

TAKAKA FLAG MEETING 13 NOTES: 24 and 25 September 2015

Purpose:	Takaka Freshwater and Land Advisory Group (FLAG)– Meeting 13
Date:	24 and 25 September 2015
Time:	9.30am-3.00pm
Venue:	Takaka Fire Station
Present:	<p>FLAG members: Graham Ball (GB) Mirka Langford (MLa) Mike Newman (MN) Mik Symmons (MS) Piers MacLaren (PM) Neil Murray (NM) Hika (Matt) Rountree (HR) Tony Reilly (TR), (only on the 24th) Kirsty Joynt (KJ), Greg Anderson (GA), Andrew Yuill (AY) (co-opted member) Martine Bouillir (MB- council representative on FLAG) (only on the 25th)</p> <p>Staff: Mary-Anne Baker (MAB – Senior Environmental Policy Planner) Joseph Thomas (JT -Resource Scientist - Water & Special Projects) Lisa McGlinchey (LM – Environmental Policy Planner) Trevor James (TJ- Resource Scientist – Water Quality & Aquatic Ecology) Steve Markham (SM – Environmental Policy Manager)</p> <p>Other Rochelle Selby-Neal (RSN -Independent Facilitator) Andrew Fenemor (AF – Landcare Research) Roger Young (RY - Cawthron Institute) (24th, left at 10.30am on 25th)</p>
Apologies:	Margie Little (MLi- iwi representative on FLAG) (24th&25th) Martine Bouillir (MB- council representative on FLAG) (24th) Tony Reilly (TR) (25th)
Notes taken by:	Lisa McGlinchey (supplemented by other staff)
Definitions and Abbreviations	FLAG = Freshwater and Land Advisory Group NPS-FM 2014 = National Policy Statement for Freshwater Management 2014 NOF= National Objectives Framework – under the NPS-FM TRMP = Tasman Resource Management Plan (the Plan) TWMC = Takaka Water Management Catchments SOE = State of the Environment WCO = Water Conservation Order application for Te Waikoropupu Springs and recharge area AMA = Arthur Marble Aquifer TLA = Takaka Limestone Aquifer TUGA = Takaka Unconfined Gravel Aquifer MALF = Mean Annual Low Flow TWS = Te Waikoropupu Springs l/s = litres per second
<i>Note: records of discussion points have been grouped into similar topics and are not necessarily in the order discussed at the meeting. Notes in square brackets [] have been added post meeting for clarity.</i>	
FLAG MEMBERS PLEASE NOTE: If you have any questions or need anything between meetings, then please contact Mary-Anne Baker by email: marya@tasman.govt.nz or by phone ddi 03 543 8486.	

Day 1 - 24 September 2015

[Post meeting note: These are not minutes of the meeting. These are summary notes of the key points, questions, and discussions from the meeting. When reading these please be aware that FLAG members are encouraged to “think out loud” or “think in public”. Therefore, the ideas and views expressed are not definitive and are open to change and development throughout the policy development and planning process. All decisions made by FLAG at this stage are interim decisions, which will be reviewed on a catchment wide basis.]

Purpose of Meeting

To decide the key elements of the management regimes, including the allocation and flow limits, for the:

Day 1 (24th)

- Waingaro River
- Anatoki River
- Pariwhakaoho River (& coastal catchments)

Day 2 (25th)

- Upper Takaka River
- Rest of AMA
- Motupipi River
- Other remaining catchments

Welcome and Karakia

RSN welcomed the group, acknowledged the passing of Kevin Heberd and several of the FLAG members' parents since the group last met. RSN led the group in the Karakia.

FLAG members unable to attend the two days of meeting (24&25th) will need to review the group decisions from the two days. MAB will be meeting with those unable to attend both days to discuss the outcomes.

Action: MAB to book meeting with MB, MLI and TR to discuss the group outcomes.

RSN introduced Roger Young from Cawthron, and Steve Markham, policy manager at TDC. The FLAG members introduced themselves.

RSN highlighted that the agenda is very full, but the intention is that discussions be allowed to continue if they are progressing towards a useful conclusion. The agenda may be changed throughout the day to accommodate this process.

Check-in

No check-in issues raised by the group.

RSN provided the group with feedback from Margie Little as she could not attend the two-day meeting.

(MLi via RSN) “Hope the meetings go well, it will be interesting to see what comes out of two days. I am curious to see how the waterwheel has progressed and if the process has helped or will help to reach a decision.

To me finding an acceptable minimum water level for the rivers is paramount especially the Takaka at the Paynes Ford and Waitapu Bridge.

The other area of concern is the amount of water allocated or not allocated to the system for Te Waikoropupu springs to survive on top of all the permits when everything is maxed out in a dry spell.”

Session 1: Updates

Andrew Yuill's role in the group

RSN: Andrew Yuill has been co-opted into the FLAG regarding targeted advice regarding Te Waikoropupu Springs. As a co-opted member, under the FLAG Terms of Reference, he does not have voting rights when the group makes decisions.

RSN: There was some potential confusion evident in the past meeting notes around the relationship between the FLAG and the progression of the Water Conservation Order (WCO) process. By Andrew being involved in the group the FLAG has a closer relationship with the applicants of the WCO and this will allow the FLAG to consider the WCO application more comprehensively during the FLAG process. This does not necessarily mean the WCO will not be progressed in the future.

PM: I don't think Andrew Yuill should be limited to providing information just on the Te Waikoropupu Springs as he has other good advice to provide on other aspects.

RSN: How does the rest of the group feel about this?

Group Decision: *General consensus that the FLAG happy with Andrew Yuill's wider contribution – group agreed Andrew can provide valuable advice for a range of topics and should not be confined to input on Te Waikoropupu Springs.*

AY: I am here primarily focussed on Te Waikoropupu Springs. The WCO has been applied for and I see a relationship with the FLAG process as providing information for building on our application and that we can work together. I'm confident that this can be achieved. I would welcome any feedback on the WCO application – good or bad. I have worked out how the aquifer water gets so clear myself, but I have passed this through NIWA staff for review and they have provided commentary on this.

Andrew provided the FLAG members with the following documents:

- *Draft Water Conservation Order application as at 24th June 2015.*
- *A summary of comments from Graham D. Fenwick (NIWA) (dated 3 Dec 2013) on the aquifer ecology and biology points raised in the WCO Application.*
- *Report by Graham D. Fenwick (NIWA) titled 'Sustainability of Te Waikoropupu Springs' Aquifer Ecosystems' (March 2015).*

MAB: Can we put these documents on the TDC website? - do you mind it being public?

AY: Yes, I don't see why not.

MAB: We should probably check with iwi too.

AY: The iwi were happy that it was at least shared with the FLAG.

Action: Staff to photocopy and ensure all FLAG members have a copy of Andrew Yuill's documents and check with iwi about their public release on the FLAG webpage on the TDC website.

Attribute Meetings

At the two previous attribute sub-group meetings. The FLAG members reached conclusions for the attributes and grades for all the attributes identified for the WaterWheel. The Te Waikoropupu Springs Flow and Cultural Health Index attributes still need further consideration regarding numbers.

MAB: We will need to talk with iwi further on cultural health aspects.

WaterWheel Use

RSN: What do the FLAG think about use of the WaterWheel for assisting in the process?

AF: That is up to the group. The WaterWheel enables comparison of scenarios and could be of use in the RMA Section 32 evaluation process.

MAB: Any decision the FLAG makes needs to be supported by evaluation of the costs and benefits and the WaterWheel could help with this aspect. It could also assist in reviewing the management objectives, with respect to the attributes.

MS: What is the hierarchy of decision making? - when we are making decisions and looking at costs and benefits, will we be potentially not pursuing benefits due to the context of the NPSFM?

MAB: In Takaka I don't think we will be at the levels in the NPSFM as we are in much higher categories already.

TR: Has the WaterWheel been used by any other council? – does it have enough detail from an economic analysis point of view?

AF: [The WaterWheel is a tool being developed for simplifying complexity for catchment management. It has been used by an ECan collaborative group to compare scenario outcomes, and is being trialled in Ruamahanga (Wairarapa) but not elsewhere that I am aware of. The WaterWheel doesn't have sufficient information to make detailed decisions for every zone, but could be used to evaluate overall catchment outcomes once those detailed decisions are made.]

Session 2 – Methodology Overview

Presentation by Dr Roger Young (Cawthron Institute) – approach to setting environmental flows and allocation limits

Roger introduced himself and provided an overview of the approaches to setting environmental flows and allocation limits for rivers in the Takaka catchments to protect aquatic ecological values.

Key Points:

- Roger is a freshwater ecologist (with Cawthron Institute for last 17 years) and has been involved in previous limit setting work and water reviews in Tasman and in Takaka. He produced an interim framework for the Takaka rivers in 2006 – this split the rivers into a number of river groups with similar species and habitat retention requirements and identified recommended methodologies for setting low flows.
- Different fish species and invertebrate species have different habitat and flow requirements
- There are various factors of a flow regime that are important, including regular flushing flows, minimum flows for rivers, and habitat maintenance needed for different species
- Minimum flows – we need to look at when water takes are restricted or ceased.
 - We need to think about security of supply effects of different allocations and low flow regimes.
 - We also need to look at the flow statistics used (eg 7 vs 1 day MALF) as these have different impacts – I suggest sticking with the 7-day MALF statistic, but it is something for the FLAG to think about.
- If we have a high allocation limit we can lose the flushing flows and the rivers 'flat line'. We also need to consider security of supply for users.
- There are different methods for determining the habitat requirements and flow levels [refer technical assessment methods slide 11]. Some are easily applied and non-specific, while others are more detailed, but are data hungry, expensive and can be controversial to apply.
- Flow Guidelines for Instream Values, Report for MfE 1998 looked at the different methods available to look at flows and habitat availability and change

<http://www.mfe.govt.nz/publications/fresh-water/flow-guidelines-instream-values-volume>).

- These methods help guide decision making by providing information on what the river system can naturally provide and the effects of different low flow and allocation regimes on the natural system.
- High value, accept minimal risk, provide 90-100% habitat retention and allocation at 10-20% MALF vs low value approach, accept more risk, provide 60-80% habitat retention and allocation at 30-50% of MALF (refer slide 13)
- We will be discussing what the specific numbers for risk management should be over the next two days.
- If we have specific aspects to protect – ie a specific fishery or rare species to protect we may set a higher threshold to protect more of their habitat.
- Roger has updated his 2006 interim framework in light of new information and the FLAG process and has identified new river groupings including the coastal rivers (Takaka North plus Wainui), Waingaro, Anatoki, Upper Takaka, Motupipi, Te Waikoropupu and Pohara Flats/Clifton.
- Process for today:
 - We will be looking at the historic flow approach in all river groups – what the natural system provides
 - Minimum flows equal a percentage of the naturalised 7-day MALF with high values sites between 90-100% of the 7-day MALF and low value sites 70-80% of the 7-day MALF.
 - Allocation limits equal a percentage of the 7-day MALF (depending on security of supply required) high value sites are between 10-20% and lower value sites between 30-50%
 - Minimum flows should equal a cease take trigger
 - Allocation rationing triggers are only suggested for Anatoki and Waingaro Rivers – a single step of 50% cut in takes when the flow equals the minimum flow plus the allocation limit.

Questions and comments arising:

AY: Regarding the minimum flow rate, the NIWA comment received on the WCO [refer NIWA letter 3 Dec 2103] noted that the dissolved oxygen in the aquifer is replenished primarily by recharge and as recharge declines, aquifer flows decline, and the dissolved oxygen levels reduce. Where does this fit into defining minimum flow needs?

RY: Water quality and dissolved oxygen are included under point number 4 'Focus on critical flow related environmental requirements' (refer slide 3), which includes consideration of critical flows.

AY: It is important when considering minimum flows that we consider the need for oxygen to make it into the aquifer system.

GA: How do you account for 'flat lining' of rivers when you extend the period a river is below MALF, which then affects oxygen levels - how do we factor this in?

RY: There has been quite a lot of research on this – if a river goes down to a low level for one day - it is very different if it is at that level for a month. One of the key aspects is maintaining flushing flows as this affects periphyton growth, which can impact significantly on dissolved oxygen levels at low flows. Dissolved oxygen levels don't automatically drop at low water levels, as you can get more oxygen exchange in more turbulent low flows. Water temperature can also influence low flow dissolved oxygen levels.

MN: the FLAG is in a bind – everything has been done previously on historic flow approaches – how do we convince the community that we need to look forward to a new approach – that these other issues and attributes are also important – some people are still focused just on volume only?

RY: It will be interesting to see how we progress over the next two days. The historic flow approaches will always be useful at a regional broad scale, but for local situations with localised issues, such as low dissolved oxygen, we will need to look at things in more detail to make good decisions.

SM: Where does the IFIM [In-stream Flow Incremental Methodology] fit in the technical assessment methods matrix [slide 11]?

RY: It is the same as the hydraulic habitat modelling.

TJ: This was discussed at earlier meetings.

JT: Some work has been done comparing IFIM with the historic flow approach (50 case studies) to look at the correlation. Most of the correlations of IFIM triggers sat at about 80% of MALF.

AF: What are the hydrological implications if we use MALF and we decide to set an allocation limit at 10% rather than some other percentage?

RY: To give you an example, if the MALF was 1000 l/s, if the group decided the allocation limit was 10% - this would be 100 l/s. As the flows reduce from say 4000 to 3000 to 2000 l/s 100 l/s is taken out – when it gets to 1200 l/s we are still taking 100l/s. We may set a limit at 1100 l/s for a cease take. The river may then naturally continue to drop below 1000 l/s.

AF: So Greg's question about the effect of the duration of low flow – in dry years the low flow may go down and stay down for a prolonged time – this is the trade-off we are making.

GA: My question was more about what impact did this have on the fish populations.

RY: My colleague has done work recently looking specifically at this (hot off the press).

JT: Regarding the size and morphology of the river – this affects the impacts of flow reductions?

RY: Yes, if you have a braided shallow system there may be fish passage issues etc at reduced flows, whereas in a more 'V' shaped channel, drops in flow may not have such a big effect. Aquatic plants can also make a difference in the effects of low flows.

PM: In the focus on fish species – is there an assumption that in protecting fish we will automatically be looking after other factors, such as water clarity?

RY: We are looking primarily today at water quantity, however water quality aspects also need to be included in considerations, such as dissolved oxygen etc which have direct links to water quantity.

PM: What about clarity?

RY: During floods clarity is usually reduced and at low flows clarity is higher. Water abstraction won't normally affect clarity unless it impacts on aquatic plant growth, etc.

AY: do you know of any research on taking water and the impacts of this on water quality aspects?

RY: If you intensify agriculture and increase nitrate leaching, etc, there will be an effect on water quality. There is no easy answer. There is a lot of research looking at existing and expected future leaching rates. There is a big unknown between what leaches from land and what actually makes it into the river system – there are some estimates that this can be around 50%, but there is a lot of variability in this and a lot of ways to estimate it.

MLa: Is this something we can use the WaterWheel to help identify?

AY: There are assumptions in the WaterWheel between water takes and water quality effects. We haven't looked into the models to look at these assumptions.

AF: It is very catchment specific. If you are asking for rules of thumb, this is difficult to provide as the effects of land use/management on water quality need to be looked at catchment by catchment. The modelling of nitrate changes in response to changes in land

use done with Aqualinc has been based on measured sampling of specific land uses nationwide

MS: I think we need to decouple quantity and quality at the moment and just focus on quantity. There seems to be an assumption that future land use will be more dairy, however it could be other uses such as grapes and the same amount of water would be needed.

RSN: This is a whole integrated issue and to manage the process we need to split the quantity and quality considerations. Today we are focused on quantity, but we will be looking at integrating quality into the process at future meetings.

HR: To a degree the quality will be dictated by the quantity.

JT: We do need to be careful when looking at the WaterWheel model outputs because they do use basic assumptions around what makes it into the rivers. We are seeing large temporal variation from our recent monitoring efforts.

RSN: we will need to look at what level of uncertainty the group is happy with when we start looking at risk management approaches.

RSN: How do the new river groups relate to the original water management zones identified by TDC?

MAB: They are broadly similar, we may need to think about subzones in some areas such as the Upper Takaka and Lower Waingaro.

RSN: is the group comfortable with the groupings Roger has come up with?

No dissent from FLAG members.

AY: I'm personally comfortable with it, as long as there is recognition of the connection between the rivers and the AMA.

RY: yes, this is included.

GB: I don't want the right arm of the Te Waikoropupu River to be included in the AMA consideration as it does not feed the springs (ie the Bell Creek area [also known as Campbell Creek])

JT: No this area is not included – we will go over all this detail later today.

RSN: What does everyone think about the basic approach suggested by Roger Young?

GA: It seems a very western approach – the idea of high and low value sites.

RSN: We need you to trust your instincts – think with both our heads and our hearts. We need to put something down to begin with and as we go through the process we can modify this until we get the best answer - particularly once we consider water quality, contemplate our initial decisions and once consultation is progressed.

GA: The process seemed to go very smoothly when the FLAG looked at the Pariwhakaoho at an earlier meeting...

PM: Yes, I've had some second thoughts about [the outcome for Pariwhakaoho]. There are several different scenarios we didn't really consider – eg small takes over long times vs large takes over short periods. I'd like to relook at the A-B-C permit system Mike Newman has outlined from Marlborough. [Issue parked for further consideration at a later time]

MAB: There are other ways of flow management to also consider - such as a percentage of flow for sharing. I see Roger is recommending flow limits be a cease take – I assume you have comment on the sharing approach Roger?

RY: Yes, this approach can share the pain, but there is no guarantee for the environment and there is no guarantee on the amount of water available at any one time as it is always

changing – I think it is clearer and more simple for people to use a straightforward cease take.

MN: New technology such as telemetered meters etc has opened up the option for more complex approaches to be practically used.

RY: The TDC also uses the Dry Weather Task Force (DWTF) which decides what will happen as flow levels drops, rather than having cease takes [listed in the TRMP or in consents]. There are also triggers in the TRMP for when takes to storage can occur.

MAB: we have a policy and we haven't worked in the numbers yet. We could easily apply the policy to the Takaka area – eg an 'A' and a 'C' take permit (C being for storage) – we can run those numbers. We can look to make take-for-storage easier and promote the practice through easier consenting/permitting.

RSN: when do we look at this?

MAB: staff can look at this behind the scenes and come back to FLAG when we look at this at a later meeting.

Action: Staff to run numbers for A and C type take permit scenarios for promotion of takes-to-storage and bring these back to the FLAG at the 30th October meeting.

[Post meeting clarification: Class A permits are those with the highest security of supply, Class B permits may have a lower security of supply being rationed or cut off before Class A permits; Class C permits only allow for takes when flows are at least 10% above median flows and these are generally takes to storage.]

MN: We did talk about a 1 in 10yr low flow – is this still being considered?

RY: Yes, there is a wide range of statistics that could be used. The more common approach around the country is to use MALF and I understand TDC has used the 1 in 5 year low flow previously also.

MS: The MALF is a moveable feature if looked at over say 5 years – one of the things we need to consider under the NPSFM is the effect of climate change – is it possible to set a MALF time period?

[Post meeting clarification AF: MALF is an average over all available years of record.]

RY: Most of the flow records are over 30 years and if there are a few very low flows or wet years they can change the MALF a small amount, however we can expect that in the future very low flows and wet years will still continue – we may see more extremes with climate change.

JT: Once we have at least 30 years of data the change in MALF between years reduces [ie the variability in the statistic reduces with more data] [currently TDC has the following data periods for the respective rivers: Upper Takaka ~40yrs, Waingaro~29yrs and Anatoki 28 yrs, Motupipi 4yrs].

SM: We can also set a time period for when a specific MALF applies and then after this the MALF is reviewed.

AF: The Plan [eg TRMP] is typically written so there is a specific number set for MALF, and until the plan is next reviewed and changed this set number does not change – even if the actual MALF changes.

AF: We need to remember that the process of setting minimum flows and allocation limits is a three-legged stool – we also need to include implications for security of supply for users.

RY: Yes, this has been included and we have data for the FLAG which will be shown in the next sessions.

TR: With regard to the flow statistics – will there be a need to use one statistic in one location and another in another location?

RY: For consistency it would be preferable to use the same statistics everywhere, although of course the numbers will vary from river to river.

JT: The Cobb consent didn't set any limit on low flows [there was no minimum flow to be maintained at Harwoods]. I have provided a summary of how the consented allocations have changed in the Upper Takaka over time.

Session 3 – Waingaro River

Presentation by Joseph Thomas - Waingaro Overview

Joseph Thomas provided an overview of the Waingaro catchment current situation including existing water takes.

Key Points (referring to slide 24 of Presentation on Day 1 – reproduced below):

- We have put together all the numbers we have including existing surface and ground water takes and those on the waiting list for further water.
- We have used 7-Day statistics and used data from the flow recorder at Hanging Rock, which has very good data. MALF at Hanging Rock is 3585 l/s, MALF at the gauging site upstream of the Takaka confluence is 2751 l/s.
- The groundwater takes are mostly in the lower catchment and are close to the river.
- The takes in the upper part are all surface water.
- The waiting list area is also where there is about 8% [on average] loss from the river [at low flows] to the Takaka Gravel and Arthur Marble Aquifers.
- The yellow coloured takes [refer slide 24] got added to the AMA/TWS recharge zone.
- The pink area is the area [where the AMA is confined and the river] does not recharge the AMA (ie does not affect flows at Te Waikoropupu Springs) and this may separate the zone into two – how the numbers are added up will impact on the [available allocation].

MAB: The [takes within the pink area] got added to the 500l/s limit for the AMA – which suggests they affect the Te Waikoropupu Springs when they don't - Joseph can you explain this further?

JT: Currently the policy says that 500l/s can come from the AMA [and all contributing surface waters]. We have not looked at the fact that the Waingaro provides recharge to [the AMA, only from the area above the confined AMA boundary].

MS: The three groundwater takes at the top [referencing slide 24] of the pink area – are they out of the Takaka River? - Where is the Waingaro-Takaka confluence on the map?

JT: The Waingaro River bends in the lower area so we think these lower groundwater takes are getting water from the Takaka River.

JT: In 1990 the regional council adopted an informal limit from the Te Waikoropupu Springs recharge area of 500l/s [including both surface and ground water]. The TDC staff have informally managed allocation by adding all the takes in the recharge zone to come up with the number.

However, now we know that the Waingaro only provides 8% of recharge to Te Waikoropupu Springs – so not all takes currently included in the AMA zone will affect the recharge to Te Waikoropupu Springs.

MS: So you have lost [a considerable amount] of the MALF between the 'U-S Confluence' site [2751 l/s] and the upstream Hanging Rock site [3585l/s] – why does it drop so dramatically?

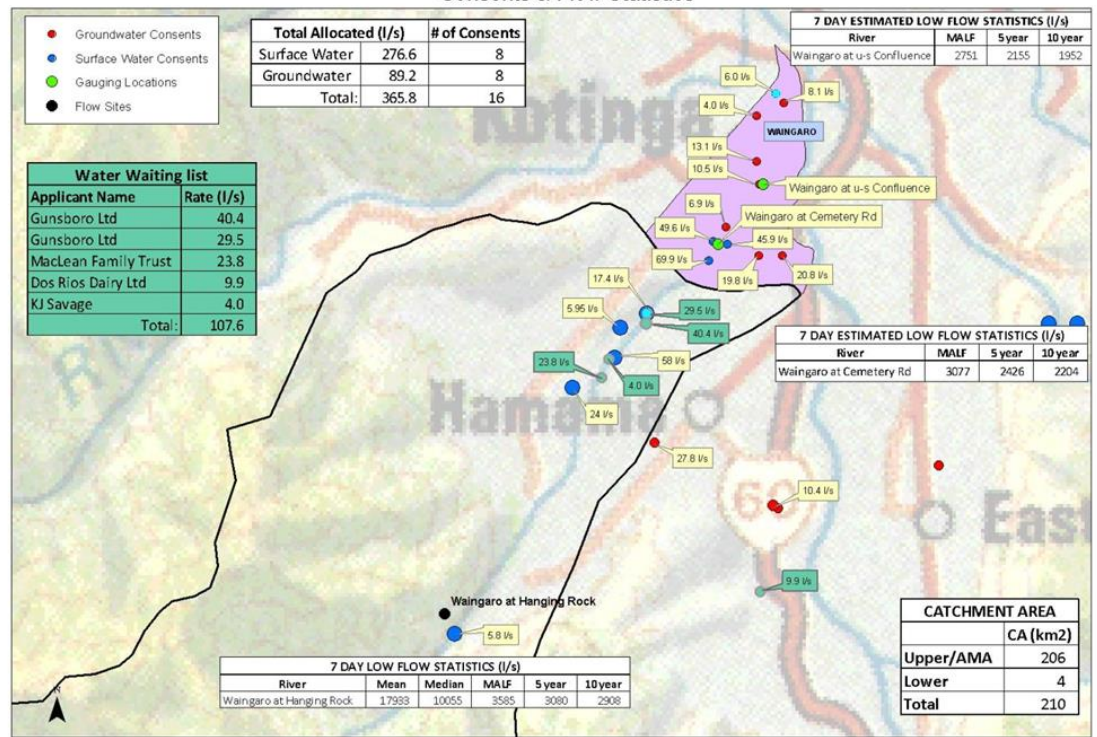
JT: [This is due to losses to groundwater] at low flows – at high flows it is different again. The recharge water has to go through the gravel aquifer first – not all of the water lost from the river will make it into the AMA.

MAB: So this water will continue into the Takaka Gravel Aquifer?

JT: Yes, it will also come back up further down in the Takaka River gravels.

Slide 24 – Presentation Day 1

Waingaro Catchment (AMA & Lower Waingaro) Consents & Flow Statistics



AY: What is it 8% of?

JT: 8% of the average low flow of the Waingaro River - this was determined in calculations done when looking at the Cobb dam consent.

JT: There is approximately 240 l/s, which is 8% of low flow, going into the marble which can be attributed to the Waingaro River.

GA: Is it 8% in high flows too?

JT: We can't model the high flows.

It may be that the springs contribution is a lower driver for management of the surface takes. We may already be protecting the springs with a cease take.

TR: So there is no point in relating the [existing 500l/s allocation limit] back to a percentage of MALF at the moment?

JT: No – we need to look at the other contributing river inputs first.

Presentation by Dr Roger Young (Cawthron Institute) - recommended flow and allocation limits:

Key features for Waingaro River

- In its own river group
- Moderate to high ecological values
- Small loss to AMA (about ~8%)
- Relatively high mean flow (18m³/s, 18,000 l/s) [note: this is not the MALF]
- 366 l/s of current takes
- 408-[98 l/s] on waiting list [post meeting correction: numbers on map presented erroneously include 9.9 l/s take from adjacent Takaka zone]
- Further demand

Roger Young suggests the following approaches:

- Minimum flow = 70-90-% of 7-day MALF – based on Waingaro flows at Hanging Rock

- Allocation limit = 20-30% of 7-day MALF – based on flows at gauging site upstream of Takaka River confluence [referred to from here on as the ‘U-S Confluence site’]
- Minimum flow should be a cease take
- 50% rationing trigger at ‘minimum flow + allocation limit’ – triggered by flows at Hanging Rock

These regime ranges would mean between:

- 0.4 to 6 days per year when the river flow would fall below minimum flows (depending on the % of MALF selected)
- 4 to 26 days per year when rationing would occur (depending on the allocation and minimum flow selected)

Considering habitat requirements, allocation needs and security of supply, staff suggest the following approach for further consideration of implications:

- 80% 7-day MALF minimum flow (2868 l/s) and 20% 7-day MALF Allocation (550 l/s) - at the locations listed above.
- This gives a rationing trigger at 3418 l/s, which gives a security of supply where we would expect an average of 10 days per year when flow would drop below this trigger (ie when water users would be restricted by 50%)
- This gives a cease take trigger at 3143 l/s. which gives a security of supply where we would expect an average of 5 days per year when flow would drop below this trigger (ie when water users would have no water)

Summary of Staff Recommended Regime for Waingaro River (upper and lower areas):

Regime Statistic	Approach for calculation	Actual number	Location where flow would be measured
Minimum flow (MF)	80% of 7-day MALF	2868 l/s	At Hanging Rock
Allocation limit (AL)	20% of 7-day MALF	550 l/s	At U-S confluence
Rationing step (50% cut)	MF+AL	3418 l/s	At Hanging Rock
Cease take	MF+ 50% of AL	3143 l/s	At Hanging Rock

- Expected take 50% restrictions = on average 10 days per year
- Expected cease take = on average 5 days per year

Group discussion points and questions arising from presentations:

MS: The median flow during the irrigation season is significantly lower at 7m³/s [7000 l/s].

RY: Yes, the mean and median flows cover all flow levels, not just low flows.

SM: Can you explain again how this approach differs [from IFIM]?

RY: This is the historic flow method – so it does not include consideration of habitat retention for a ‘U’ shaped channel.

PM: There is another issue here unrelated to fish – swimming for people. This should also be a primary factor to consider...

RY: This has not been specifically done yet, but just as I have looked at specific fish requirements - you can do this for an average swimmer also.

Action: Staff to investigate river flow requirements for swimmers.

GA: If we turned this around – would all the people wanting water fit in this regime?

[RY: Yes, but takes would be restricted under low flow conditions.]

NM: Why does this method use the 7-day MALF and not the limit used in the TRMP – ie the 10% of the 5yr low flow? This seems very similar for the 7-day MALF for the Waingaro...

MAB: You need to remember the statistic used in the TRMP was not based on any specific research – it was a generic approach to avoid over allocation in lieu of more information. [AF: It is a conservative holding pattern. This planning process considers detailed information.]

RSN: so are you comfortable with this approach Neil?

NM: I will be using the [TDC default] policy as a check for the numbers we select.

MLa: We know the existing numbers, so perhaps we will be able to look to see if the numbers we select will be above or below the current situation.

MAB: there will possibly be an impact on the existing users' security of supply as we will be applying a rationing and cease take regime – which they currently don't have.

Is it 10 days of rationing for the whole year or just the irrigation season?

JT: It is over the whole year. However, this wouldn't necessarily be every year – in wetter years there may be no restrictions, in drier years there would be more days of restrictions.

PM: How many days can farms go without irrigation before it affects grass growth?

TR: It depends on your soil – it can also depend on how long it takes your irrigation system to get around the property.

PM: So cutting you off for 1 day wouldn't affect you economically? – how would 10 days affect you?

TR: it depends if it was 10 days in a block or a few days here or there. 10 days in a row would be hard to live with.

AF: I suspect the group may benefit from seeing the 5yr and 10yr drought numbers to see how bad it would look...

MAB: do we have this?

JT: We don't have a 10-year drought number [with us today], but we do have a 7 year.

RY: [refer data quoted] the 2000-01 drought had the highest number of cease take days at 62 days.

HR/GA: How does the allocation number identified relate to the existing takes and the waiting list?

AF: There is 366 l/s allocated currently and there is ~~408~~98 l/s on the waiting list so there would be some head room still with the suggested allocation of 550l/s (474 l/s total demand).

[Post meeting note: there may also be demand that is not on the waiting list – this could be estimated from the plausible irrigable land map by JT]

AY: How does the flow look along the Waingaro river ?

(JT showed FLAG the graph on slide 25 - Day 1 presentation)

JT: The losses from the river to the aquifers depend on flows and on the pressures in the aquifer.

MN: There is another buffer we have not discussed – for takes from the gravels there will be a drawdown – you can suffer quite a draw-down in the gravels without losing access to water...

TR: Some of my wells go dry now.

MAB: What is the assumption used regarding ground and surface water takes?

RY: Groundwater and surface water takes are considered equal – they are both included in the allocation amount. [This is because groundwater takes can also impact on river flow levels by increasing river losses to groundwater]. This assumption will be less applicable as you move away from the rivers.

AY: How much does the groundwater level affect the losses from the river?

JT: We don't have an aquifer monitoring bore in this area to track groundwater levels - the ambient groundwater level will affect how the river loses water [but currently we don't know by how much].

JT: There is no rationing or cease take trigger currently for the Waingaro – because of this the suggested regime is stricter than what there is currently.

TR: this is where the irrigators are talking – if there was a bigger allocation, they would be keen to see step-down rationing.

MAB: this regime gives direction to Council - but it is not to say the permit holders couldn't use a rostering system to determine who takes water when – this works in the Riuwaka as there is diversity in the types of water demand.

Would implementation of this regime have to wait until the consents are reviewed in 2016-17?

Not necessarily, as a regional rule it could be brought in earlier with the review [clauses in the consents].

MS: In the 2014 summer we had a 1-in-5-year low flow at Hanging Rock [3080 l/s] – it was getting a bit scummy at Payne's Ford – if we hit the rationing step as suggested [3418 l/s] we would have better swimming at Payne's Ford than we had last year...

...

RSN: What are people thoughts – are there any alarm bells going off – are we covering all the values?

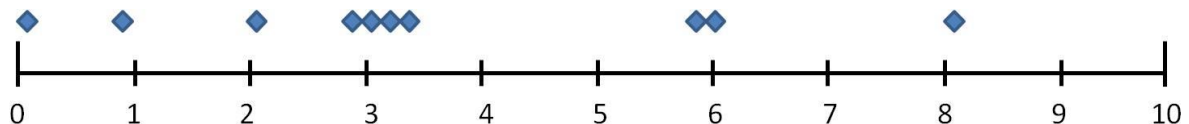
PM: I was having my doubts before – but if what Mik says before is correct about the swimming, then I'm happy.

MS: We talk about the minimum flow as if it will happen on a regular basis, but statistically we'd only hit the minimum flows about once every 5 years. Most years we'd be above this flow most of the time.

RY: Yes, you might have 1 day below every other year, but you might have 7 days below every 10 years.

AF: Every 5 years, on average, everyone would be shut off.

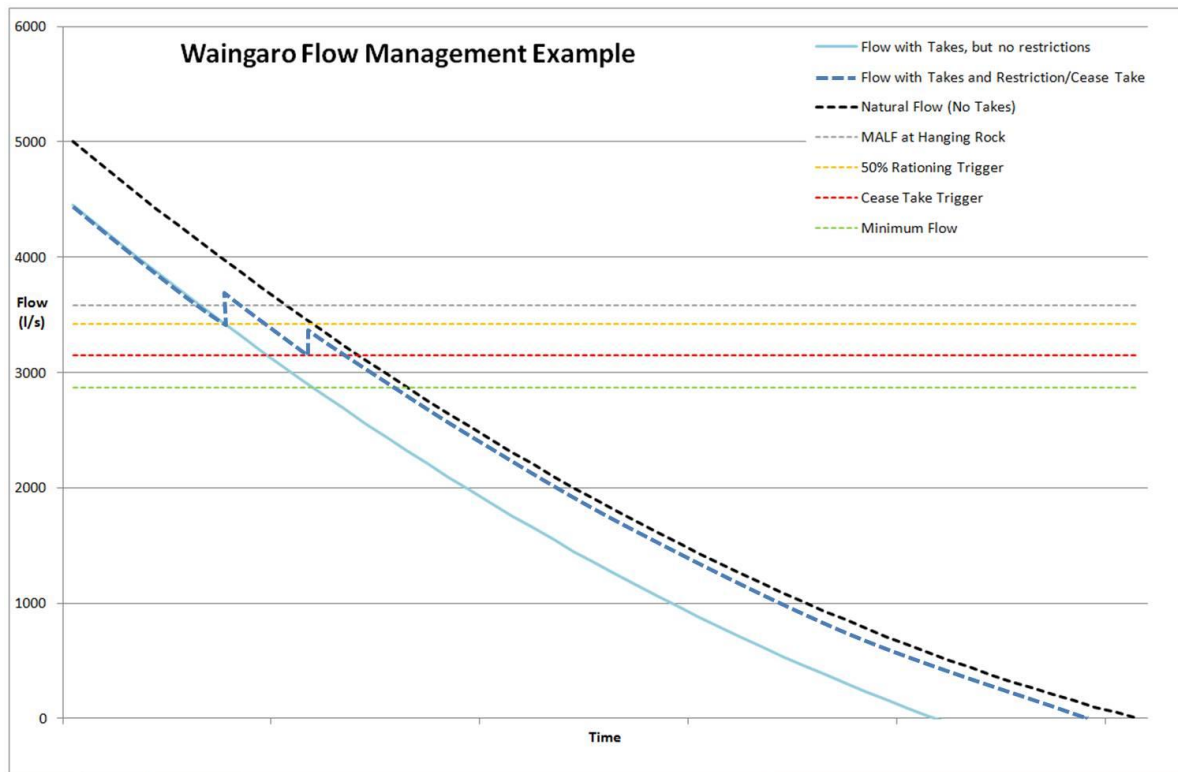
[Post meeting clarification: It is important to understand the difference between averages and how dry periods might actually be distributed. The diagram below shows 'clumping' of dry weeks (blue diamonds) – there are 10 dry weeks over the 10-year period, which gives an average of 1 week per year. However, four of these occur consecutively and several years have no dry periods]:



Can you explain the difference between the cease take number and the minimum flow?

RY: The minimum flow at the downstream site (eg upstream of Takaka river confluence) plus the allocation limit (flow) gives the trigger value for rationing at the upstream site (Hanging Rock).

[Roger drew a representative graph on the whiteboard to illustrate this to the group... – example below]



So could we compare numbers to a 1-in-10-year low flow?

JT: Yes, we could.

RY: This would not be related to the naturalised flow – which the statistics are based on – and which is why I have selected Hanging Rock’s as the trigger site.

Action: Staff to provide comparisons of values with 1 in 10 year low flows.

...

MAB: There is nothing special about the 35% security of supply – it depends on the users – if we are happy with the minimum flow, then we can discuss what security of supply is acceptable in conjunction with the associated allocation amount.

RSN: is everyone happy with the minimum flow identified by Roger Young?

If we can get numbers on the end game then we could go back and check where we want to be...

The 1-in-5-year low flow at Hanging Rock is 3080 l/s.

The 1-in-5-year low flow at the U-S Confluence site is 2155 l/s.

RSN: are you [FLAG] saying if it doesn’t go below 2155 l/s in a typical year you are happy?

AY: If we had 2868 l/s at the U-S Confluence site what would we see at Hanging Rock?

JT: It is difficult to correlate, but approximately 2m³/s [3693l/s – JT rechecked his initial figure].

MS: but it would never get to that level [due to water takes], as we have a rationing step and a cease take trigger before that.

AF: As a water user what do you think Tony?

TR: There is a trade-off between the number of days of restriction and cease take. The irrigators are keen to look at the step down rationing system if there was a higher allocation amount.

GA: So they are happy with a lower security of supply if there is more water allocation?

TR: Yes

There is also the possibility to use storage to improve security of supply.

RSN: What is the probability that it would ever reach 2000 [3693]l/s at Hanging Rock?

JT/MAB: We would expect this to happen say once every 10 years – but this would not be a result of abstraction - it would be a natural drought, as everyone would have been ceased prior to this [under the suggested regime].

NM: how does this compare to other rivers in Tasman – especially those with Water Conservation Orders? If we extrapolate this regime to the Anatoki – and then we revisit Upper Takaka, what happens to our numbers?

RY: in the Anatoki (and we will be looking at this next) – there is not much current demand – there is potential for more allocation in the Anatoki – this is up to the group to decide. When we look at the Upper Takaka – the current total take is close to the likely allocation – there may be some room for movement, but this will also impact on the springs so we will need to look at this closely.

NM: What about other regional rivers – eg Motueka and Buller with WCO?

RY: The Motueka is unusual as it has flow sharing within the WCO in the middle reaches. The rules in the upper Motueka are being looked at currently and these will probably go through a similar framework as we are doing here. Other regions in the country are using similar approaches with high value systems seeking 90% habitat retention.

Eg. Mataura River in Southland has 90% habitat retention and 10% allocation.

AF: The allocation limit numbers for Motueka are 12% allocation at Woodstock, 6% in the Wangapeka and 5% in the Buller – of all flows. [Post meeting clarification - This means that the total of surface water and groundwater allocations above Woodstock can be up to 12% of the flow, so there is no cease take unless the Council declares a water shortage direction, just gradual rationing steps. However, the TRMP does also specify allocation limits for each zone which meet these requirements – the WCO and TRMP limits work together. . The reason for this ‘shared suffering’ approach reflects the large size and ‘buffering/recovery capacity’ of these large rivers].

RSN: We can use the same management framework across different rivers, but use different numbers to ensure the values specific to those areas are protected.

JT: The WCO gives percentages, but the TRMP gives numbers which gives greater certainty.

MAB: Why do you have Dry Weather Task Force role in the suggested regime?

RY: I was just thinking about what happens when the river reaches 3418l/s – the Dry Weather Task Force could make this call, rather than it being specified in the consents.

MAB: there is a choice for the group - if the consent conditions do not have a rationing trigger that is linked to a flow, then it could be a rationing regime linked to a discretionary system using the Dry Weather Task Force which would decide when rationing steps would occur. The consent condition does give certainty and it can be difficult to give discretion to a taskforce when the criteria are quite distinct.

SM: The consent condition approach has been used in Waimea.

JT: The Dry Weather Task Force can also be used to forewarn people and let them know restrictions are coming and that Council will be checking compliance with specific consent conditions.

AY: The Dry Weather Task Force can also take into account information that could be used to make decisions – is there such information available?

PM: Yes – imminent rain could change outcomes.

AY: What about telemetered information for river flows and pulse indicators on irrigation takes?

JT: Yes, irrigators could have direct access to this information.

AY: So this somewhat negates the need for the DWTF to advise takers...

JT: the DWTF also looks at fire needs, water supplies, emergency provisions, etc

TR: So a DWTF could be used to also look at environmental values such as swimming?

JT: Yes

<lunch>

RSN: In regards to process, you can take Roger's recommendations as a starting point and discuss whether this is good or needs to be something different – or you could start from a free-thinking base – you can decide in your discussion groups.

[The FLAG chose to discuss the issue as a single group]

Group discussion points:

MS: I believe the numbers as proposed are a workable compromise given the FLAGs intended role. It gives us a bottom line for minimum flows, which we have not yet had.

MS: this year there has been a strange correlation between low flows in the Waingaro and very low flows at Kotinga in the Takaka – JT can you comment?

JT: We did a gauging at the bottom of the Waingaro just before the Cobb shutdown. The Waingaro showed a 1-in-5 drought, but the Kotinga site on the Takaka River showed a very large drought. Following the 10 day shut down by the Cobb, I believe that there were more river losses in the Lower Takaka by the kiwifruit area.

So it was the Cobb, not the Waingaro that caused the lower flows at Kotinga?

JT: Yes.

TR: I'm concerned about the days of restriction – the worst one mentioned was 62 days in one year – was that concurrent or where there gaps in between?

JT: Yes, there were gaps in between.

...

RSN: Are you saying you are ok with the regime, but you need further info on the numbers of days?

TR: Yes – I'm happy with the overall regime.

MLa: Can we show the days of restriction on a graph to show their distribution?

JT: Yes, we can do this.

Action: JT to show days of restriction for preceding 15 years in Waingaro on a graph to show their distribution.

RSN: What was the average days of restriction in any year?

RY: 10 days on average - the past 16 years look like this:

Number of days of water cease take in the Waingaro [that there would have been under the 80:20 regime]:

1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
0	47.5	0	0	0	3.5	8.0	0	1.8	13.5	39.3	0	0	7.6	9.3	7.1

RSN: How many days will be consecutive?

JT: Typically only 2-6 days at a time.

TR: The existing security of supply will be undermined by the new allocations. Could we have a higher trigger for newer takes? [topic parked for later discussion – although all decisions are inter-related, we need to step through a process to make the decisions:–FLAG to agree minimum flow first, then allocation, then consider security of supply/management regime]

RSN: Does everyone on the FLAG present agree to the minimum flow proposed?
Outcome: General agreement from previous discussions.

AY: I think it is good based on water volumes, with the FLAG returning to look at water quality - which may modify the volume considerations.

RSN: Does everyone on the FLAG present agree to the allocation limit proposed?

Group Discussion occurred on the security of supply for existing users vs new users with consideration of existing investment by existing users.

MLa: We can't really make a decision until we understand the security of supply – how many days in a row would users be restricted and what would the cost of this be to existing users. If this is acceptable to existing users then we can progress with this allocation limit, if not we will need to lower the limit.

MAB: The economic benefits at a regional scale can be better at a lower security of supply with more water users, than focussing on a more limited number with a higher security of supply.

AY: It seems to me we have two questions of - what are the flows to protect the environment, and then of the water left, how does this get distributed. This may mean we need to phase out A-type¹ permits rather than imposing a big change.

MAB: we can do this by making changes when the consents would normally renew to allow for users to prepare for the changes.

MS: How would this work with managing low flows?

MAB: We would use the RMA Section 329 directions to manage takes during low flows.

SM: We could also add conditions to their consents.

JT: If we froze the 366 l/s then the cease take periods would not be much different in terms of days as these have been due to natural prolonged dry periods years - eg 2000/01 and 2009/10 were the two bad years for restrictions.

¹ Class A permits are those with the highest security of supply, Class B permits may have a lower security of supply being rationed or cut off before Class A permits; Class C permits only allow for takes when flows are at least 10% above median flows and these are generally takes to storage.]

MN: there is a lot of fat in the system – no one is using their full allocation – so their actual security of supply is greater than what we are specifying...

JT: This needs to be considered if we look at transfer of allocations – we may end up creating a property right.

TR: We need to have a look at the economic implications.

MLa: We may find the impact is a non-issue.

RSN: Yes, as the discussion has highlighted, the long duration restrictions may just be due to natural droughts anyway which the FLAG have no control over.

[AF: FLAG has control over what restrictions apply – that has an economic consequence].

RSN: So are you happy to use the numbers, or do you want more economic information first?

TR: I'm happy to run with the allocation number at the moment – as long as we look at the economics to check the implications.

Action: Staff to look at previous distribution of restriction days for Waingaro and assess impact on users of proposed regime.

Action: MAB to create 1-2 page of options for how these approaches could be implemented (ie when consents review, vs adding conditions etc)

NM: Isn't the main change that there will be restrictions and cease take, which are not there now?

Yes.

JT: In a significant drought there will still be a number of long periods of no water under a cease take regime.

MAB: We do need to consider managing low flows in the meantime – we may need to use Section 329 directions to manage low flows in the interim.

Is it the councillors or the Dry Weather Task Force that makes the decisions?

The Council have delegated the decision to Dennis Bush-King (Environment and Planning Manager) who is advised by the DWTF and Joseph Thomas.

PM: We could change the allocation limit if we could be sure of how much of the allocation wasn't being used - ie lower the allocation limit to how much people actually need during dry periods so the cease take trigger goes up...

SM: We could review the consents – so that the authorised rate of take is closer to actual use.

TR: They may not be trying to abuse the system – they may be using less water due to greater efficiency and we don't want to penalise those being efficient.

RSN: Does this summarise the discussion?: There is potentially some room to move in the allocation – we could use more of this for the waiting list if we understood the actual needs of existing users. An important aspect to consider is, is what is being allocated is being used? Another important consideration is that people have invested in the existing allocation and security of supply.

KJ: Would their use change under this proposed regime?

TR: No, but we don't want to promote inefficient use to retain allocations.

JT: They already have to map the areas they are irrigating and their soils are taken into account, so in a dry period their weekly use should be pretty close to what they actually need.

MAB: We could say we only have 80% of allocation used at any one time (eg 440l/s)– so reduce the restriction regimes by 20% to reflect what is likely to actually happen – so the first rationing flow becomes 440 + 2868 = 3308l/s

JT: So your allocation is still 550l/s and you reduce the dry days a little bit. If we look at the impact – there is almost no difference [in the rationing/cease take days].

RY: Is the 80%, of the maximum take?

JT: It is the average over the zone for the driest week.

MS: I'm conservative and I wouldn't want to see the rationing step lowered. My preference is that the numbers stay as Roger has suggested and that the only way the security of supply is increased is if the allocation amount is lowered – eg 18% or 500l/s...

JT: The cease take would stay the same.

MAB: But we are suggesting it would lower – ie be minimum flow +80% of the allocation...

GA: I think the public would prefer we lower the allocation limit.

[Post meeting note: Do other FLAG members believe this is the public view? FLAG need to consult with the public. FLAG can put out options for public feedback, and review initial decisions in light of feedback received.]

AF: What is the demand of the plausible irrigated area from the mapping exercise? Knowing that would allow the FLAG to scope the approximate maximum allocation required, at least for irrigation...

MAB: Do we have this number with us?

JT: We have gone over the irrigation mapping and included likely and unlikely irrigation based on ease of ground water access etc.

SM: Have you crunched the numbers on a per catchment basis?

JT: Not yet, but this can be done.

Action: JT to provide the numbers for the plausible irrigated area demand on a catchment-by-catchment basis to FLAG.

To ensure a security of supply, do we lower the allocation limit or change the rationing regime?

TR: If we use Roger's numbers we retain the fat in the system as people aren't always using their whole allocation.

AF: One option is to tighten up the irrigation per hectare allocated.

MS: I think the numbers currently are a good balance between health of stream and economic benefits – if users want higher security they could look at storage.

MS: Could we put the question of managing security of supply between existing and new users to the irrigators group?

TR: Yes, we could do this – within the parameters given – it is an either or situation.

Action: FLAG representatives to put the question of managing security of supply between existing and new users to the irrigators group.

RSN: What is the variability in rationing/cease take days between the scenarios?

JT: There is only about 10 days difference between the bottom and top numbers being discussed.

SM: Is there any appetite in the irrigators group to consider future users of irrigation? – ie those that are on a waiting list vs those not yet on a waiting list but potentially irrigable in the future?

TR: This was what I was discussing before - with a system for existing users and a system for new users.

[MAB is going to present some management regime options – refer action points]

RSN: Who is comfortable with 550 l/s as an allocation limit?

MS: I think this is a water-users question.

HR: This is not set in stone – we can revisit it.

AY: This is a good starting point – I'm not happy with a reduction in the rationing based on 80% of allocation, as there may be an exceptional year when they do use more.

MLa: It would be interesting to look at the plausible irrigation – to see if these allocation numbers would allow this additional irrigation to occur.

Action (repeat): Staff to provide plausible irrigation numbers for each catchment.

Waingaro Discussion Outcome:

FLAG to use Roger's regime and numbers as suggested with checks of:

- Plausible irrigation demand at a catchment level
- Number of rationing and cease take days under the proposed regime compared to previous years cease takes to identify the economic implications for existing users
- Review of how the regime might be implemented, including consideration of transition time for existing users

Statistic	Approach for calculation	Actual number	Location where flow would be measured	FLAG Decision
Minimum flow (MF)	80% of 7-day MALF	2868 l/s	At Hanging Rock	Agreed
Allocation limit (AL)	20% of 7-day MALF	550 l/s	At u-s confluence	Agreed - with checks of economics and look at how to transition implementation
Rationing step (50%)	MF+AL	3418l/s	At Hanging Rock	Agreed – with further look at plausible irrigation data.
Cease take	MF+50%ofAL	3143 l/s	At Hanging Rock	Agreed – with further look at method using 80% of allocation

Session 4 – Anatoki River

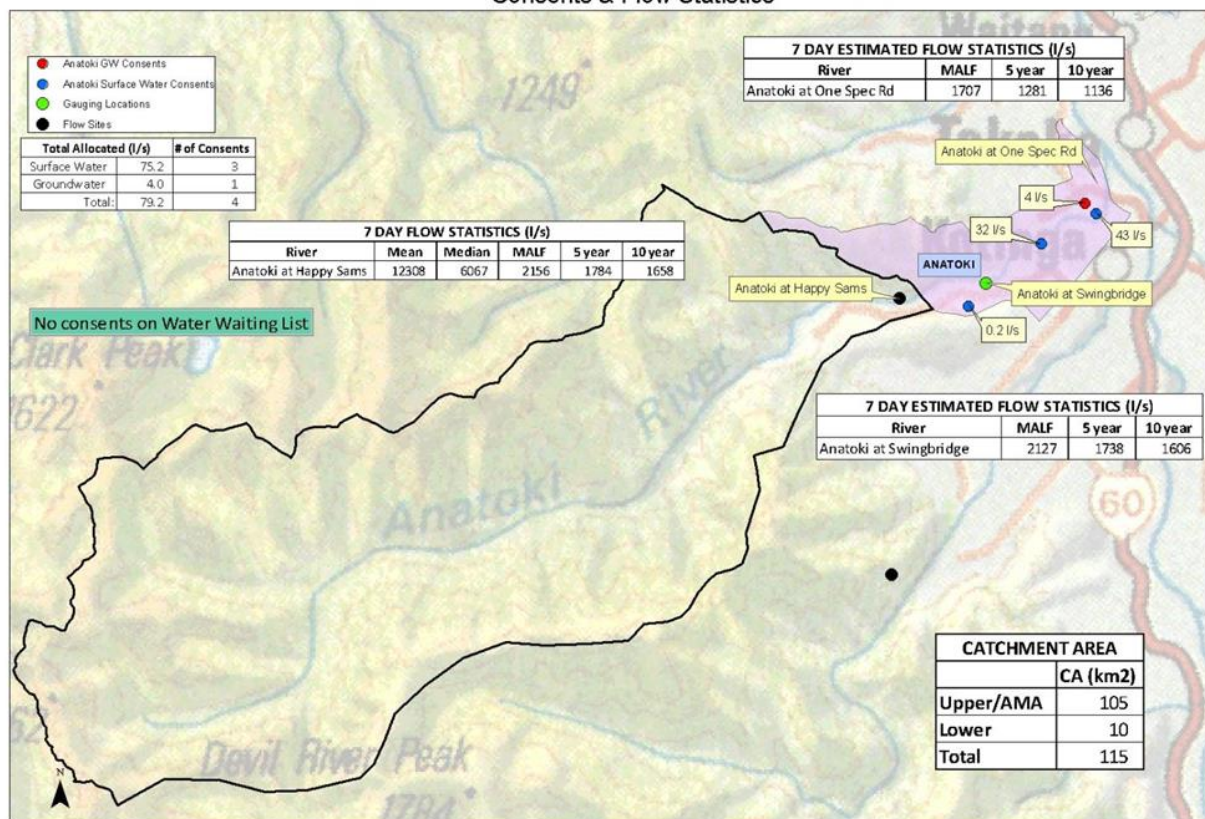
Presentation by Joseph Thomas - Anatoki Overview

Key Points (referring to slide 32 of Presentation on Day 1):

- Losses occur to the Takaka Gravel Aquifer in the lower reaches
- No leakage into the AMA marble in the lower areas due to overlying geology
- 3 surface takes, 1 groundwater take – all in lower area
- MALF at Happy Sams is 2156 l/s [above all takes]
- MALF at One Spec Road is 1707 l/s [below all takes]
- The salmon farm is a non-consumptive take [so is not included in the calculations]
- Median flow could be a harvest flow trigger - ie allow C class permits² at 10% above median flows
- It is a gaining river at the gorge, but a losing river to the Takaka Gravel Aquifer.

Slide 32 – Presentation Day 1:

Anatoki Catchment (Upper Anatoki, AMA & Lower Anatoki)
Consents & Flow Statistics



Presentation by Dr Roger Young (Cawthron Institute) - recommended flow and allocation limits:

Key features for Anatoki River

- Anatoki is smaller than Waingaro, but still a big river.
- No waiting list, limited further demand [but there may be future demand from plausible irrigable areas of the catchment]
- Moderate-High ecological values
- No contribution to AMA
- Relatively high mean flow (12m³/s) [12,000 l/s]
- 79 l/s of current takes [surface and groundwater takes]

² Class A permits are those with the highest security of supply, Class B permits may have a lower security of supply being rationed or cut off before Class A permits; Class C permits only allow for takes when flows are above median flows and these are generally takes to storage.

- TJ: Anatoki is more 'U' shaped than Waingaro so water takes are likely to reduce habitat by a lesser extent.

Roger Young suggests the following approaches:

- Minimum flow = 70-90-% of 7-day MALF – based on flows at Happy Sams
- Allocation limit = 20-30% of 7-day MALF – based on flows at One Spec Road
- Minimum flow should be a cease take
- 50% rationing trigger at 'minimum flow + allocation limit' – triggered by flows at Happy Sams

These regime ranges would mean between:

- 1 to 6 days per year when the river flow would fall below minimum flows (depending on the % of MALF selected for the minimum flow)
- 4 to 23 days per year when rationing would occur (depending on the allocation and minimum flow percentages selected)

Considering habitat requirements, allocation needs and security of supply, staff suggest the following approach for further consideration of implications:

- 80% 7-day MALF minimum flow (1727 l/s) and 20% 7-day MALF Allocation (341 l/s) - at the locations listed above.
- This gives a rationing trigger at 2067 l/s, which gives a security of supply where we would expect an average of 9 days per year when flow would drop below this trigger (ie when water users would be restricted by 50%)
- This gives a cease take trigger at 1895 l/s. which gives a security of supply where we would expect an average of 5 days per year when flow would drop below this trigger (ie when water users would have no water)

Summary of Staff Recommended Regime for Anatoki River:

Regime Statistic	Approach for calculation	Actual number	Location where flow would be measured
Minimum flow (MF)	80% of 7-d MALF	1727 l/s	At Happy Sams
Allocation limit (AL)	20% of 7-d MALF	341 l/s	At One Spec Road
Rationing step (50% cut)	MF+AL	2067 l/s	At Happy Sams
Cease take	MF+ 50% of AL	1895 l/s	At Happy Sams

- Expected take 50% restrictions = on average 9 days per year
- Expected cease take = on average 5 days per year

Group discussion points and questions arising from presentations:

GA: When it is at MALF [2156 l/s] it is becoming a slimy mess upstream of the salmon farm. I can't imagine it at 20% lower flow...

HR: We swim there all the time - it gets pretty slimy

GA: We are asking the public what they think of dropping the natural low flows 20% lower.

MS: This isn't really the case as we have a cease take [post meeting clarification: This means the flows won't go lower than the cease take trigger level -1895 l/s - unless it is due to naturally dry conditions].

GA: Is there any reason to make any compromise on a river like Anatoki with the current demand? This place is truly special and Anatoki is a special river. Why not leave this one as it is?

MAB: Should we increase the low flow percentage to 90%?

GA: Or even 100% as there is plenty of water for current demand.

MLa: Can we use the plausible irrigable area and look at what this number looks like compared to the suggested numbers?

Action (repeat): Staff to provide plausible irrigation numbers for each catchment.

...

RSN: Even though you are setting a minimum flow you can choose to set the limits higher than this [Dr Young's recommended min flow]. I've heard: 'Why not in this river where there is lower demand we protect the values better?'

GB: I'd like to see the numbers from the plausible irrigation map before we make this decision...

JT: Just looking at the map I'm thinking there could be another 30-40 l/s more demand.

Action (repeat): Staff to provide plausible irrigation numbers for each catchment.

AY: I'd like to look further at Greg's suggestion - if we said minimum flow was 100% of MALF – what would the other numbers look like? What would the economic cost be to users?

The Anatoki looks pretty small sometimes in low flow – and pretty slimy...

TJ: It will be the frequency of flushing flows that will control the slime, rather than low flows per se.

AY: Is there any economic reality in pumping water from the Anatoki to elsewhere? – if not we really are looking at a river to protect as it is...

JT: Once you start pumping upstream it gets expensive.

MAB: You don't know what the future is – all we have to say is what are the requirements for this resource – in our objectives nothing popped out as special for the Anatoki above that for the Waingaro – we may need to revisit our objectives on this.

Action: FLAG to review the management objectives zone by zone.

RSN: Is there an obligation in the RMA/NPSFM to provide for economic benefits if there is not a specific ecological need that requires 100% of MALF as a limit?

MAB: Not really, but if we have a resource consent come in that says it doesn't affect the values of the river then we need to be able to say why it has a higher level of protection.

AY: We could just say we protected it higher because it was easier to do than for other rivers.

MLa: We may want to change our farming methods – we would like to keep the opportunity to irrigate in the future – particularly if it is not going to impact on the river values. We want to avoid a 'gold rush' mentality for existing farms applying for consents to protect their ability if restrictions might come in.

SM: But it sounds like the latent demand [ie plausible irrigation] is below our suggested allocation number...

JT: Yes, but we could add 40 l/s to allow for further future demand in the current number and still not impact on the river values.

...

RSN: At what low flow point does periphyton occur?

RY: The main feature affecting the periphyton is flushing flows.

MS: I think temperature would have a big impact as at low flow it is a very bouldery stream and heats up faster – it gets real warm in summer.

SM: There is a question of robustness of the 80% habitat protection and other stream values...

GA: In the NPSFM it includes maintain or improve – if this wasn't intended to promote improvement of water bodies why put it in if it is only expecting maintenance? Iwi would not improve a water body only if there were economic reasons – they would do it because it was the right thing to do...

NM: The point that the Anatoki warms faster than the Waingaro could be justification to raise the protection threshold.

RSN: Greg where is your bottom line? Would you be happy to allow for further irrigation?

GA: Yes – I want to look at the irrigation demands to see if we can have a higher percentage (ie 90%) that also allows for irrigation needs.

RSN: would you be happy with 90% of MALF?

GA: Yes

MAB: This is in line with DoC's approach of 10% of MALF for allocation.

JT: I think we can defend 90% more than we can defend 100%.

SM: In previous discussion about the values have you talked about intrinsic values?

RSN: Yes, we did in the early stages – we may need to revisit the wording of these as we go through this process.

SM: and is it recognised that some values don't have the same science basis as others?

RSN: Yes, we have recognised this.

GA: It is unfortunate Martine and Margie couldn't be here today to provide the intrinsic value view point.

PM: People are considering the Anatoki as special and unimpacted, but I hear that the water quality is stuffed after it comes out of the salmon farm. We set the Pariwhakaoho at 100% - I would have thought the Anatoki would be lower due to the effects from the salmon farm...

TJ: Please note that not all of the water quality issues downstream of the salmon farm will be due to the salmon farm operation. There were natural issues with sediment from slips. We have compliance monitoring data for the salmon farm I can share with you.

Anatoki Discussion Outcome:

FLAG to modify Roger's regime and numbers to increase habitat protection, while still allowing for current and future irrigation demands, with checks of:

- Plausible irrigation demand at a catchment level

Statistic	Approach for calculation	Actual number	Location where flow would be measured	FLAG decision
Minimum flow (MF) – FLAG alternative	90% of 7-day MALF	1940 l/s	At Happy Sams	Agreed as less demand and opportunity to protect
Allocation limit (AL) – FLAG alternative	10% of 7-day MALF	170 l/s	At One Spec Road	Agreed - with review of irrigable area to determine impact on demand
Rationing step (50%)	MF+AL	2110 l/s	At Happy Sams	Agreed
Cease take	MF + 50% AL	2025 l/s	At Happy Sams	Agreed

Session 5 – Summary of Day 1

Comments or reflections on the day (day 1)

RSN called for any comments from the day.

Hika Rountree thanked Roger Young for his easy to understand presentations. Andrew Yuill agreed.

AY: It has been an enriching experience for me to go through the Water Conservation Order and read the pakeha stuff and reflect on the Māori stuff. I suggest the FLAG do this also.

SM: Having experience the FLAG a year ago and now again today, I am impressed with the style of discourse and the sharpness of your questioning and probing of the data and assumptions - about the science and the management arrangements. It highlights to me the importance of such groups undertaking this work. I think the staff are also seeing the benefits of this process.

MAB let the FLAG know that both Mary-Anne and Lisa McGlinchey will be moving to work with the Hawke's Bay Regional Council at Christmas. MAB will be documenting the FLAG progress to date. It has been a great process and she will miss working with the group.

<End of day 1>

DAY 2 - 25 September 2015

Welcome and Karakia

RSN welcomed the group. SM led the group in a Karakia.

Agenda Discussion

The agenda was amended to make use of Roger Young's time with discussion of Pariwhakaoho.

RSN asked the group if they wanted Roger to come back at the October FLAG meeting to discuss aspects for the other catchments.

MS: I would appreciate Roger's input on the Upper Takaka. Perhaps this could be left until the October.

JT: We could look at the Pariwhakaoho and small Clifton-Pohara streams today and work on Upper Takaka and Motupipi in October as staff also have some further work to do on the Motupipi numbers.

AF: The water quality needs to be added to the Upper Takaka allocation discussions as this is likely to affect the quantity work.

Action: FLAG to consider water quality in Upper Takaka allocation discussions.

FLAG agreed to work on the Pariwhakaoho and the coastal streams today and delay looking at the Upper Takaka and Motupipi at the October meeting.

Check-in

Group discussion of evening event and lessons learnt.

RSN: Several members have asked 'What does Mary-Anne's departure mean for the FLAG process?'

SM: I am hoping to commence a recruitment process for Mary-Anne and Lisa's roles next week. We don't know how this process will go. However, the FLAG should not have any fears about the process – a lot of progress has been made and we will maintain continuity.

RSN: FLAG members have asked whether MAB can organise the policy framework before she goes, however the priority for staff will be the Section 32 analysis which justifies the reasoning behind the options selected by the group as this would be the most difficult aspect for an incoming person to pick up.

Session 6 – Pariwhakaoho

Presentation by Joseph Thomas – Pariwhakaoho Overview

We decided at earlier meetings that whatever we decided on the Pariwhakaoho would be used for the other coastal catchments in the river group (about 5 other catchments). Roger is recommending a slightly different approach than the FLAG decided on at the earlier meeting [*refer Meeting 12 on the 24 July 2015*].

The previous FLAG preference was for:

- Minimum flow to be at MALF (100%)
- Allocation to be 10% of MALF
- Cease take at MALF plus the allocation of 10% (ie at 110% of MALF)

Presentation by Dr Roger Young (Cawthron Institute) - recommended flow and allocation limits:

Key features for the Pariwhakaoho:

- *In the coastal rivers grouping*
- *Major forest area in upper catchment*
- *Significant ecological values*
- *Relatively low mean flow*
- *No current water takes*
- *Flow site in the lower areas, but flows generally taken from Anatoki (Happy Sams flow site) following correlation work*

Roger Young suggests the following approaches:

- Minimum flow = 90-100% of 7-day MALF – based on flows at State Highway 60
- Allocation limit = 10-20% of 7-day MALF – based on flows at State Highway 60
- Minimum flow should be a cease take - triggered by flows at Happy Sams on the Anatoki [*this site is telemetered and has been correlated to Pariwhakaoho flows*]
- No rationing trigger proposed [*as river recedes very quickly*]

These regime ranges would mean between:

- *5 to 12 days per year when the river flow would fall below minimum flows (depending on the % of MALF selected)*
- *12 to 24 days per year when cease take would occur (depending on the allocation and minimum flow selected)*

Considering habitat requirements, allocation needs and security of supply, staff suggest the following approach for further consideration of implications:

- 90% 7-day MALF minimum flow (176 l/s and 10% 7-day MALF Allocation (19 l/s) - at SH60.
- This gives a cease take trigger at 195 l/s - which gives a security of supply where we would expect an average of 12 days per year when flow would drop below this trigger (ie when water users would have no water)

[*Post meeting clarification: a cease take trigger of 195 l/s in the Pariwhakaoho equates to a correlated flow at Happy Sams on the Anatoki of 2156 l/s*]

Summary of Staff Recommended Regime for Pariwhakaoho River:

Regime Statistic	Approach for calculation	Actual number	Location where flow would be measured
Minimum flow (MF)	90% of 7-day MALF	176 l/s	At SH60
Allocation limit (AL)	10% of 7-day MALF	20 l/s	At SH60
Rationing step		None proposed	
Cease take	MF+ AL	2156 l/s (equates to 195 l/s in Pariwhakaoho)	At Happy Sams on Anatoki River

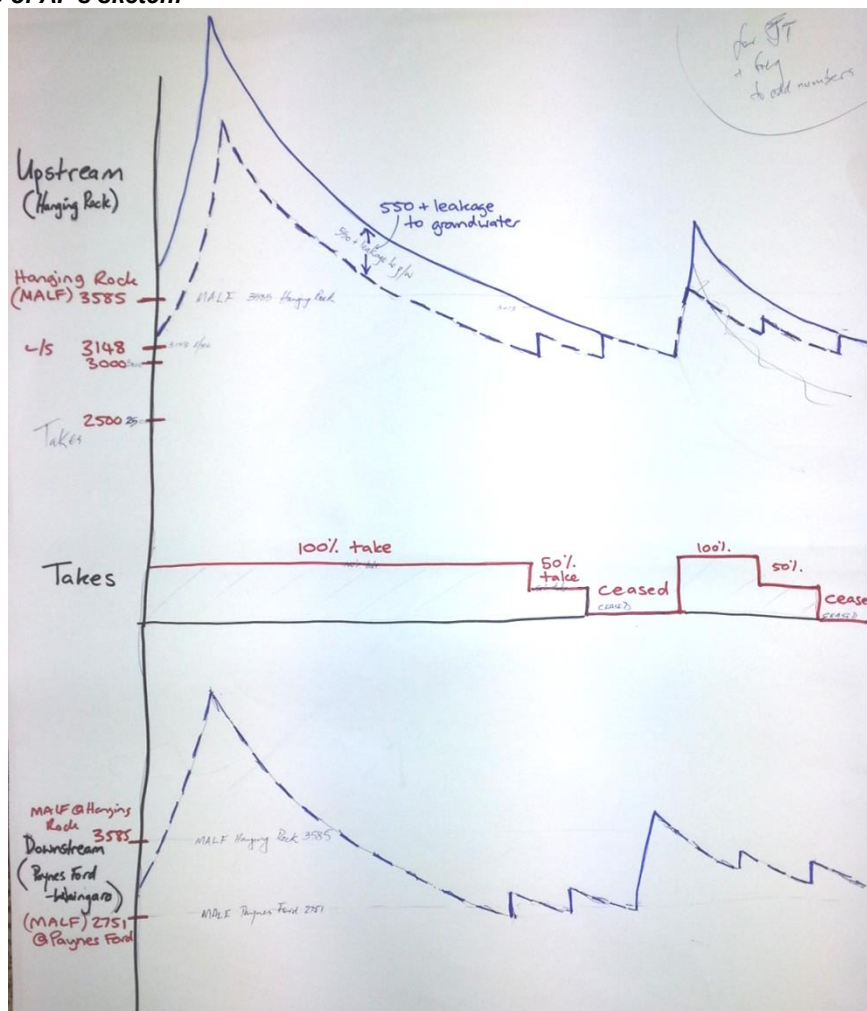
- Expected cease take = on average 12 days per year

Group discussion points and questions arising from presentations:

GA: I'd like to relook at the data for the Waingaro to show the effect of what we discussed yesterday at the swimming hole.

AF: We could draw some schematic hydrographs to look at this. (AF sketched upstream flow hydrograph, water take rate, downstream hydrograph as a suggested format for later).

Photo of AF's sketch:



NM: When you look at the figures the flows are almost 10 times the size – Is the Pariwhakaoho as a smaller stream going to be affected more by 20 l/s allocation than a large stream would be by a proportionate amount? DoC's current approach is stricter than what FLAG is proposing for Pariwhakaoho and in areas of greater 'value'.

GA: How do we compare the diversity of the Pariwhakaoho for example with rivers in the national park?

MAB – We have the RIVAS information, but we don't really have any tool to compare those in parks and those outside.

GA: How do the coastal rivers compare – are they of 'park' quality?

SM: We need to think about the risk into the future of demand in and out of the Kahurangi national park. [Demand is likely to be out of the park].

TJ: The small coastal streams have greater abundance per area of stream – you will get more effect from water takes in these smaller streams than in the larger ones in the national park.

RY: Generally, if you take a similar proportion out of a small river compared to a large river, you will generally see a bigger effect - except for some aspects such as adult trout, which are only found in the larger streams and get impacted by reduced flows. It is not as simple as saying smaller streams are more affected – it depends on the values you are protecting.

MS: If we ran the data on the FLAG approach vs Roger's recommendations – how many days of cease take would there be?

JT: There is quite a substantial difference in the security of supply.

JT gave the restriction figures.

[Post meeting clarification of cease take figures:

- FLAG approach: average of 29 days of cease take
- Roger's approach: average of 17 days of cease take]

MS: So there is [a difference] in the restriction days. – Trevor how do you see this affecting the ecology of these streams – will it have an effect?

TJ: We don't have the curves for determining the threshold of change to determine the effects – so it will just be based on expert opinion – these streams have a lot of riffles – it will have more impact on these rivers than it would have on others.

PM: Having a cease take at MALF +10% is reasonably arbitrary...

AF: Effectively the numbers [under the FLAG option] for cease take would mean any take in these catchments would be C-type permits – only taking to storage, as there wouldn't be enough security to justify any investment without storage.

MN: We haven't really looked at the context around this in terms of the stream types around the Pariwhakaoho – where does dairying begin and end? There has been a wetland that has been drained just outside of the lower catchment, but could still be linked and could be a classic site for storage to be created. It would be important to have a trigger for both lower and upper flow takes to allow for takes to storage to occur. I think the area is fertile and has a future in horticulture rather than just dairying.

GA: I agree – we should be focussing on taking water when it is available – rather than what happens when it is low flow.

MAB: It sound like the FLAG is struggling that there is only provision for C-type takes and no A-type takes?

RSN: The approach we have been taking is to set minimum flows, set allocations and then review if storage, etc, might be provided and how this would be provided for. Is everyone happy with this approach?

AY: I'm not particularly happy with our approach, as I'm not sure we know why these rivers have such a high fish value?

TJ: The Onekaka has the highest fish diversity in NZ (13 species in the lower reaches).

AY: Yes, but do we know why?

MN: Trout don't like that environment, so there is no pressure on the native fish from these.

AY: We need to know what the factors are that are important for the fish diversity - to know if we should be discussing whether there should be 90 or 100% protection. If this doesn't have much impact on the values we are trying to protect...

GB: We also need to be aware of stock and domestic uses in these catchments.

PM: A 25,000 litre tank costs about \$2000 and will last you a while [so storage for domestic use can be affordable].

GA: We don't have robust data on the impacts between 80, 90 and 100% MALF – if we don't want to see impacts we will need to tell people that they will need to put in storage to use the water - we will need to err on the side of caution until they can prove 80% is ok.

NM: I'm uneasy that we have been taking conflicting approaches in different rivers – we decided a higher protection in the Anatoki than in the Waingaro because there was less demand – which seems the wrong way round...

MB: We need to promote a new culture and to get people thinking about storage more. We need to change the culture to get economic benefits without creating damage.

RSN: What is the policy view of this from staff?

MAB: We need to be consistent and be able to justify decisions as these will be challenged in the future by those wanting water.

JT: Pariwhakaoho is easy in that it is a clean catchment [no current takes] – but this approach will be used in the other catchments also, which will change the security for the existing takes in the other catchments.

Should we be looking at the Onekaka then?

MAB: You need to be looking at them consistently. They all have high values. We need to figure out how much can be taken out before there is an unacceptable effect on the values?

SM: We also need to take into account potential future demand, as well as existing demand. Consistency doesn't mean being the same – but we need to have good justifications for differences.

RSN: So if there is no existing demand – can FLAG draw a line in the sand to say “we don't want further takes in order to protect the values”?

SM: There is also an approach to avoid any impacts by setting a high level of protection from the beginning.

RSN: Is that a justifiable approach?

AF: There is a strong spatial component – are the high fish values generally in the higher catchment?

TJ: The greatest diversity is in the lower to mid catchment areas – before it starts to steepen up.

AF: So takes during low flows could affect the fish values...

RY: Think about the flow in the Pariwhakaoho at 197 l/s (MALF) occurring every few years versus a flow of 177 l/s (90% of MALF) occurring every few years - the rest of the time it is higher than this. Would you be able to visually see a difference between the protection? 90% is a high level of protection, while 100% is a very high level of protection. If there are long dry periods there will naturally be long low flow periods regardless of the regime chosen.

AY: It depends if the fish will be affected. From Roger's habitat vs flow graph, it would suggest that for a small change in flow there would be a big impact in habitat availability.

AY: Does it follow that a 10% drop in habitat will make a 10% drop in fish? Or are we arguing about nothing?

RY: No, it does not necessarily mean a corresponding drop in fish – we don't know if the fish numbers are affected by habitat change or flood effects, etc. My feeling is the incised channels, shading, good water temperature, water coming from a short reach of forested upper catchment, and good fish passage – are probably the key reasons why there is such high fish diversity – the amount of habitat is a small feature, which is relatively unimportant compared to these other features.

GA: So if these are considered the most diverse rivers in the country are there any others that justify 100% habitat protection?

RY: Not really, but there are some in Taranaki that use 100% as a default.

GA: but this is likely to be challenged?

JT: If the plan has submissions and a hearing questioning the decisions – TDC through consultants such as Roger will have to justify the reasons for the decisions.

RY: Are you willing to provide for water uses? – and what level of risk are willing to accept?

MS: If we have a good cease take value that protects the minimum flow then I think we have the right approach irrespective of the other numbers. We need to give flexibility in the community for small uses and storage is not ruled out. I think Roger's recommendations are sufficient protection of the values in the coastal streams, while also allowing some flexibility for water use.

MLa: We are not just talking about ecological values, but social and economic too - it is important that we allow some flexibility for water use - and avoid a situation where anyone wanting to use water will have to spend a lot of money proving they can take it, as it will just be the lawyers making money out of such situations.

MN: The 'stick' is a high cease take trigger, but the 'carrot' is to allow for storage.

MS: When the Onekaka hydro take was renewed there was a lot of community concern – but you talk to them now and they think the stream is now in good order. Sometimes the fear of what might happen is different to what actually happens and typically the natural droughts are of much larger impact than some of the human effects we are talking about here.

HR: we don't have control over natural situations, but we do have control over water takes.

MAB: We need to make sure we have good policy around what we are doing to close the gap to avoid the 'next expert' situation coming along challenging the rules. Surplus protection is not necessarily a justifiable approach. JT what is our permitted activity take?

JT: 5 m³ per day.

MAB: I don't think it is irrigation use we are talking about [in these catchments] – but perhaps a small cafe.

GA: I need to be able to justify our decisions to the community...

SM: If limits are set robustly they will stand the test of time, if not they will be eroded over time.

NM: What can be taken from the Onekaka now? It doesn't make sense if the Pariwhakaoho protection is set higher than the Onekaka – yet the fish values in the Onekaka are listed as higher...

JT: Under the suggested regime [Roger's numbers], the Onekaka becomes over-allocated slightly – the cease take will kick in regularly. The cease take is set at MALF (116 l/s). The 5-yr low flow is 88 l/s.

AF: This means every year, on average, water users will be turned off.

MAB: and the security of supply will be low.

RSN: So if we were being consistent, would you seek to [correct the Onekaka over allocation] over time?

MAB: Yes, the NPSFM directs us to do this.

RSN: I get a sense that some of you are uncomfortable with:

- **Why we should be providing for future allocation if the demand is not there yet.**
- **That the 10% of MALF variance in cease take does not appear to be significant.**

NM: Why are we giving these rivers more protection than those in the national parks?

HR: None of the rivers are the same, so why should our approaches have to be the same? Why can't we have a river we don't allow takes from?

AY: It seems we think that we can defend 90% of MALF, but not 100% - why is this?

MAB: If the reason you want to protect the river is the value of fisheries, then 90% [habitat protection] will protect this – if you want more protection than this then you need justification for this – it seems at the moment the justification just seems that it is because you just want this...

SM: You need to set aside the values side from the risk situation – you need to look at the values side consistently.

GA: We are looking at economic impacts – there will be a big economic impact in the Waingaro, but not in the Anatoki.

MAB: If we apply this regime to the Onekaka – which would be over-allocated – what would we do for those people in the Onekaka? We could determine the economic cost, but not necessarily the social cost to those people – would they be pushed out of the Onekaka catchment?

They would be cut back.

MB: If someone buys some land in one of these catchments – can they clear the land right up to the river. If we are going to lose a percentage of habitat - are they going to be protecting these other values?

MAB/JT/SM: lowland forest requires a consent over 1000m² to clear and there are rules protecting stream meander, etc.

RSN: So, when we do the plan change, we will need to check that there are appropriate land use controls to protect things like riparian vege etc.

Perhaps Roger can review why the rivers are grouped as they are to highlight the various values...

RY went over the rivers grouping map [refer slide 16 of day 1 presentation].

RY: I agree with Hika that the rivers are all a bit different, but if we look at the rivers in their groups then we can argue that the framework has been applied over the group – this makes it more difficult for each one to be challenged in the future, as challenges need to prove both distinctions in the specific river and the framework itself.

MB: Does this mean we are constantly compromising downwards?

RSN: This is really justifying the values behind what you are protecting – if you are saying “we want this to be pristine” – you still need to justify it.

AY: We seem to be returning to the graphs saying these are justifiable, yet a feeling can be pushed over.

MAB: We are talking about a framework that is seeking to protect the values of these streams – the grouping allows us to set the distinction between high and lower value rivers.

MN: Every river we have is highly modified compared to what they would have been originally. Is there a tipping point when we start to lose more?

SM: But also look at the social and economic values over the past 100 years.

MB: We don't have to say there will be an economic loss just because we are protecting the streams – we can have both.

GA quoted a poster he'd seen 'We'd like to save the planet, but it doesn't appear to be economically feasible'.

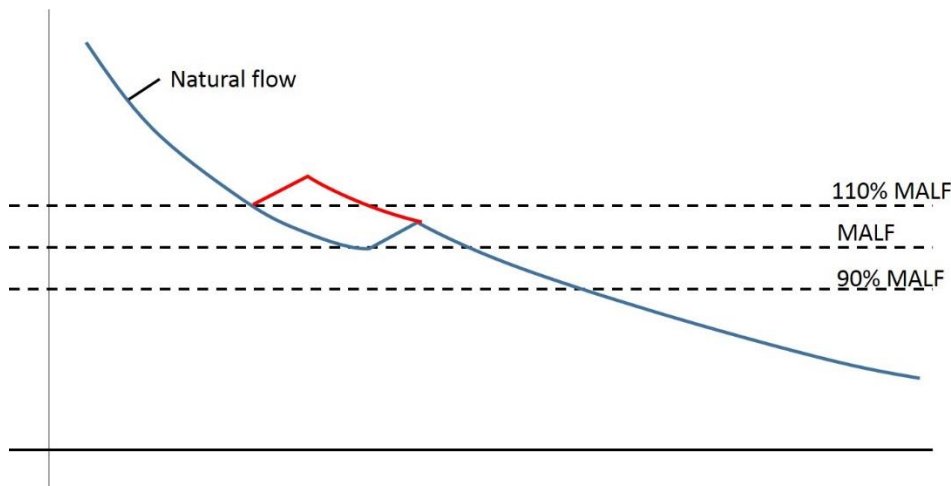
AY: You said 90% of MALF would categorically protect fish habitat?

MAB: No – I said it was a high level of protection.

JT: This does not mean a 10% loss of fish habitat – it is 10% of MALF – cease take is still at MALF.

MS: Can you draw the graph?

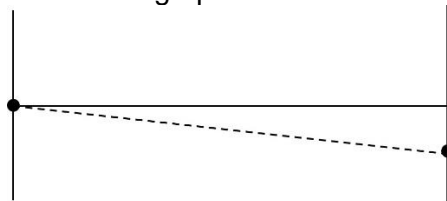
RY drew graph for the group.



MAB: When you are thinking about this – consider the existing takes in Onekaka – 90% will still allow them to take some water, but with more cease takes – but if you go to a higher cease take – this would have a bigger impact on them – we'd need to look at what they were using the water for to determine the effect ton them.

JT: If we are ceasing at MALF – we just need to justify this.

GA drew a graph for Pariwhakaoho:



GA: The flows at the bottom will be lower when losses (evaporation and to the ground) are included.

JT: These losses are taken into account in the correlations.

<Roger Young left the meeting>

JT: The cease take will be about a 1 in 4-year drought – which is better than currently, as there is no cease take.

SM: The question is – [are the low flows] being improved enough?

MAB: Regarding levels of protection – there is a high level of protection for the coastal catchments – we are looking at a higher level of protection as they are outstanding for fisheries values (national). We currently don't have criteria for outstanding, but given the fish diversity results we could put up an argument that they are outstanding and due to the impacts on the riffles, etc, we want to take a precautionary approach to setting the standards.

JT: I suggest if you follow that approach – that you don't allow allocation (0%) as how can you justify any takes?

MAB: This would mean we would not allow any 'A' take permits and only allow 'C' take permits (during higher flows to storage).

MAB: We then need to decide what happens with the existing takes – whether they are grandfathered or clawed back or something else.

JT: This would apply to existing takes at Onekaka and Wainui.

AF: This is effectively a Water Conservation Order approach.

KJ: So how do we justify the Onekaka take?

MAB: It is an existing situation approach – we protect what is there now – including the existing takes.

JT: We freeze the Onekaka and the Wainui situations and say everywhere else there is no allocation.

RSN: So that means there is no take?

JT/MAB: No it means there is no 'A' class takes, we allow for harvesting – 'C' class takes to storage which only occur at higher flows.

JT: eg harvesting allowed at 10% above the median flow [refer slide 8 of day 1 presentation]

AF: 10% of median flows is an insignificant amount during a flood.

KJ: Regarding the existing take – is it still [outstanding for fish diversity] with the take in place?

LM: The measurements of high fish diversity where measured with the existing take in place.

Group discussion on this option:

NM: this has turned this morning's discussion on its head. It seems all we are doing is protecting the existing demand - now we are going to grandfather existing takes on our highest value rivers. We are saying our existing takes are ok, but further takes are not – even if the conditions in the rivers will remain the same. I don't think we are being consistent.

MLa: We have also allowed for further future takes on the Anatoki and Waingarō.

RSN: The decisions you make are about understanding the social and economic impacts of the water takes.

SM: We either live with it, wind it down [over time or cease it immediately].

AY: It is more disruptive to stop someone already doing something, than to tell people they can't start something.

NM: This was Tony's argument yesterday – that he wanted to ring fence existing takes – but then we didn't agree with it.

HR: Doesn't the NPSFM require we maintain or improve water bodies?

SM: This relates to the water quality aspect – for quantity allocation under the NPSFM we need to make sure we don't get into an over allocation situation [but taking more water doesn't necessarily mean degradation occurs].

RSN: Are you saying Neil that the group seems to have started making decisions on the basis of protecting ecological values, but now seem to be making them on protecting existing takes?

NM: Yes.

MLa: Are we putting in protection that won't protect what we want it to?

JT: This same approach will apply to Bells Creek.

GB: I know and I don't really agree with a no-take approach. I think we are taking away a lot of opportunity around things like hydro and small irrigation takes. The river is at a high value with the existing take in place – and we are then going to punish them when it is already at a high value.

JT: The limits won't affect non-consumptive hydro takes.

GA: Then we end up with the argument of 'we haven't damaged the Onekaka so let's take more'.

RSN: Roger has said that 90% of MALF will provide a high level of protection of the fish values.

JT: We have a challenge that parties can still bring their experts to challenge the framework. We need to be able to defend the decisions.

RSN: Do you agree that the whole coastal area has high fisheries values?

The FLAG agreed.

MAB: Is it very high or outstanding? If very high, we can go with Roger's regime, if it is outstanding then we go with the 100% protection and 0% takes approach and have no A type water takes.

JT went over flip chart graph.

JT: 90% of MALF is the minimum flow at which we cut everyone off which then allows the river to bounce back to MALF.

MAB: A cease take at MALF is not a very secure supply for a water taker.

GA: What is the breakdown of existing takes in the Onekaka?

JT: There is one big take of 13.9 l/s.

RSN: If Roger was the scientist that would be used in court to defend the framework and he is saying 90% is ok in these steams – why would the group disagree with him?

GA: I phoned Mike Joy this morning to discuss yesterday's discussion and he said there was a lot of disagreement around the science.

SM: The answer is to have a framework and justifications that stand up to challenge.

JT: You won't get Roger justifying it if it is a community decision – this will be the community defending their stance.

AF: You will be defending it as a precautionary approach taken by the community.

MB: What is the difference in streams if we set the limit at 90%?

JT: Only Roger and Trevor can say this?

GA: Can we plot this?

JT: I've given you the numbers in terms of the [cease take] days.

PM: What is Neil's alternative approach?

NM: I think the 90% rule is consistent.

MS: At 90% there is so little water available in some streams – I think 90% gives a significant level of protection. It will only marginally go below MALF. There won't be a significant number of days affected by low flows.

RSN: I'm going for a 'can you live with it' question regarding Roger's proposed regime?

MAB: We are now focusing on the security of supply – there is not a good security even now.

AF: Joseph gave us the numbers – we are effectively providing for 'C' type takes, not 'A' takes.

What are the options for implementation of the regime for existing consents?

MAB: We can:

- Change allocations on consent renewal
- 'Grandfather' the existing takes and numbers
- Implement reductions within consent review clauses

Action (repeat): MAB to create 1-2 page of options for how these approaches could be implemented (ie when consents review, vs adding conditions etc).

MB: If we decide in a couple of years time that we've made a mistake – how big a deal is this to go back and change it?

SM: We can review it at any time, but it is an expensive thing. The plan change cycle can vary greatly. You can assume the concerns of the existing takers will come through in the process.

MAB/JT: It depends on the significance of the issue. We will need to look at the costs and benefits in the process.

JT: The Onekaka consent used different science and a different policy framework when it was granted. Both of these are now changing.

MAB: When the consent was applied for the protection of the fisheries wasn't that clear – we are now seeking to make this clear and we can transition the takes to achieve this over time.

GB: How many rivers are we talking about?

JT: Seven: Tukurua, Onekaka, Puremahaia, Onahau, Campbell Creek, Wainui, Wainui North.

RSN: Can you live with a 90+10 approach? It is Roger's advice that the change between the 90% to 100% won't impact the habitat much...

MS: I think the 90% is a precautionary approach.

MAB: If we use different language it might help – we are looking at a very high level of protection.

MB: Can MALF change?

AF/SM/JT: We set a fixed number in the plan to work with, over time the actual MALF will change with more data. With a long term data set the change in MALF gets less. When we come to revise the plan a new MALF will be calculated at the time and used.

GA: A graph of last year's river flow with our suggested changes over the top would help us understand the implications...

Action: Staff to present decisions to date over previous real data.

RSN: So can you live with a 90+10 approach?

MB: I'm not sure I feel informed enough to make a decision, but I think I can live with 90%

MAB: I think we need to find a common metric to discuss and compare the security of supply.

Action: Staff to determine appropriate metric for security of supply discussions.

JT: The cease take days double in the most normal years...

GA: It must be challenging when there is such a difference in the year to year days of cease take.

AF: TDC has traditionally taken the approach of looking at what is occurring in a 1 in 10-year drought. JT: but this can't be looked at in the Pariwhakaoho [because the cease take trigger is above the 1 in 10-year flow].

MAB: The number doesn't change - it is just a different way of expressing the security of supply.

SM: In other areas they use the term 'reliability of supply' which means the same thing.

RSN: There will always be areas that have higher environmental values than others and this may mean the uses in those areas are restricted and the FLAG need to determine the thresholds of when these restrictions apply.

RSN: How would you like to see information presented so you can better understand it?

FLAG: Graph of river flows with methods and days of cease take.

Group decision status:

Rogers 90 +10 approach: everyone can live with this – with staff coming back to show what this methodology looks like on real data so the FLAG can see what impacts will be for existing and future demand in each catchment.

Action: Staff to produce summaries of the impacts of the selected regimes for each catchment using real data and identifying the resulting dry days and cease takes.

JT: Regarding questions for the FLAG – we have 3 big things still to address:

- **Upper Takaka**
- **Motupipi with further numbers (due to complexity)**
- **Te Waikoropupu Springs**

Roger can come back for one more day and provide a summary report – we need to use the 30th October meeting to cover those three things.

GA: Where does the water wheel come back in?

AF: There are two issues – the water quality for nitrate and the WaterWheel – I think it would be good to refresh the trade-offs presented by the WaterWheel, but the focus for the meeting should be the water allocation first, then look back at the water quality implications that may change this.

JT: I don't think that the decisions you are making are coming close to the double irrigation scenario in the WaterWheel modelling.

MS: We might have identified say a number of 550 l/s in Waingaro, but there are a lot of other factors that need to fall into place before this can be confirmed.

MS: The Upper Takaka and the springs are linked.

<lunch>

Session 7 – Motupipi River

RSN reminded the group of constructive meeting behaviours and acknowledged the group was in the dynamic part of the decision making process “the groan zone”. We may appear to be going around in circles, but many valuable questions and points are being raised, along with differing perspectives on the issues, so those “circles” are still moving us forward.

MB: We have a process in council meetings that works – everyone who wants to speak holds their hand up and someone takes a list of people wanting to speak to ensure everyone gets their opportunity – I’m happy to make this record. [Offer acknowledged]

Presentation by Joseph Thomas – Motupipi Overview

Key points:

- Roger Young wants to put some more work into the Motupipi zone in light of recent work done by others on the dissolved oxygen in the lower river that he would like to incorporate.
- Need to discuss changing some zone boundaries as this will impact on how the allocations may work.

Features of the Motupipi Zone

- There are two parts to the limestone aquifer – one from East Takaka and another in the Clifton area. The Clifton water has a different [chemical] fingerprint.
- Rameka Creek runs on limestone.
- We get recharge to the limestone from the Rameka area and from the Takaka River.

Motupipi Zone Boundary Location

- The western boundary of the Motupipi zone was originally done to capture the monitoring bores.
- Based on modelling work and review of three large takes by the township (near SH6 around the i-site) the capture zones for these bores take more water recharged from the Takaka River than from the Motupipi zone. These three bores would be affected by any rules determined in the Motupipi zone.
- JT is suggesting that these three bores should be removed from the Motupipi zone and moved into the Takaka Township zone. The Motupipi River also gains limestone water [determined from water hardness measures] from below the Fonterra farm bridge and at Reilly’s crossing and very little at the dairy factory.
- The proposed new boundary will go from the dairy factory to the south by Page Road.

Trigger measurement site

- We have good correlations between the river flow at Reilly’s bridge and the groundwater level in the fire station groundwater bore.
- Roger Young and Joseph Thomas’ preference is that the fire station bore is used as a surrogate location for triggers in the Motupipi River as the Reilly site is difficult to gauge accurately due to periphyton growth.

TJ: Another option was to shade the weeds in the Reilly's bridge area...

JT: Our hydrologists are more in favour of using the bore.

MN: Is the Clifton water from a Pīkikiruna source?

JT: The only takes are in the Central Takaka water bore by Rameka (depth 40-50 m – groundwater is at about 5m below ground level).

[Clifton water supplies are from Clifton hill]

MB: So the dairy factory bore will be included in the Motupipi Zone and be subject to the Motupipi rules?

JT: Yes.

NM: Where does the Takaka Gravel Aquifer extend?

JT: It covers the whole area, but some parts are underlain by limestone.

AY: The southern tip of the zone – does it flow south into the marble or does it all go to the Motupipi River?

JT: We think the limestone at this point is underlain by coal measures [which are impermeable]. A bore was drilled in Loop road that went through gravel limestone and marble without the coal measures so the sequence isn't always consistent.

AY: Looking at the absolute level of the aquifer above sea level there seems to be a deepening towards the south suggesting the water will flow to the south?

JT: The pressure effects we see show there is a lot of different connections.

Session 8 – Rototai – Tangmere Area

Presentation by Joseph Thomas – Rototai-Tangmere Overview

Key Points

- The only takes are from the shallow aquifer – does the FLAG want two layers? – or do you mind if we merge this area into the one zone.
- The only recharge this area gets is from rainfall.
- Roger will not cover this in October, but JT is recommending the zones be merged into a single Rototai Zone
- JT is also suggesting we don't have a flow trigger, but use a salt intrusion trigger instead.

AY: Why was it drawn this way in the first place?

JT: Due to the geology.

NM: So the dairy factory water comes from the Takaka Gravel Aquifer, but we are keeping this in the Motupipi Zone?

JT: Yes, because it is so close to the river – this area is contributing to river flows.

HR: Have the coastal bores already suffered from saltwater intrusion?

JT: The monitoring bores have, but not the water takes so far. Most are shallow wells for domestic takes.

MS: The ground water takes – at what point do you need a consent?

JT: Anything above 5m³ per day need a consent.

AF: Are you proposing that with the changed zones – that there will be a single zone for the gravel and the limestone aquifers? So if someone wanted to drill into the [Takaka] limestone there would be no limit?

JT: It would only apply to the Takaka Gravels - so yes there would be no limit on the [Takaka] limestone aquifer – we also need to think about making [takes from] the AMA a discretionary activity.

MB: So takes from the AMA wouldn't have an effect?

JT: With a big enough take there could be saltwater intrusion into the AMA and potential effects on Te Waikoropupu Springs.

RSN: We will talk about this aspect when we look at Te Waikoropupu Springs.

RSN: Between now the next meeting I suggest that FLAG work through the information in the slides for Upper Takaka and Te Waikoropupu Springs keeping in mind there will be more information for Motupipi for discussion at the October meeting.

Action: FLAG to work through the information in the slides for Upper Takaka and Te Waikoropupu Springs keeping in mind there will be more information for Motupipi for discussion at the October meeting.

RSN: Was there anyone with issues about the zone boundary changes in the Rototai and Motupipi zones proposed by Joseph Thomas?

No issues arising from group.

Session 9 – Remaining catchments

[Remaining catchments include those not specifically looked at by FLAG for discussion of management regimes and include: Clifton to Pohara, Te Waikoropupu, the AMA - including Middle Takaka, Takaka township, Rototai, Tata Beach, Wainui/Wainui North, Onekaka, Puremahaia, Onahau, Tukurua]

RSN asked if FLAG agree with the suggestion that TDC staff work through the numbers and methodologies and send these to the FLAG by email.

Small / Dry streams (Clifton- Pohara)

Overview by Joseph Thomas:

- Roger Young has some ideas for the Clifton-Pohara area.
- Numbers will only be available for Ellis and Winter Creek as the rest go dry.
- We will go over these at the October meeting.
- There will be a recommendation on a slide for discussion and provided to the FLAG a week in advance

Action: Staff to “crunch” Clifton-Pohara numbers and provide these to FLAG at least a week in advance.

Groundwater takes near the coast

Overview by Joseph Thomas:

- For groundwater near the coast, we have put a precautionary margin around the coast to address potential risks for sea level rise and salt intrusion.
- This approach has been used elsewhere (eg Waimea) – we are suggesting using the same approach as this has not been challenged elsewhere.

RSN – is everyone happy with this approach?

FLAG members present: Yes.

Session 10 – Summary of Day 2

Summary of meeting outcomes

LM took the group through the summary of outcomes from the two meeting days for the Waingaro, Anatoki and Pariwhakaoho.

Waingaro Summary Table:

Statistic	Approach for calculation	Actual number	Location where flow would be measured	FLAG Decision
Minimum flow (MF)	80% of 7-day MALF	2868 l/s	At Hanging Rock	Agreed
Allocation limit (AL)	20% of 7-day MALF	550 l/s	At u-s confluence	Agreed with checks of economics(SOS), irrigable area, and look at options for how to transition implementation
Rationing step (50%)	MF+AL	3418l/s	At Hanging Rock	Agreed – with check of irrigable area data.
Cease take	MF+50%ofAL	3143 l/s	At Hanging Rock	Agreed – with further discussion of method using 80% of allocation

Comments:

Cease take is better than the current policy.

Outcome: Group happy with summary table.

Anatoki Summary Table

Statistic	Approach for calculation	Actual number	Location where flow would be measured	FLAG decision
Minimum flow (MF) – FLAG alternative	90% of 7-day MALF	1940 l/s	At Happy Sams	Agreed - Differs from Roger's recommendation of 80% <ul style="list-style-type: none"> • There is less demand and opportunity to protect • River gets warmer than Waingaro
Allocation limit (AL) – FLAG alternative	10% of 7-day MALF	170 l/s	At One Spec Road	Agreed -Differs from Roger's recommendation of 20% less demand and opportunity to protect - with review of irrigable area to determine impact
Rationing step (50%)	MF+AL	[2110 l/s]	At Happy Sams	Agreed
Cease take	MF + 50% AL	[2025 l/s]	At Happy Sams	Agreed

Comments:

TJ: Allocation and takes won't change the temperature of the water unless the takes are very large.

Why is the Anatoki River getting slimy?

GA: It has gotten much slimier – I've noticed a change.

GA: We need to talk to the Rainbow people – they will know their river.

TJ: Yes, the slime grows more in lower flows, particularly after long periods without flushing flows, but there must also be a nutrient source for the growth to be so prevalent. It is likely that there is flow or seepage over nutrient-rich mudstone causing nutrients to leach into the system. After a big flood the grazing invertebrates can get washed away and therefore there are fewer to control the growth.

Outcome: Group happy with summary table, with the amendment to remove reference to temperature.

Pariwhakaoho Summary Table:

Statistic	Approach for calculation	Actual number	Location where flow would be measured	FLAG decision
Minimum flow (MF)	90% of 7-day MALF <i>(previously: MALF)</i>	177 l/s <i>(197 l/s)</i>	State Highway	Previous flag decision was 110% of MALF Roger recommending 90% Group decision: “can live with it” ³ Roger’s recommendation – staff to show implications of approach
Allocation limit (AL)	10% of 7-day MALF	20 l/s	State Highway	Agreed
No Rationing step proposed				
Cease take	MALF <i>(previously MALF +10%)</i>	195 l/s <i>(217 l/s)</i>	State Highway	Agreed (currently no cease take) <i>(Onekaka cease take will be far more frequent (current cease at 1dayMALF- close to MALF) if same approach is applied)</i>

Note: Previous FLAG decision shown in brackets under Roger Young’s recommendations.

Comments:

FLAG are now in agreement with Roger Young’s recommendations for Pariwhakaoho (and the coastal streams group).

Group discussion occurred on what previous FLAG decision was as this seemed to have been recorded incorrectly.

Outcome: modify table to amend earlier FLAG approach to a minimum flow at 100% MALF and cease take at 110% of MALF, but FLAG now in agreement with Roger Young’s recommendations.

Session 11 – Project Management

Next steps in process / Next meetings

GA volunteered to do graphing of the past results.

JT: TDC staff have the software and real time data to do the graphing.

Action: GA to advise JT of what he wants to see [partially done at meeting refer points following:].

GA: What the Waingaro River did last year with the existing takes and what it would look like with the proposed regime...

MS: At the confluence, as well as at Hanging Rock to look at what happens at the swimming hole.

MB: Do we have enough meetings before the end of the year?

RSN: Could we do another two-day meeting?

MB: or another Friday?

³ This is based on a decision making scale – “can live with” means support with reservations. This means not every member is whole-heartedly endorsing the decision.

MB: When are we going to present something to Council?

RSN: The meeting date for the Environment and Planning Committee (EPC) is the 19th November.

SM: To make the most use of available time between now and December – is there some added value in having further decision time in November?

JT: I think we will struggle to finish what we have at the October meeting – whether we wait to finish this at the end of November or bring it forward to another meeting?

MAB: I think we will need the next two meetings to finish the allocation work.

SM: It would be helpful to have the water quality stuff done with MAB present – can we fit the quality in at the end of November?

LM: Do you focus on getting allocation sorted this year and look at water quality next year?

GA: We could have seen some information in an email beforehand to save on time and be able to come to the October meeting with Roger to be able ask questions...

RSN: Staff time constraints have not allowed this to happen so far.

Action: Staff to aim to have info to FLAG a week before the next meetings where possible.

JT: I thought we had guidance through the Waimea FLAG who have been looking in detail at water quality?

MAB: I don't think it will be applicable to Takaka – we need to look at this further. We have collated the learning on Waimea to go out with this to the public. We could do this for the Takaka also – this can be discussed by the consultation sub- committee.

Action: MAB to record what is relevant – key questions and areas to consider for water quality; Decisions needed; Useful approaches to water quality planning etc.

SM: So the story from the nitrate issue for the Waimea FLAG is a preferred option?

MAB: They have got to the stage that they understand there won't be a significant cost to managing nitrate and will be looking at land use controls.

SM: Do you think this will translate to the Takaka catchment?

MAB: We still need to join the dots – but it could lead into this.

JT: I think we are putting too much weight on the water quality model.

MAB: We need to work out how comfortable the FLAG are and where they want to go and the levels of risk acceptable.

MB: We should invite councillors to attend the 27 November meeting so they can see the FLAG in action.

SM could give a report back on the 19th to EPC about his views having seen the group in action in a year and advise that we won't be completing the framework this year.

Action: Staff/FLAG to report back to EPC on 19th November and advise that the framework will not be completed this calendar year.

MS: Is it possible to provide some guidance to the Council for minimum flow management to advise Section 329 decisions over the coming summer?

MAB: This would have impacts on the existing users.

MS: It would be the DWTF that made the recommendations - because the existing users are below the allocation level that it may not be an issue for them to have S329 used.

SM: This would not be a formal process – but would be an interim measure.

Action: MAB to write up paragraph on advice to EPC for DWTF use of s329 in Takaka over the coming summer season.

Group discussion and decision on further meeting dates/topics and feedback to Council:

- 30th October (with Roger Young) – Allocation in Upper Takaka, AMA and Motupipi
- 6th November - Allocation (MS/HR may not be able to make it)
- Report to EPC on 19th Nov – invite councillors to attend 27th November meeting to observe the FLAG.
- 27th November – Water quality

GB: Has a hearing been set for the Gunsboro consent?

MAB: It has been put off with work behind the scenes to avoid a hearing.

MS: Can we put the triggers discussed to the Gunsboro consent?

MAB: It is a little too far past this point – they have drafted the consent conditions – however they will still be captured by any section 329 orders.

JT: We tried to get a condition added that they would accept any rules put in the proposed plan, but this was not considered legally doable.

RSN: Can we get a draft plan in place – can you do this for the numbers FLAG decide for quantity?

MAB: We need to do this (quality and quantity) together.

SM: This is also more efficient in terms of time and resources used.

RSN: The FLAG also needs to go out to the community before they make recommendations to the Council.

SM: Have the FLAG determined consultation requirements?

MAB: The subgroup for consultation was meant to meet but we haven't had workable date yet.

Action: MAB to advise consultation sub-group of meeting date – linked with a meeting to update Tony, Margie and Martine on the two-day meeting outcomes.

MB: I think council will be pleased to know where the FLAG are at, as there is some concern about what the process is doing.

SM: There was acceptance at the last feedback that the FLAGS are trying their best to achieve the outputs.

Other comments

AF: Thanks to everyone who filled out the survey on the FLAG process – AF will send out the results by email.

Action: AF to send out survey results to FLAG and staff by email.

MAB: There was an announcement about the Aorere Landcare Group – they won their local award and are now entering into a worldwide award competition.

GA: Wouldn't it be great to say to the world - Golden Bay had the most sustainable framework between dairy industry and great water quality.

<End of meeting>

Action Points – Council Staff/Facilitator/Advisor

No.	What	Who
1.	MAB to book meeting with MB, MLI and TR to discuss the group outcomes.	MAB
2.	Staff to photocopy and ensure all FLAG members have a copy of Andrew Yuill's documents and check with iwi about their public release on the FLAG webpage on the TDC website.	MAB
3.	Staff to run numbers for A and C type take permit scenarios for promotion of takes-to-storage and bring these back to the FLAG at the 30 th October meeting.	JT
4.	Staff to investigate river flow requirements for swimmers.	
5.	<i>Staff to provide comparisons of values with 1 in 10 year low flows.</i>	
6.	JT to show days of restriction for preceding 15 years in Waingaro on a graph to show their distribution.	JT
7.	Staff to look at previous distribution of restriction days for Waingaro and assess impact on users of proposed regime.	JT
8.	MAB to create 1-2 page of options for how these approaches could be implemented (ie when consents review, vs adding conditions etc)	MAB
9.	JT to provide the numbers for the plausible irrigated area demand on a catchment-by-catchment basis to FLAG.	JT
10.	Staff to present decisions to date over previous real data.	JT
11.	Staff to determine appropriate metric for security of supply discussions.	MAB /JT
12.	Staff to produce summaries of the impacts of the selected regimes for each catchment using real data and identifying the resulting dry days and cease takes.	JT/ LM
13.	Staff to "crunch" Clifton-Pohara numbers and provide these to FLAG at least a week in advance.	JT
14.	Staff to aim to have info to FLAG a week before the next meetings where possible.	JT/ MAB
15.	<i>MAB to record what is relevant – key questions and areas to consider for water quality; Decisions needed; Useful approaches to water quality planning etc.</i>	
16.	<i>Staff/FLAG to report back to EPC on 19th November and advise that the framework will not be completed this calendar year.</i>	
17.	MAB to write up paragraph on advice to EPC for DWTF use of s329 in Takaka over the coming summer season.	MAB
18.	AF to send out survey results to FLAG and staff by email.	AF

Action Points – FLAG members

No.	What	Who
19.	FLAG representatives to put the question of managing security of supply between existing and new users to the irrigators group.	TR/ KJ
20.	<i>FLAG to review the management objectives zone by zone.</i>	
21.	FLAG to consider water quality in Upper Takaka allocation discussions.	
22.	FLAG to work through the information in the slides for Upper Takaka and Te Waikoropupu Springs keeping in mind there will be more information for Motupipi for discussion at the October meeting.	ALL
23.	<i>GA to advise JT of what he wants to see [partially done at meeting refer points following:].</i>	GA

Action Points – FLAG Sub-groups

No.	What	Who
24.	MAB to advise consultation sub-group of meeting date – linked with a meeting to update Tony, Margie and Martine on the two day meeting outcomes.	MAB

Scheduled FLAG and FLAG Subgroup meetings

Date	30 October 2015 (FLAG Meeting 14)
Time	9.30am -3pm
Venue	Takaka Fire Station
Agenda Items	Allocation (Upper Takaka, AMA remainder, Motupipi)

Date	6 November 2015 (FLAG Meeting 15)
Time	9.30am -3pm
Venue	Takaka Fire Station
Agenda Items	Allocation (any remaining)

Date	27 November 2015 (FLAG Meeting 16)
Time	9.30am -3pm
Venue	Takaka Fire Station
Agenda Items	Water quality
Date	18 December 2015 (FLAG Meeting 17)
Time	9.30am -3pm
Venue	Takaka Fire Station
Agenda Items	Water quality

Information and resource documents identified during meeting

Date	Title	Author/Source
	None	

**Key documents available electronically will be added to the online PDF document bibliography.*

Issues or topics identified during meeting for future consideration

Topic/Issue Description	Requester
None	

**Issues or topics unable to be addressed at the meeting, but requiring future consideration will be recorded in the Takaka FLAG 'Information Eddy'.*