices and lower leaching of nutrients.
- 6.3** Loss of irrigation water for this length of time would result in serious moisture stress, loss of pasture and crop production and loss of farm income. Side effects would be less efficient water use, luxury watering and increased leaching. Farmers would need to adapt with lower stocking rates, more supplements and accept lower profit.
- 6.4** For example: restrictions through January, February and March might halve pasture production on a flood irrigated dairy support farm during that period. Using Winchmore Station actual figures that would be a loss of 20kgDM growth per day for say 90 days at 80% utilisation and 24c/kgDM for dairy support is a loss of \$345/ha in gross income. Actual losses may be higher with a delay in pasture recovery, the cost of making supplements as insurance and more conservative stocking rates. On a typical mixed farm this would be one third to a half of the farm surplus.
- 6.5** A Macfarlane (11 January 2013) has calculated even higher figures depending on irrigation reliability. He describes an improvement in income of between \$430 and \$830/ha resulting from a 15% increase in reliability. Losses on more intensive farm systems such as dairying will be major and, depending on debt level, could cause farms to become unviable.

- 6.6** To remedy the loss of reliability would require large scale water storage to bridge periods of restrictions for spray irrigators.
- 6.7** For example: 52 days restriction to half take say 2mm/day = 104mm or 1,040m<sup>3</sup>/ha. Storage at \$1.50/m<sup>3</sup> would be a capital cost of \$1,560/ha. Storage for a 200ha farm at 4m deep would cover 5.2ha lost productive land. Total cost of storage on this farm would be \$434,000 including lost the land occupied at \$25,000/ha.
- 6.8** Flood irrigated farms would not be able to retain reliability by using storage unless they convert to spray irrigation. The cost to convert will be between \$4,000 and \$6,500/ha plus \$2,170/ha storage. This is a total of up to \$8,670/ha capital cost or \$1.734m for a 200ha farm.

## **7. SUMMARY OF SUBMISSIONS**

- 7.1** That contrary to the proposed L&WRP this loss of reliability will have a significant impact on the farm productivity of existing irrigators causing lost income and requiring capital investment.
- 7.2** That despite verbal assurances from the Commissioners and from Ecan staff full irrigation reliability for GISL will be reduced by 25% points.
- 7.3** That the proposal to change the point of take of the GISL abstraction from O'Shea Creek to the South Ashburton River will not achieve the objective of a continuous flow in the North Ashburton River.
- 7.4** That consequently the conditions of the GISL irrigation take should remain unchanged.

## **REFERENCES**

de Joux, R T; 2013: *Evidence of Richard Trevor de Joux – Hearing Three Ashburton River (Section 13)*.

Environment Canterbury; Aug 2012: *Proposed Canterbury Land & Water Regional Plan Volume 1 Prepared under the Resource Management Act 1991*

Horrell, G A; 2012: *Ashburton/Hakatere River flow and allocation regimes: Update of modelling results. Niwa Client Report No. CHC2012-140 prepared for Environment Canterbury, November 2012*

Macfarlane, A W; 2013: *Evidence of Andrew Webster Macfarlane – Hearing Three Ashburton River (Section 13)*.