

From: [John Talbot](#)
To: [Plan Hearings](#)
Cc: [Customer Services](#)
Subject: Evidence on PC7
Date: Thursday, 16 July 2020 9:25:46 am
Attachments: [Evidence of John Talbot for Bowden Environmental on PC7.pdf](#)

Kind Regards
John Talbot

DDI 03 375 5015 | Fax 03 375 5016
Email john@bowden.co.nz | Web
www.bowden.co.nz
Mail PO Box 404, Kaiapoi 7644
Physical 92 Williams Street, Kaiapoi 7630



Please consider the environment before printing this email

Legal Disclaimer : All views or opinions expressed in this message are solely those of the author. Accordingly, Bowden Consultancy Limited / Bowden Environmental do not accept responsibility for the contents of the message unless specifically stated otherwise.

This email is intended solely for the addressee(s) and the information it contains is confidential. If you are not the intended recipient (a) please delete this email and inform the sender as soon as possible, and (b) any copying, distribution or other action taken or omitted to be taken in reliance upon it is prohibited and may be unlawful.

BEFORE THE HEARING COMMITTEE OF THE CANTERBURY REGIONAL COUNCIL

IN THE MATTER of the Resource Management Act 1991 ('the Act')

AND

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

EVIDENCE OF JOHN TALBOT ON BEHALF OF BOWDEN ENVIRONMENTAL

JULY 2020

1. My name is John Talbot. I have a Masters Degree in Civil Engineering from the University of Canterbury and am a Chartered Professional Engineer (CPEng). One of my areas of expertise is in groundwater engineering. I have previously been a senior officer at Environment Canterbury responsible at Director level for, amongst other activities, all Resource Management work of the Council (planning, regulatory, scientific). I am currently a consultant in environmental engineering. I have 40 years' experience in water resource management in Canterbury.
2. I have read the Environment Court's Code of Conduct and agree to comply with it. My qualifications as an expert are set out above. I confirm that the issues addressed in this statement of evidence are within my area of expertise.
3. The data, information, facts and assumptions I have considered in forming my opinions are set out in the part of the evidence in which I express my opinions. I have not omitted to consider material facts known to me that might alter or detract from the opinions I have expressed.
4. In my evidence I address the following matters:
 - (a) S42A responses to submission points (Table attached)
 - (b) Groundwater Allocation Management
 - (c) Surface Water Environmental Flow and Allocation Limits.

Groundwater Allocation Management

5. The sustainable management of groundwater requires two aspects to be dealt with. These aspects are short-term effects and long-term effects. Short-term effects of groundwater abstraction occur over a timeframe of days or weeks (and within an irrigation season or year) and are assessed as drawdown interference effects on surrounding bores and stream depletion effects arising from the abstraction from a single bore, or bore field. The long-term effects are related to an excessive or general continuing decline of groundwater levels over a timeframe of years, and results from the cumulative effect of the combined abstraction from all bores in an aquifer.
6. The only way to ensure long-term average groundwater levels and flows in groundwater-fed streams are maintained is to not allow any abstraction. The way that groundwater responds to variable natural inputs (rainfall recharge and river seepage) and natural outputs (spring-fed streams and lakes, and outflow to the sea) is manifested in changing groundwater levels. Groundwater levels are a direct measure of the amount of water in storage in the aquifers which is continuously flowing under gravity to the sea. If inputs are low in any particular year (e.g. low recharge from low winter rainfall), then groundwater levels decline and outputs decline (i.e. springflows decline, and outflow to the sea declines resulting in a landwards movement of the saltwater/freshwater interface). This is a natural dynamic system that has existed for hundreds if not thousands of years in the Canterbury Plains. The long-term average groundwater level is probably unchanged over a long period.

7. However, when artificial outputs occur (abstractions via pumping from bores) then the groundwater balance is changed, and other natural outputs must be smaller to compensate (including a decline in long-term groundwater levels). A new “equilibrium” is achieved, and the long-term groundwater levels are at a lower level than occurred under natural conditions. This is not a problem so long as:
 - (a) there is not a continuing decline in long-term levels (mining of the groundwater resource)
 - (b) the lower springflows do not cause springfed streams to be at undesirable low flows
 - (c) the saltwater/freshwater interface does not migrate into the aquifers under the land to contaminate the freshwater supplies.

These three effects are described in terms of objectives and policies in the Canterbury Land and Water Regional Plan (LWRP).

8. There are two methods commonly used to manage the cumulative effects over the long-term (although they are related). One method is to identify a critical groundwater level below which unwanted effects occur (often called a “trigger level” which is similar to a minimum flow in a river). When levels reach the trigger groundwater level in an aquifer, then abstraction is restricted or even stopped until levels recover (which they would normally do during the winter recharge period) although they may not recover to the pre-existing level or may take several recharge periods to recover. The other method is to assess a total volume of groundwater that can be abstracted each year while ensuring that, over the long-term, levels do not reach the trigger level or continually decline (but will return on average to a defined lower level than would naturally occur without any abstraction). Both methods require some form of mathematical modelling, particularly the method that sets a total volume.
9. To date, both types of groundwater abstraction management are used in Canterbury. The trigger level method actually encompasses the total volume method, because the height of the groundwater level describes how much groundwater there is in the system. It is a more direct way of managing groundwater abstraction because it defines the critical level below which unwanted effects occur and does not have the uncertainties contained in the total volume method. The total volume method requires sophisticated modelling to define all inputs and outputs (e.g. rainfall recharge, river gains and losses, other land surface recharge, springflow, abstractions, throughflow or outflow, etc). My view is that the trigger level method is best, although it may require some form of modelling to decide how much groundwater to allocate to protect a specified reliability of supply for abstractors.
10. The total volume method appears to be favoured by ECan at this stage. I could agree with this if the sophisticated modelling were to be completed for each groundwater zone to support the volume allocation limit. Such modelling has to date not been completed for any Canterbury groundwater zone. There are approximation methods to estimate a volume limit, but these methods are, to say the least, crude. For example, allocating a percentage of the estimated average annual rainfall, or a percentage of the estimated average annual land-surface recharge (i.e. from rainfall, irrigation and river seepage), are methods that give some measure of

significant allocation. There are endless debates about how to calculate the recharge and what percentage is appropriate.

11. ECan used the total volume method (but calculated using the “crude” percentage rainfall/recharge) in its first regional water plan which was released in 2004 (this was the Natural Resources Regional Plan (NRRP) which was superseded by the LWRP in 2010). The volume limit was established as a sign-post to indicate acceptable allocation. In this respect, “acceptable” was simply a consensus of ECan’s scientists’ views that indicated when there was a reasonably significant concentration of allocation in an area delineated by groundwater “zones”. The “zones” are an artificial construct. They are not hydraulically separate. In addition, it must be acknowledged that the zone allocation limits are based on a percentage of the **average annual** rainfall/recharge whereas the consented allocation (for irrigation purposes which is the major component of allocation) is based on the water demands in an **extreme dry year**, i.e. the consented allocation will meet demands in 9 out of 10 years. In most years, the actual use is much less than this and has been shown to typically be between 40% – 60% of the 9/10 year consented allocation. In other words, comparing total consented allocation to the allocation limit means that over the long-term only half the allocation limit is actually abstracted.
12. However, it was acknowledged that the volume limit should be viewed as a sign-post that should trigger further investigations and assessments using sophisticated techniques to assess effects. The NRRP adopted the volume method as an interim approach through classifying further allocation as a non-complying activity which would require detailed assessments to satisfy policies related to the aspects described above. Under this policy regime, further allocation was granted in some zones based on groundwater levels at the beginning of spring (after winter rainfall recharge was complete for the year). This has been called “adaptive management” and operates in several zones. However, this approach is not now possible under the LWRP due to a change in activity status from non-complying to prohibited.
13. The LWRP incorrectly in my view sets the allocation limits for groundwater zones as if the limits are definitive, i.e. prohibited activity to allocate above the limit (except if the use is for community supply). The LWRP allocation limits are not based on calculations of sustainable limits with acceptable effects or beyond which any additional allocation would produce unacceptable effects. Plan Change 7 (PC7) goes even further and reduces the limits to the current allocation plus 10%. This is even further from any sustainable management approach.
14. I have described the above development of methodologies in some detail because there is confusion amongst some people that the groundwater allocation limits set in the LWRP are to be read as sustainable limits. They are not. The limits were always viewed as “interim” assessments and that ECan would undertake further investigations to refine the numbers based on groundwater modelling. No such work has been carried out in the 16 years since first identifying the management approach and incorporating it in the NRRP and subsequent LWRP. Even a simple updating of the statistical average annual rainfall/recharge to include the recent 20-year period has not been carried out. I would have thought that this updating might account for any recent climate change aspect.

15. The s32 Report “The current state of groundwater quantity in the Waimakariri Zone (2016)” (Report No. R18/81. Etheridge and Wong, 2018) appears to mistakenly interpret the zone limits as: “The purpose of these limits is to allow groundwater abstraction.....without causing significant adverse effects on the water environment” (paragraph 2.1 of the Report). This is not the purpose of the limits as I have described above. However, the Report goes on to analyse groundwater level trends (which is the appropriate method to assess whether total abstraction is causing continuing decline in levels) and concludes that the significant increase in groundwater abstraction in the Waimakariri zone in recent years has not caused significant widespread declines in groundwater levels across the zone (Section 7 of the Report). I agree with this conclusion. However, the Report analyses groundwater level trends in a number of monitoring bores and suggests that, in the Eyre Groundwater Zone, there are two bores that show a declining trend, one with no change and two with increasing trends. Any statistical analysis depends on the data, and in this case the length of period of the data being analysed. The two bores that show a declining trend, according to the Report, have data ceasing in May 2016, i.e. 4 years ago. If the recent 4 years from 2016 to 2020 is added, then those trends may not be declining. The recent 4 years show groundwater levels returning to more “normal” seasonal fluctuations with reasonably good winter recharge (e.g. bore L35/0051, graph attached). The same situation is the case for a monitoring bore at the downstream end of the Eyre zone, in the Silverstream catchment (bore M35/5436, graph attached).
16. However, in a subsequent s32 Report “Waimakariri land and water solutions programme groundwater allocation options and solutions assessment” (Memo. Etheridge, April 2019) it is suggested that the earlier trend analysis shows that groundwater levels are declining. I disagree, as I describe above. In fact, the earlier s32 Report shows a variable response in groundwater levels, not a consistent declining trend across the whole Eyre zone.
17. The Report also notes that abstraction by consent-holders is generally less than half their allocated volume. This is to be expected because the consent allocations for irrigation (which make up the majority of total allocation) are based on meeting needs in an extreme dry year, i.e. meeting needs in 9 out of 10 years. In most years, the actual abstraction will be between 40% - 60% of the allocations. The Report then states that actual abstraction rates could increase without any additional water being allocated. I disagree with this suggestion. Irrigation will occur to match the needs in any particular season, and it will not increase to result in over-watering in most years (inefficient irrigation). It will continue to be within the 40% - 60% for most years. The groundwater modelling (the results of which are briefly summarised in the Report, but the full modelling details appear to not be available) appears to be based on this incorrect assumption that actual abstraction will increase to match the consented allocation and zone allocation limit (the total consented allocation equals the so-called zone allocation limit when fully allocated). In my view, this assumption is incorrect, and the resulting modelling does not reflect any possible reality.

18. The apparent misunderstanding of what the current groundwater zone allocation limit represents is a major flaw in the basis of setting the limits as “environmental limits” or “sustainable groundwater allocation limits” as is often stated in the various reports. The NPSFM and CRPS and, of course, the RMA itself, all require water to be managed sustainability. Part of this management is to set limits that meet the statutory test of “sustainable management”. This must include enabling people and communities to provide for their social, economic, and cultural well-being (RMA Section 5). By using the current zone limits (or the proposed limits which are even further reduced) as if they are sustainable limits does not, in my view, meet the statutory tests.
19. There is a simple way to provide for all the requirements. It should be open to prospective users to show that additional abstraction will not cause adverse effects. This cannot be done while the “prohibited activity” status is maintained – it requires the status to be “non-complying”. This would still be a high level of protection because the objectives and policies must be addressed (those describing the sustainable management of groundwater). In fact, much more lenient requirements are already the case for permitted activities (e.g. Rules 5.113 onwards, which are assumed to continue to apply in the catchment) and for community supply (Rule 5.115, which is a restricted discretionary activity and is also assumed to continue to apply). These Rules allow additional abstraction even if the zone is “fully allocated”. This submission seeks to make other additional abstractions “non-complying activities”, and to retain the current zone allocation limits.
20. In summary:
 - (a) The groundwater allocation limits in Table 8.4 are not “sustainable” limits or limits beyond which unacceptable adverse effects occur. The limits do not meet the “sustainable management” test of s5 RMA.
 - (b) The original groundwater allocation limits, previously called “interim limits”, should be retained and not reduced to an arbitrary existing consented allocation + 10%.
 - (c) Consented allocation is based on extreme dry year water requirements. The cumulative actual annual volume abstraction will be 40% - 60% of the allocation limit over the long-term.
 - (d) Groundwater level analyses of long-term monitoring bores in the Waimakariri catchment do not portray declining trends, even though total abstraction has increased significantly in recent years.
 - (e) Groundwater takes that do not meet condition 2b of Rule 8.5.14 should be amended to be a non-complying activity under Rule 8.5.15 instead of a prohibited activity under Rule 8.5.16.
 - (f) Other amendments are listed in the attached submission Table.

Surface Water Environmental Flow and Allocation Limits

21. This submission relates to several aspects of Tables 8.1 and 8.2. These are: Cam River and Cust River minimum flows, implementation date for new minimum flows, A allocation limits, and B allocation limits.

Cam River Minimum Flow

22. The Cam River is currently managed by a minimum flow of 1,000 l/s, an A allocation block of 700 l/s, and B allocation above this. The proposal is to retain the 1,000 l/s minimum flow but to decrease the A allocation to 350 l/s (which is suggested to be the existing total allocation via current consents), and to cap allocation to just this A block, i.e. no B allocation. This submission requests a minimum flow of 890 l/s and does not seek any other changes from the proposal.
23. The s42A Report rejects the submission to change the Cam River minimum flow to 890 l/s. While there is no analysis in the s42A Report of the 890 l/s number, it does reference an earlier report by Main (2001) which clearly sets out the reasons for the current 1,000 l/s minimum flow and that 800 l/s would be appropriate in the absence of the need for effluent dilution. Further Council studies have subsequently been completed, and in 2009 the Council received a report "Minimum Flows and Aquatic Ecological Values of Lower Waimakariri River Tributaries" (Golder Associates, 2009). That report details the RHYHABSIM methodology that was used, and the recommended Cam minimum flow was 890 l/s. This submission requests that the best science is used for the Cam River minimum flow, i.e. 890 l/s. Justification is sought for why the most recent scientific evidence has not been considered when setting the Cam River minimum flow.

Implementation Date

24. The implementation date for the proposed minimum flows in Table 8.2 is 20 July 2027. This is sooner than the consent expiry dates of most current consents, which is in the early to mid - 2030s. Where there is a significant increase in the minimum flow, some consent-holders will experience a significant decrease in reliability and may have to obtain water elsewhere or build storage (if that is possible under the proposed rules), all of which is expensive. For those consent-holders who will face a significant increase in their minimum flows, it is submitted that their consents should run until their expiry or close to it. The deletion of the column "From 20 July 2027" in the Table 8.2, but retention of the next column "From 20 July 2032" that is recommended in the s42A Report would provide consent-holders adequate time to make appropriate alternative arrangements.

A Allocation Limits

25. It is submitted that the proposed A block limits may not be the correct summation of all existing consents. The s42A Report suggests that the summations for all limits in Tables 8.1, 8.2, and 8.4 (groundwater) are correct. However, at paragraph 7.36 (page 466) it is at least acknowledged that the Council is currently undertaking a project to determine the consented allocation of all water allocation zones within Canterbury, and the results will likely be available at the Hearing to assist in determining an accurate A limit. While this statement relates to the groundwater zone limits, it is nonetheless also relevant to the surface water limits. Because many allocation

limits are the summation of existing consented allocations, it is critical that the summations are correct. This is exacerbated by the groundwater consents that have a stream depletion effect. It must be acknowledged that the stream depletion assessments were desk-top calculations that were not based on site specific parameters for the aquifer. An alternative is to provide a clause in the Tables that states that the A limits are the summations of existing consented allocations which prevail if the number listed is shown to be incorrect.

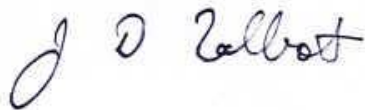
Cust River Allocation Limit

26. The Cust River minimum flow is to be increased from 20 l/s to 60 l/s. This is a significant change for the existing consent-holders. It is submitted that implementation of this restriction should be extended to allow consent-holders sufficient time to adjust and make alternative arrangements. This includes allowing B allocation for storage.
27. It is unclear what the Cust River A block limit of 290 l/s is based on. This limit is certainly the current A limit in the current WRRP, but there appears to be no assessment of whether this limit is still appropriate. It is also unclear what the existing consented allocation is for the Cust River. The "Resource Consent Inventory" (Vattala, 2018) reports the summation of existing consents to be 366 l/s (direct surface water abstractions plus stream depletion groundwater abstractions). However, the detailed working sheets in that report indicate different allocations for direct abstractions and stream depleting abstractions. It must also be acknowledged that the stream depletion assessments were desk-top calculations that were not based on site specific parameters for the aquifer. This is a major shortcoming of these assessments of existing allocation. In another report "Waimakariri Land and Water Solutions Programme" (Arthur et. al., May 2019) it is reported that the current consents total 394 l/s. There are discrepancies which must be resolved. It is requested that a review of the existing consented A allocations be carried out. It is also submitted that the A block limit be set at the existing allocation as opposed to the current A block limit of 290 l/s.
28. The B block limit is proposed at 131 l/s compared to an unlimited limit in the current WRRP. It is reported that the 131 l/s is the summation of existing consented B allocation. However, there is an opportunity to provide for reliable water supply through the use of storage. This is particularly important with the proposed increase to the A minimum flow and could be restricted to A consent-holders to compensate for decreased reliability. The Cust River often floods during winter and flood flows can be large (tens of cumecs). Providing a B block limit of 1,000 l/s (one cumec) when flows are large, say, greater than 3 cumecs, may not detract from the ecological values of the River. An important flow rate for rivers is 3 times the median flow which is thought to be a rate at which bed sediments are turned over to refresh the bed (also discussed in the Arthur (2019) report at page 53). The median flow of the Cust River is around 500 l/s (0.5 cumecs). The B abstraction would only likely occur during winter (the River responds to winter rainfall on the plains) and filling storage would be for a short duration. The s42A Report (paragraph 6.114) indicates that an ecological assessment was carried out for B allocation. However, it was advised by ECan staff that the decision to cap the Cust River B allocation at 131 l/s was based on expert judgement following the completion of the report by Arthur (2019) and that the rationale for the Cust River B allocation aligns with reasoning and

discussion set out on page 50 of that report. I cannot find any analysis supporting this “reasoning” for the proposed B limit of 131 l/s (which is reported to be the current consented summation). There are options for providing for this type of “flood flow” allocation such as a gap to a higher minimum flow as I have suggested. This option would become a C allocation with a gap above the proposed A and B allocations.

29. In summary:

- (a) The Cam River 1,000 l/s minimum flow was originally established to, amongst other things, cater for the District Council’s effluent discharge. That discharge was discontinued in the mid-2000s. The Council’s scientific studies recommended, in the absence of the discharge, that the minimum flow should be 890 l/s.
- (b) The implementation date for the proposed minimum flows is 20 July 2027, which is a short timeframe for consent-holders to make other arrangements. Most consents expire in the early-mid 2030s. It is submitted that the second column of the Table 8.2 with date 20 July 2032 is more appropriate.
- (c) Incorrect summations of existing consent allocations that provide the proposed A limits may inadvertently classify replacement consents as prohibited. A clause that states that the A limits are the summations of existing consented allocations which prevail if the number listed is shown to be incorrect, would resolve this issue. Alternatively, replacement consent applications should be exempt from complying with the allocation limits.
- (d) The Cust River minimum flow is increasing significantly, and A and B allocations are proposed to be capped. It is unclear what the A limit of 290 l/s is based on. It is submitted that the A and B limits be the summation of the existing consented allocations. The provision of a reasonable C allocation of 1,000 l/s would allow consent-holders the option of installing storage to alleviate the increased A minimum flow.



John D Talbot
CPEng
16/7/20

(1) The specific provisions of PC7 that Bowden Environmental's submission relates to are:		(2) Bowden Environmental's submission is that:		(3) Bowden Environmental seeks the following decisions from Environment Canterbury (ECan) (Note: amendments sought to the text of PC7 are shown with additions in <u>underline</u> and deletions in strikethrough).	Comments on s42A response.
Section & Page Number	Sub-section/ Point	Oppose/ support (in part or full)	Reasons		
Section 4 Policies Page 14	Policy 4.6	Oppose	Stockwater needs and drinking-water needs require better description to allow for priority usesstockwater needs, <u>including water for stock drinking, dairyshed washdown and animal welfare</u> ; an individual's or community's <u>domestic needs, including drinking-water needs,</u>	S42A has made some amendments to this Policy. However, it is not clear what "stockwater needs" include. The submission attempts to clarify what these needs include as priority needs; in particular, animal health and welfare, and the washdown requirements. These quantities are relatively small. The submission seeks this clarification.
Section 7 Hurunui- Waiau Page 54	7.6 Allocation Limits Table 6	Oppose	The decrease in the limit for the Kowai groundwater allocation zone is not based on any resource management assessment, e.g. sustainability assessment or adverse effects assessment.	Retain limit of 17.4 MCM/yr	S42A rejects the submission. See additional comments on groundwater zone allocation limits.
Section 8 Waimakariri Page 59	Northern Waimakariri Tributaries Freshwater Management Unit	Oppose	The Eyre River headwaters are not north-west of Oxford; they are to the west and south of Oxford. The Eyre River is dry for most of the year and over most of its course rather than the more limited description suggested. An incorrect description appears to lead into policies which classify the Eyre River as a natural state waterbody, which it simply cannot be described as.	Rewrite the description for the Eyre River	S42A appears to accept in part that the Eyre River is not a flowing waterbody. However, the amendment doesn't quite acknowledge that the river does not flow for most of the year, and when it does it is due to stormwater relief. Policy 8.4.5 classified the river as a natural state waterbody, but this Policy appears to have been deleted.

Section 8 Waimakariri Page 61	8.1A Definitions – Deep groundwater	Oppose	Deep groundwater is referenced in policies and rules for substituting surface water or stream depleting groundwater takes with groundwater takes that have limited or no stream depletion. The definition is very restrictive with the requirement of an average abstraction rate less than 10 l/s. The rate of take does not define an aquifer system, and this definition eliminates most irrigation takes. The depth and distance requirements are sufficient.	Delete clause c	S42A accepts the submission in part. Deletion of the definition of “deep groundwater” accompanied by amendments to the relevant Policy 8.4.15 and Rules 8.5.12 and 8.5.12A and 8.5.13 have been recommended. These recommendations are appropriate. However, it is noted that the Rule 8.5.13 still refers to conditions 5 and 6 of amended Rule 8.5.12, which are shown to be deleted. Clarification is sought.
Section 8 Waimakariri Page 62	Policy 8.4.5	Oppose	The Eyre River cannot be described as a natural state waterbody. There are many activities carried out in the bed that may be curtailed if the classification remains.	Delete Eyre River from the policy	S42A accepts the submission and recommends deleting the Policy.
Section 8 Waimakariri Page 63	Policy 8.4.12	Oppose	Additional priority uses should not be subject to restrictions	As per relief sought for policy 4.6 above	S42A rejects the submission. Exceptions to the Policy currently only include uses for stock drinking water and community water supply. The submission seeks that water used for animal health and welfare and dairymed washdown requirements are also included as exceptions. The volumes for these purposes will be small and are essential for the care of animals and dairymed cleanliness. The relevant rules would consequentially require amendment to allow these priority uses even when allocation limits are exceeded.

Section 8 Waimakariri Page 64	Policy 8.4.16	Oppose	Additional priority uses should not be subject to restrictions	As per relief sought for policy 4.6 above	S42A rejects the submission. Exceptions to the Policy currently only include uses for renewals of consents, community water supply, enhancement of mahinga kai, environmental enhancement, and non-consumptive takes. The submission seeks that water used for animal health and welfare and dairymshed washdown requirements are also included as exceptions. The volumes for these purposes will be small and are essential for the care of animals and dairymshed cleanliness. The relevant rules would consequentially require amendment to allow these priority uses even when allocation limits are exceeded.
Section 8 Waimakariri Page 64	Policy 8.4.17	Oppose	The policy appears to prohibit the transfer of a water take permit to another property. This includes a groundwater take. This applies even if the allocation zone is not over-allocated (groundwater zone or surface waterbody). Transfer is an efficient method to re-distribute available water. Region-wide policies 4.50 and 4.71 adequately cover the situation.	Delete Policy 8.4.17	S42A recommends amendments to the Policy to only refer to the Ashley River. Reference to other waterbodies are thereby removed. This is appropriate.
Section 8 Waimakariri Page 64	Policy 8.4.18	Oppose	Region-wide policies 4.50 and 4.71 adequately cover the transfer and granting of permits in over-allocated zone.	Delete Policy 8.4.18	S42A recommends amendments to the Policy which go a long way to reverting to the region-wide Policies. This is appropriate.

Section 8 Waimakariri Page 70	Policy 8.4.36 and Policy 8.4.37	Oppose	Durations should be for the maximum in accordance with resource management. Short-term durations impede long-term planning. The use of the review of consents should be relied on.	Delete Policies 8.4.36 and 8.4.37	S42A recommends amendments to the Policies, but essentially retains the directive on duration and expiry date. The RMA s123 sets out durations of various types of consent. Where there is provision for the duration to be other than the maximums set out in this section, it is for the consent decision-maker to make that determination in the context of sustainable management. Reviews of consents during their term are valid and when a new Plan requires new restrictions is one such reason for review. Otherwise, it may not be lawful to fetter the decision-maker on duration.
Section 8 Waimakariri Page 70	Policy 8.4.38	Oppose	Reviews are a valid method to implement a new Plan's flow and allocation regimes. For those consents that will be subject to a change in restrictions, a longer lead-in time should be provided.	Amend review date to that of the majority of consent expiry dates for the surface waterbodies. This is around the early to mid 2030s.	S42A recommends no amendments to the Policy except for "readability" reasons. The dates set out in the Policy to review consents have been brought forward. The dates in the relevant Tables 8.1, 8.2 and 8.3 which specify the date at which new minimum flows are to be implemented remain as notified. It is these implementation dates that are critical for consent-holders. A submission has been made on the Tables and further comments are provided there.

<p>Section 8 Waimakariri Page 75</p>	<p>Rules 8.5.6 to 8.5.11</p>	<p>Oppose</p>	<p>These surface take rules refer to allocation limits specified in Tables 8.1, 8.2 and 8.3. These allocation limits are ECan staff calculations of the sum of all current surface take and groundwater stream depleting take consents. These summations have in the past been shown to be incorrect. The concern is that the limits in the Tables may unnecessarily restrict renewals simply because they have been incorrectly summed. The conditions provide that the activity becomes a non-complying activity under another rule which is unfair simply because of an incorrect calculation. Where the allocation limit is greater than the currently consented summation, i.e. there is still allocation available, then the limit should still apply. It is only where the limit has been capped to currently consented summation that the condition 2b needs amending. Region-wide policy 4.50 still applies for renewals, and this requires some reduction in over-allocated zones.</p>	<p>Delete from condition 2a of rule 8.5.9 the phrase following the abbreviation "...RMA...".</p> <p>Condition 2b of rule 8.5.9 needs to refer to all consented takes that exist as at the date of the Plan, rather than a potentially incorrect summation for the allocation limit.</p> <p>Delete condition 13 of rule 8.5.9, or add reference to Policy 4.50 instead of seeming to require the first renewals to achieve all the reduction required to meet the allocation limit.</p> <p>Delete reference to 2a in rule 8.5.10</p> <p>There may be consequential amendments required to other rules</p>	<p>S42A recommends no amendments to Rules 8.5.9 and 8.5.10. The s42A suggests that the Council's summations of current consent allocations (which are set out as the allocation limits in the Tables) are correct. Our experience is that these summations are not correct, especially when the Council has "estimated" groundwater stream depletion rates rather than assessing these using site specific aquifer pumping test data. The allocation limits in the Tables simply "cap" the allocation at the current total consented rate. A simple amendment to the condition 2a will both maintain the integrity of the allocation limit and allow for renewals. In addition, the matter of discretion 13 appears to be redundant for renewals if, as is stated, the allocation limit is simply the summation of current consents.</p> <p>This allocation limit issue may affect renewals in an unintended manner, and there is a simple amendment to deal with it.</p>
--	------------------------------	---------------	--	--	---

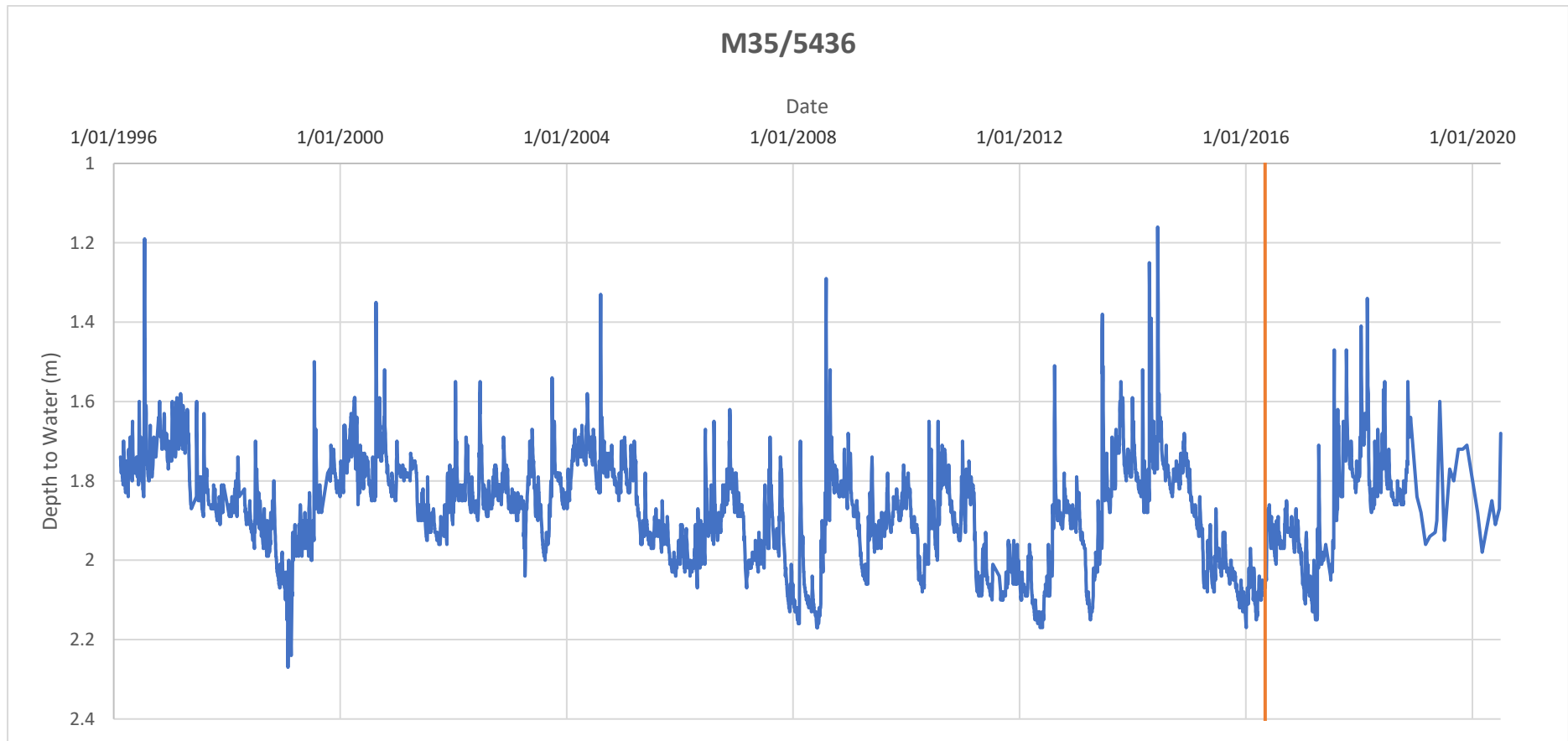
<p>Section 8 Waimakariri Page 77</p>	<p>Rules 8.5.12 to 8.5.16</p>	<p>Oppose</p>	<p>These groundwater take rules refer to allocation limits specified in Table 8.4. These allocation limits are not based on science. Further submissions are made below on this point. For stream depleting groundwater takes, the incorrect summations for the allocation limits in Tables 8.1, 8.2 and 8.3 may unnecessarily restrict renewals.</p> <p>The requirements for assessment of stream depletion are set out in Schedule 9. Condition 1 of rule 8.5.14 needs to refer to that schedule in the same manner as regional rule 5.128.</p>	<p>Delete from condition 2a of rule 8.5.14 the phrase following the abbreviation "...RMA...".</p> <p>Condition 2b of rule 8.5.14 needs to refer to all consented takes that exist as at the date of the Plan, rather than a potentially incorrect summation for the allocation limit.</p> <p>Delete reference to condition 2a in rule 8.5.15, add reference to condition 2b</p> <p>Delete reference to condition 2b in rule 8.5.16 related to Table 8.4 groundwater allocation limits, and add reference to condition 2b in rule 8.5.15</p> <p>Replace condition 1 of rule 8.5.14 with condition 2 of rule 5.128 with the necessary modifications to refer to Tables 8.1 and 8.2.</p> <p>There may be consequential amendments required to other rules</p>	<p>S42A recommends no amendments to Rule 8.5.14. The s42A suggests that the Council's summations of current consent allocations (which are set out as the allocation limits in the Tables) are correct. Our experience is that these summations are not correct, especially when the Council has "estimated" groundwater stream depletion rates rather than assessing these using site specific aquifer pumping test data. The allocation limits in the Tables simply "cap" the allocation at the current total consented rate. A simple amendment to the condition 2a will both maintain the integrity of the allocation limit and allow for renewals.</p> <p>This allocation limit issue may affect renewals in an unintended manner, and there is a simple amendment to deal with it.</p>
--	-----------------------------------	---------------	---	--	--

Section 8 Waimakariri Page 74 and 77	Notes to the rules	Support in part	It is not made clear that some “regional rules” in section 5 of the plan are still valid, e.g. small and community takes	Amend the notes to clarify that regional rules still apply.	It is unclear whether a “Note” is part of the formal Plan provisions. In addition, there are some “Notes” that say that some rules prevail over specified regional rules in section 5 of the LWRP. However, there are other regional rules that are not referenced in these “Notes”. The concern is whether it is clear that those other regional rules are still relevant in situations where the activity could be covered by both regional and chapter specific rules.
Section 8 Waimakariri Page 79	Rule 8.5.18	Support in part	Groundwater takes should be required to meet drawdown interference effect limits in the same manner as all other groundwater takes	Add condition 4 of rule 8.5.12 to conditions of this rule 8.5.18	S42A recommends adding the condition.
Section 8 Waimakariri Page 90	Table 8.1	Oppose	The allocation limits appear to mostly be ECan’s staff summation of current consent rates. In the past, these summations (including direct takes and stream depleting groundwater takes) have been shown to be incorrect. This will unnecessarily restrict renewals of consents. Amendments have been requested in above rules, but the Table limits need to acknowledge this as well.	Request details of summations to confirm limits, and add a note to the Table to provide flexibility should the summation later be shown to be incorrect.	S42A recommends no amendments to the allocation limits in the Table. The s42A suggests that the Council’s summations of current consent allocations (which are set out as the allocation limits in the Tables) are correct. Our experience is that these summations are not correct, especially when the Council has “estimated” groundwater stream depletion rates rather than assessing these using site specific aquifer pumping test data. The allocation limits in the Table simply “caps” the allocation at the current total consented rate. There needs to be provision for current consents to be renewed without penalty in all situations

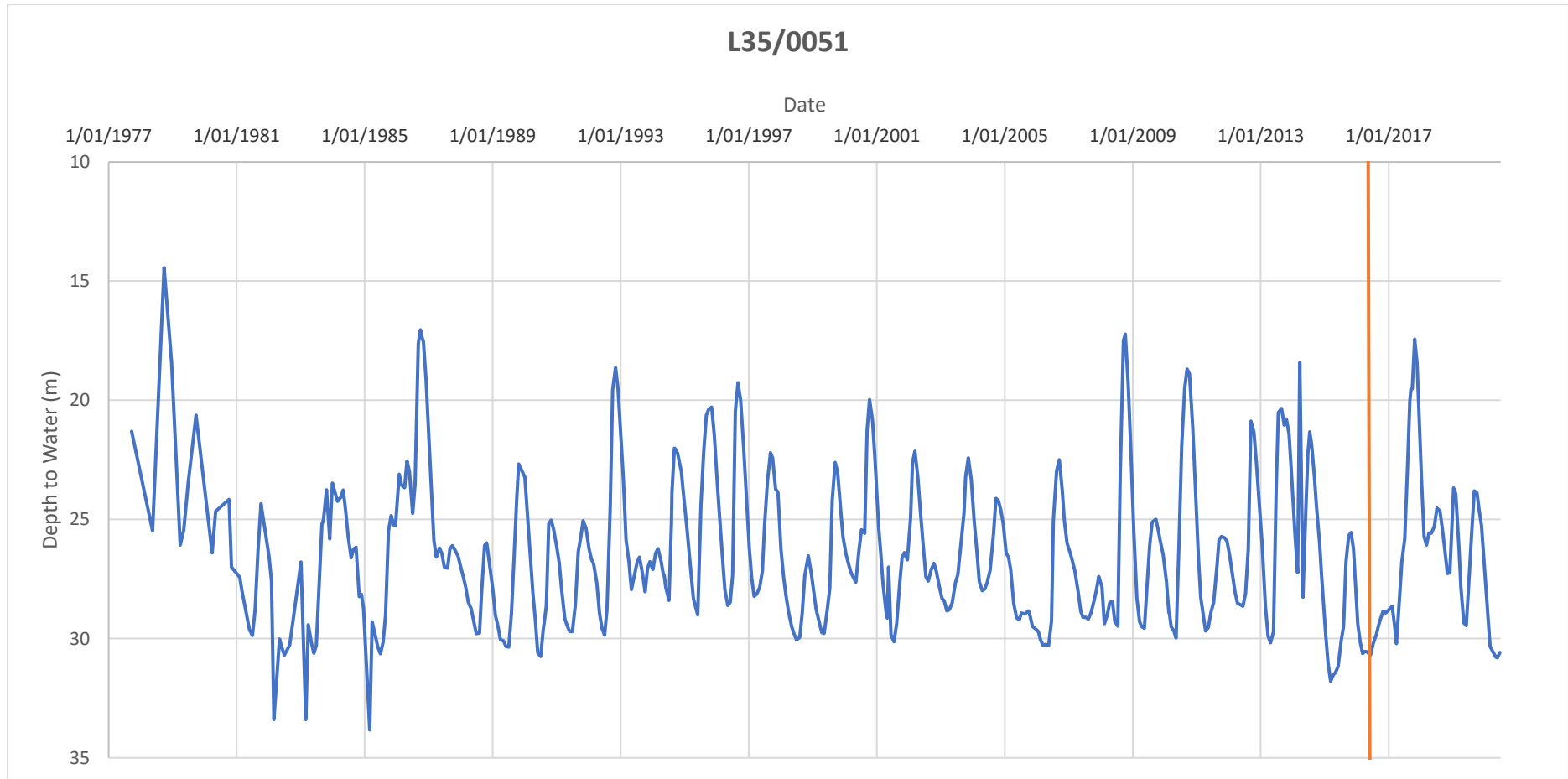
					where the allocation zone becomes “over-allocated”.
Section 8 Waimakariri Page 91	Table 8.2	Oppose	<p>The allocation limits appear to mostly, but not all, be ECan’s staff summation of current consent rates. In the past, these summations (including direct takes and stream depleting groundwater takes) have been shown to be incorrect. This will unnecessarily restrict renewals of consents. Amendments have been requested in above rules, but the Table limits need to acknowledge this as well.</p> <p>The minimum flow of 1000 l/s for the Cam River is not based on science.</p> <p>The Cust River currently allows unlimited B allocation, and the proposed limit is set at 131 l/s. This is assumed to be the summation of currently consented B permits. This needs to be confirmed. In addition, when the river is in high flow, there is an opportunity to store water, typically during winter.</p> <p>The Eyre River is included in the Table 8.2 but has no provisions. It is unclear what this means. Does it mean that takes from the river and stream depleting groundwater is prohibited? Perhaps the intention is to continue the current provisions that do not provide any restrictions. In contrast, Policy 8.4.15</p>	<p>Request details of summations to confirm limits, and add a note to the Table to provide flexibility should the summation later be shown to be incorrect.</p> <p>Change the Cam River minimum flow to 890 l/s.</p> <p>Allow B allocation limit of 1,000 l/s.</p> <p>Delete the Eyre River line from Table 8.2.</p>	<p>S42A recommends no amendments to the allocation limits in the Table. The s42A suggests that the Council’s summations of current consent allocations (which are set out as the allocation limits in the Tables) are correct. Our experience is that these summations are not correct, especially when the Council has “estimated” groundwater stream depletion rates rather than assessing these using site specific aquifer pumping test data. The allocation limits in the Table simply “caps” the allocation at the current total consented rate. There needs to be provision for current consents to be renewed without penalty.</p> <p>S42A recommends no amendments to individual rivers’ minimum flow and allocation limits. Additional comments are provided in this evidence on the Cam River and Cust River.</p> <p>The Eyre River is included in the Table 8.2 with no allocation allowance. It is not clear whether this means that taking is prohibited (as it is for the Kairaki/Mackintosh River listed below the Eyre River in the Table) or whether there are no restrictions. If it means that</p>

			<p>clearly prohibits any taking from Kairaki/McIntosh SWAZ, and this is similarly set out in Table 8.2.</p> <p>The dates for implementing the new minimum flows appears to be 2027.</p>	<p>Extend the implementation date to reflect most current consent expiry dates.</p>	<p>takes are prohibited, then this would result in a significant number of existing groundwater stream depletion takes being prohibited. It should be made clear that the Eyre River has no restrictions or alternatively, remove the line from the Table.</p>
<p>Section 8 Waimakariri Page 92</p>	<p>Table 8.4</p>	<p>Oppose</p>	<p>The current allocation limits for each groundwater allocation zone are based on expert opinion of the stage that a closer examination of sustainability is required. They are not sustainable limits or limits beyond which adverse effects are shown to occur. Reducing the limits even further are likewise not based on resource management assessments and may unnecessarily restrict further economic growth and prosperity within the Waimakariri District. If there are water quality effects as a result of changes in land use brought about by irrigation, then this is covered in other nutrient management land use rules.</p>	<p>Retain current limits as “interim” limits and amend the rule relating to allocation above the limit to be a non-complying activity rather than a prohibited activity.</p>	<p>S42A recommends no amendments. Additional comments on the groundwater allocation issue are provided in this evidence.</p>

Section 11 Selwyn Te Waihora Page 106	Rule 11.5.33	Oppose in part	This rule is referenced in the amendment to rule 11.5.35. Rule 11.5.33 has condition 8 relating to drawdown interference effects but does not exclude the requirement for renewals. All other groundwater take rules in the LWRP exclude the requirement for renewals. This exclusion has been incorporated in proposed rules 8.5.14 (page 78) and 14.5.9 (page 146). The same provision is required in rule 11.5.33.	Replace condition 8 of rule 11.5.33 with condition 4 of rule 8.5.14	Rule 11.5.33 is the only groundwater take rule in the LWRP, including the proposed rule 8.5.14 of this PC7, that doesn't explicitly exclude existing consents from meeting the Schedule 12 drawdown interference requirements. In some situations, existing consents will not meet the drawdown limits and will not be able to be renewed. This, surely, is not the intention.
Section 13 Ashburton Page 111	Policy 13.4.5A	Oppose	It is unclear what the reference to "economic impacts on any other authorised abstraction" is referring to. Is it existing groundwater users or surface water users? The policy reads as if the reliability of existing groundwater users can be ignored to some extent for the benefit of the surface waterbody. The reliability of existing groundwater users should not be reduced beyond those thresholds set out in Schedule 12.	Delete Policy 13.4.5A	S42A accepts the submission and recommends deleting the Policy.
Section 13 Ashburton Page 116	Rule 13.5.30A	Oppose in part	The rule allows for further effects on existing groundwater users beyond the thresholds set in Schedule 12 and seeks to include that the effects are no greater than 25% of the available drawdown. However, for some bores an interference effect of 25% may result in an effect which is more than minor. The classification as a non-complying activity brings the non-compliance with condition 3 into line with all other rules in the Plan	Delete the conditions of rule 13.5.30A Consequential amendments to rule 13.5.31 removing reference to rule 13.5.30A	S42A accepts the point of the submission. In particular, the condition on interference effects is recommended to be deleted.



Vertical red line is end of ECan's assessment period which is updated in this graph to show that levels are not declining.



Vertical red line is end of ECan's assessment period which is updated in this graph to show that levels are not declining.