

## Introduction

My name is Richard Forbes. Our family farm is beside the Waipara River, currently producing sheep, cattle and crop.

I have been here for 65 years and have observed the river for what is now a considerable time. We have been affected by its extreme natural flow variations, its huge floods and very low flows.

Our family land beside the river has been irrigated from the Waipara River for over 50 years. In 1981 our family put in its present irrigation system, improving on the irrigation, which commenced in the late 1950's. The present consents have been operating for 30 years.

ECan has referred to the Waipara consents developing on an ad-hoc basis. This is not a fault, it is simply because no other current consent holders had applied for water, and it was not until relatively recently that they arrived in the area, planned to grow a crop i.e. grapes, applied for and were granted water from the Waipara River for their crops needs.

Storage of water in the area commenced in the late 1970's not on the Waipara River but on its tributaries via a brilliant scheme funded by the Government of the day. Since that time a much smaller volume of water storage has been added because of the very high and prohibitive costs of funding storage.

I have seen the Waipara River with its huge floods of over  $\frac{3}{4}$  of a million L/s at Teviotdale and at other times completely dry further downstream in a reach to the sea.

I am aware of high natural levels of nutrients in the river and I am thankful for these nutrients. Some of these are in reasonable supply over a large area for quite big distances from the river as a result of the make up of the eroding parent material in the surrounding hills. This benefit, coupled with the low rainfall in the area mean that we put on very low levels of fertilizer.

The great disadvantage for the Waipara area is its lack of moisture. We have a long boundary with the Waipara River and it seemed some years ago a sensible idea to provide water to the very land that the river was flowing beside, when that land most needed it.

After some years, new members of the community arrived on the river with the intention of growing grapes and olives aided by this same water. They have been of great benefit to the community. A huge financial investment has been made by all those with the current consents on the river.

We have developed an irrigation system in an attempt to reduce the risk for us of the present effect of the existing restriction in the Upper Waipara River at White Gorge (50L/s) and to keep the operating costs of this system within reason. The result being our irrigation system is quite unlike the general public might imagine. On average we apply no more than 120mm of water per season compared to approximately 640mm in the dairy industry. Our irrigation system can have long periods with no water applied while other irrigators continue to water. 5 years in the last 30 years we have not turned on the irrigation because for us there has been sufficient rainfall. Our system uses strategic and occasional watering of Lucerne and green feed paddocks to help them through to the next rain. The irrigated land is used to finish lambs and grow young stock.

Measurement of surface flows in the Upper Waipara River in relation to the Forbes consents have involved 2 Waipara Experiments.

The 1<sup>st</sup> Waipara Experiment was conducted by the North Canterbury Catchment Board in 1993, to determine the effect of the Forbes take on surface flows in the river. This occurred at a time when no abstraction had taken place for years.

The object of the Experiment was to determine if 60L/s restriction at Stringers Bridge (i.e. equates to 50L/s at White Gorge) was sufficient protection for the river. This Experiment determined that whether or not the Forbes abstraction was occurring the flow variation down stream at the State Highway 1 Bridge was insignificant. The effect was described as de minimus.

The 2<sup>nd</sup> Waipara Experiment conducted in 2009 by Environment Canterbury showed similar effects on surface flow at the State Highway 1 Bridge as the 1<sup>st</sup> Waipara Experiment.

#### **PROPOSED INCREASED RESTRICTIONS ON THE UPPER WAIPARA RIVER FROM 50L/S TO 60L/S AT WHITE GORGE.**

The Decision of the Hearing s Commissioners of the 1<sup>st</sup> April, 2010, Pegasus Bay Vineyards and Winery Ltd and the Canterbury Regional Council stated:

“Existing abstractors currently have a very poor reliability of supply during Summer Months”.



To assist in the understanding of the degree of severity of the present 50L/s minimum flow at White Gorge and its present implications, the following points are relevant.

Since the early 1990's no new consents for additional water from the Upper Waipara River has been issued.

Some years ago the second largest wine company in the world considered buying some of our land to put together a large area of flat land, ideal for grapes with a large water consent. When the calculation to determine the quantity of storage indicated a minimum of 50 days of storage the cost to achieve this resulted in the deal falling through. Even the one of the largest wine company's contemplating the advantages with economies of scale on all fronts could not make the figures stack up. Note this situation applied to the present minimum flow restriction at 50L/s. Any increase in restriction makes the potential development in future for any enterprise involving river water even more unlikely.

The 2 large blocks of land developed for grapes on the banks on the Upper Waipara River in the last 10 years have not used river water. They have both developed deep ground water wells to remove the risk of the present restriction.

The following figures are drawn from Environment Canterbury official data, all public information illustrating the present periods of 50L/s minimum flow restriction at White Gorge.

During the period 1988 –2010 of 23years

1997/1998 48 days full restriction 26L/s minimum flow

Jan 1998	min flow 30L/s	9 days full restriction
Feb 1998	min flow 26L/s	28 days full restriction
Mar 1998	min flow 29L/s	11 days full restriction
Apr 1998	min flow 71L/s	0 days restriction

1998/1999 45 days full restriction 32L/s minimum flow

Jan 1999	min flow 34L/s	21 days full restriction
Feb 1999	min flow 32L/s	24 days full restriction

2000/2001 4 days full restriction 47L/s minimum flow

Jan 2001	min flow 74L/s	0 days restriction
Feb 2001	min flow 59L/s	0 days restriction
Mar 2001	min flow 47L/s	4 days full restriction
Apr 2001	min flow 52L/s	0 days restriction
May 2001	min flow 76L/s	0 days restriction
June 2001	min flow 153L/s	0 days restriction

2007/2008 26 days full restriction 33L/s minimum flow

Jan 2008	min flow 35L/s	18 days full restriction
Feb 2008	min flow 33L/s	8 days full restriction
Mar 2008	min flow 157L/s	0 days restriction

2008/2009 14 days full restriction 35L/s minimum flow

Jan 2009	min flow 35L/s	7 days full restriction
Feb 2009	min flow 38L/s	7 days full restriction
Mar 2009	min flow 146L/s	0 days restriction
Apr 2009	min flow 161L/s	0 days restriction

Our experience of the present 50L/s minimum flow restrictions

In the 16 years 1982 – 1997 recorded only 1 day of full restriction

In the subsequent 14 years 1998- 2011 the situation for us has changed dramatically

This period includes 137 days of full restriction

This illustrates why we consent holders on the Upper Waipara River are so concerned at the suggestion of any increase in restriction because the existing bad situation can only get worse.



**THE PROPOSAL TO INCREASE THE MINIMUM FLOW AT WHITE GORGE TO 60L/S FROM THE EXISTING 50L/S HAS THE FOLLOWING CONSEQUENCES:**

Over the 23 years 1998- 2010 the extra days of full restriction will increase by **53 days** from the existing **137 days** to a potential **190 days of full restriction**.

As an example the irrigation season 2000/2001 referred to by Environment Canterbury earlier gives a glimpse into the potential future problems for Consent Holders.

2000/2001 4 days of existing restriction @ 50L/s

15 extra days of full restriction @ 60L/s

= 19 days of total restriction @ 60L/s

Feb 2001 1 day, March 2001 10 days, April 2001 4 days

Using the above example this proposed increase in restriction to 60L/s can magnify a period of minor restriction into a period of major restriction.

The decision by the previous Environment Canterbury Councillor's to retain the existing minimum flow at 50L/s at White Gorge followed 8 years of exhaustive consultation, meetings, hearings and evidence. In their decision Councillor's were aware the consent holders had no realistic way to avoid or mitigate any increased unreliability or its very large cost.

The Councillor's were aware of the rivers natural surface flow fluctuations; its extreme low flows for extended periods at times of no abstraction.

Ian Jowett, in his evidence stated that low flows for long periods stress native fish, which then migrated to more favourable sections of the river or in the worst event, died.

Recall 1988, the river reduced in flow for 48 consecutive days after all abstraction had ceased. It reached a recorded low of 26L/s at White Gorge, to **HALF** the present minimum flow trigger level, while continuing to drop daily for 48 days.

Recall 1999, the river reduced in flow for 46 days after all abstraction had ceased. It reached a recorded low of 31L/s at White Gorge.

White Gorge is upstream of all abstraction, the only option that will meet environmental targets and assist in the reliability of water to the local community in this naturally water short region is the addition of water from out of the catchment. We have already heard in evidence that augmentation is a greater probability with many different options now available to provide water in the Upper Waipara River.

We request that the present minimum flow at White Gorge of 50L/s be retained.

It is important to record here the effect of the Proposed Partial Restriction in relation to scenario 2 in the year 2000/2001 (the least restrictive option to consent holders).

This example of Partial Restriction as an example, used the present minimum flow; 50L/s at White Gorge.

The recorded **4 days** of no take at the present minimum flow, increased by an additional **89.5 days** of no take, to a new total of **94.5 days of no take**.

**The existing 4 days of complete restriction now become a total of 94.5 days of complete restriction or are 23.6 x more severe.**

I am sure the consequences of Partial Restrictions are much more severe than was generally understood.

#### **GROUND WATER TAKES OF 3L/S OR LESS ON THE UPPER WAIPARA RIVER**

A considerable time at this hearing has already been spent discussing the merits or otherwise of including these takes in the Upper Waipara River surface flow restriction.

No adverse effects have been identified.

Information already provided suggests that the inclusion of these takes in any restriction, is unlikely to be of significant advantage to the environment, and certainly no advantage to consent holders.

#### **DURATION AND REVIEW OF CONSENTS**

Seeking a short term of 3-5 years is counter productive.

A large amount of work and knowledge has already been accumulated for the Upper Waipara River.

The risk of unknown adverse effects is low.

Current consent volume is unchanged in the last 20 years.

No further abstraction in the A Block is likely.

Time for all and particularly cost to consent holders is unreasonably large.

Consent durations and reviews in the Ministry of Environment Publication 2000 include consideration of the cost and benefits to the Community and consent holder's capital investment in the pre existing activity.

Future environmental issues are best attended at the time; they may or may not occur.

Short consent durations and reviews provide less certainty for investment.



More costly options that lead to greater water efficiency and environmental benefits are therefore, less likely to be included in future considerations.

We request that the suggested 3 year/5 year review and/or duration of the Waipara River consents be declined.

## **ALLOCATION AND REASONABLE USE**

Policy 1.8 seeks to limit future consents, to water previously taken or used.

No detail is provided to indicate how this may be assessed.

Water allocated to land use is likely to change over time and involve new plant varieties, the existing land area being redeveloped or the effects of climate change. Short-term records cannot take account of these aspects.

The telemetered site at White Gorge upstream of all takes, produces the daily flow record for the Upper Waipara River which the public can easily access online. This is the only readily available record of the flow over the approximately 15kms of this section of the river, down to the Omihi confluence.

The public and some submitters to this process naturally assume that the greatest daily flow in the Upper Waipara River occurs at White Gorge.

In practice downstream of this site the flow increases substantially in places. It is accepted that the confluence of Bobby's stream contributes approximately an additional 20L/s of flow when the White Gorge recorder indicates flows of around 100 L/s.

However, this flow is not constant for the section down to the confluence of the Omihi Stream. The bed of the river and its flow are more dramatically changed in this section of the river because it is wide open and can be easily braided and the river can easily change course. In other sections the river is further enclosed and does not have the same opportunity. The consequence is that whenever there is a fresh or flood in this section, the rivers path can change dramatically not only between years but sometimes, many times within a single year. This means that the flows measured in the same reach at different times of the year or between years, but at the same flow levels measured upstream at White Gorge can vary dramatically while the flow elsewhere may be more constant.

The significance is that this natural flow variability encourages conditions leading to no flow reaches and is likely to be counterproductive to any benefit of *theoretical* increased restriction at current or greater flow levels, and the perceived benefits impossible to achieve.

2<sup>nd</sup> Waipara Experiment: Other factors include site variation and full surface flow disappearing into the surface shingles just upstream of the State Highway 1 bridge.

In the Upper Waipara River the length of surface flow affected by abstraction represents less than 5% of the surface flow of this water body.

The existing native fish have demonstrated that in the thousands of years they have inhabited the Waipara River they are exceedingly resilient. However the human species i.e. Consent holders are extremely vulnerable to small changes.



## OUTLINE OF POSSIBLE MEASUREMENT PROGRAMME

- **GAUGING RUNS:**

- At least 8 full gauging runs from White Gorge to the mouth
- Runs should cover a full range of flows in the river, and spread over a series of months
- Gauging sites should be chosen above and below tributaries
- Gauging of each tributary, where they join the Waipara mainstem – if possible
- For tributaries, like Weka Creek, which only has surface flow after heavy prolonged rain, a piezometer (purpose drilled well for monitoring subsurface water level), will be required
- Gauging sites chosen above and below each direct surface abstraction
- If the abstraction is a gallery or shallow well the site downstream of the take will need to be sufficiently downstream to ensure take is accounted for. Depending on the depth/size of gravels, the effect on the flow may be delayed for days, therefore a piezometer may also be required downstream of these takes

- **CONSENT MONITORING**

- Continuous monitoring of each direct surface abstraction or shallow groundwater take within the river terraces on each run

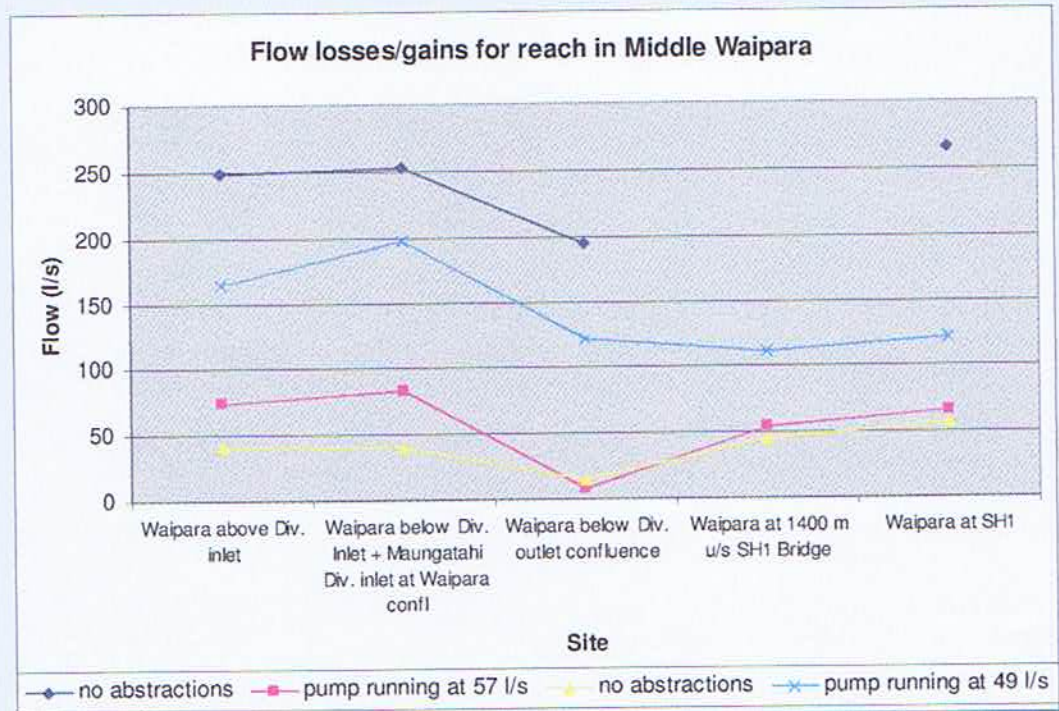
- **WATER LEVELS IN 'RECENT' RIVER GRAVELS**

- Piezometers driven into the recent gravels on both sides of the river at a series of sites down the river - this will determine the depth to water and therefore the change in water level over time will determine the change in the gravel storage. Ideally, these will have temporary water level recorders. The data resulting from these piezometers, together with the gauging information, will also be used to determine the streambed conductance over a reach

- **OTHER CONSIDERATIONS**

- Given the complexity of the geology in the Waipara Catchment, each groundwater take OUTSIDE of the first river terraces, but within the Catchment, may also need to be individually assessed as to whether or not it could be affecting the flows in the River. Each assessment will depend on the depth of the bore, the geology of each bore log and the distance to the River.

Slide from Jeanine Topelen's presentation to a Council Workshop in March 2009.





Presentation by Richard Forbes to the –

HURUNUI WAI AU ZONE COMMITTEE MEETING Monday 21<sup>st</sup> February, 2011

On behalf of the:

WAIPARA RIVER GROUP.

Our vision for the Waipara River:

1. Reduction of willows in the central waterway in critical areas of the Waipara River.  
Aerial photos of the Waipara River in the 1960's provided by Ecan show few and scattered willows in the riverbed. Today's photos show a continuous path of willows along the same waterway. It is estimated that the existing willows remove approximately 10L/s of water per kilometer from the river system.
2. Vehicle reduction in the riverbed during the bird nesting season from those areas most colonized by breeding birds.
3. Preservation and enhancement of native plants in the riverbed.  
Using as an example the successful "Greening of Waipara" to encourage further Native bird life.
4. Preservation of native fish.
5. Increased reliability of water supply for irrigation to the community along the River. Some individuals and organizations who live and work outside the area and whose livelihood is not dependant within the area propose that the way forward for the Waipara River and its community is a greatly reduced reliability of supply to the existing consent holders. Reliability of water supply from the river has deteriorated markedly during the last 12 years. The causes are uncertain but are likely to include increased forestry upstream and perhaps climate change.
6. Augmentation of the Waipara River upstream of White Gorge from the proposed Hurunui Irrigation Scheme is the only option that will meet the

environmental targets and assist the reliability of water to the local community in this naturally water short region.

The Waipara Community seek an addition of water from the proposed Hurunui Scheme into the Waipara River and seek this Committee's support for our vision for the future of the Waipara River.