TAKAKA FLAG MEETING 14 NOTES: 30 October 2015

Purpose:	Takaka Freshwater and Land Advisory Group (FLAG)– Meeting 14
Date:	30 October 2015
Time:	9.30am-3.00pm
Venue:	Takaka Fire Station
Present:	**FLAG members:** Graham Ball (GB) Mirka Langford (MLa) Mike Newman (MN) Mik Symmons (MS) Piers MacLaren (PM) Neil Murray (NM) Kirsty Joynt (KJ), Greg Anderson (GA), Andrew Yuill (AY) (co-opted member) Martine Bouillir (MB- council representative on FLAG) Margie Little (MLi- iwi representative on FLAG) **Staff:** Mary-Anne Baker (MAB – Senior Environmental Policy Planner) Joseph Thomas (JT -Resource Scientist - Water & Special Projects) Lisa McGlinchey (LM – Environmental Policy Planner) Monique Harvey (MH - Hydrologist - Data Analyst) **Other** Rochelle Selby-Neal (RSN -Independent Facilitator) Andrew Fenemor (AF – Landcare Research) Roger Young (RY - Cawthron Institute)
Apologies:	Tony Reilly (TR), Hika (Matt) Rountree (HR) Steve Markham (SM – Environmental Policy Manager) Trevor James (TJ- Resource Scientist – Water Quality & Aquatic Ecology)
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
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.	
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.	

Purpose of Meeting

To clarify the approach to decision-making – seeking agreement across FLAG on *how* you go about setting limits and making allocation decisions, and *why* you are doing it that way.

- Agree a consistent approach to limit setting and allocation decisions
- To clarify the language (and/or measurement) used to:
    - rate ecological values and assess levels of protection/risk to those values
    - talk about security of supply.
- To consider how differing 'world views' can be accommodated in RMA planning

To trial different approaches to presenting scientific and resource management information and assess whether they assist in the decision-making

For the Upper Takaka River - decide key elements of the management regime, including minimum flows, allocation and management approaches.

Welcome and Karakia

RSN welcomed the group. MLi led the group in the Karakia.

RSN introduced Monique Harvey who will be taking over the note taking when Lisa McGlinchey leaves. Monique is a hydrologist with TDC.

RSN – There are some agenda changes from that discussed at the last meeting – we had planned to focus on Upper Takaka and Motupipi, but after further consideration by RSN and MAB – it was felt there is a need to review everyone's comfort level with the approach being used before we go further forward.

The first session will focus on reviewing 'How you are doing what you have to do and why you are doing it that way' to ensure every member of the FLAG is comfortable with the approach being followed by the group.

We are going back over where we have already been on a number of occasions this year:

- partly because we are evolving and improving understanding of process requirements as we go through the process
- to get agreement on HOW you are doing WHAT you have to do and WHY you're doing it that particular way
- Without full FLAG agreement to approach can't proceed to make any decisions, because the process will be undermined by a lack of buy-in.

RSN is everyone ok with this approach?
No dissent from the group.

Check-in

Check-in focused on response to RSN's question above.

MN: I think we can reach consensus around this table, but the misgivings that are arising are not necessarily arising from the members - but from feedback from the wider community – we need to be sure we are taking the community with us.

AY: I've been uncomfortable with the process taken at the last meeting and it has upset me - I feel we have been directed to follow the expert opinion in setting minimum flows rather than our desire to have higher protection, as there is a perception there will be difficulty in justifying it in court later.

RSN: Staff have been intending to provide the best information available to assist the FLAG in making decisions, but the intention is that this does not replace the need to take into account community values.

MAB: We need to have a process that meets the values of the community, within the framework we have been given by the NPS-FM.

MB: It is just as valid to have community views alongside the science recommendations.

MLi: while we have the experts brining in their knowledge, they don't live here or have the emotional attachment to the waterways. Iwi will never agree to irrigation on the Pariwhakaoho – it hardly has any water, even in winter. We've had a lot of good information provided, but we need to go out and look at these rivers before we make decisions.

MLi: Water quality is the most important thing, we need to treasure this. We need to review the Māori forms of water. We seem to be accommodating people rather than doing what we need to do.

RSN: Yes, the quality aspects are fundamental and we had agreed to look at quantity aspects first and then look at quality aspects. There have been concerns expressed previously about compartmentalizing the process, but this is one of the challenges of resource planning in that we need a process to go through.

RSN: In terms of bringing in expertise – this session is not about accepting expert advice or recommendations without consideration of their implications, or critique with regard to community values and knowledge, but about addressing if all of FLAG are comfortable that the method and approach used is robust and defensible, and gauging how comfortable people are from a philosophical perspective.

Regarding expert advice and science – sometimes we can come into situations with a bias – at one end of the spectrum there is just blind faith in the science and to the other end of the spectrum being completely cynical of all science – it is good to be in the middle with a healthy level of scepticism.

RSN: Any comments Roger?
RY: I've tried to give a range of options for the FLAG to consider rather than recommendations as such – with a single option used to look at the implications further. My intension wasn't to direct the group to one specific outcome. I'm a river ecologist because I'm passionate about rivers.

MAB: Roger has done exactly what we asked of him - we need to review the framework we are working in and ask ourselves if we have asked Roger to do the correct thing.

GA: I've been very frustrated. We are trying to balance a multitude of viewpoints and we are trying to include spiritual and cultural values. We have been given a lot of information and sometimes it feels like an overload. I've asked about 80 people about how they feel. We need to be careful that we are in touch with what the wider community are saying.

RSN: We can talk some more about how much we dig into the science – everyone has different levels of comfort with dealing with lots of information and the uncertainty in this. The FLAG members will become an information resource for their community.

RSN: As a facilitator I feel we have been rushing things somewhat, with pressure from council, but also the desire from some FLAG members to get things done. It takes time to get 12-18 people all having a common (high) level of understanding about the resource, and then to work through discussing the issues and the information to a point where you are able to agree on a decision or take the next step forward.
JT: Council staff are also under pressure.
MAB: Some councillors have expressed interest in attending the FLAG meeting to better appreciate the process. It is proposed that they will attend the meeting on the 6 November. The councillors attending may include Stuart Bryant, Paul Sangster and Tim King.

MS: One of the reasons I've been focusing on the limits is that things are happening under the existing rules and while we may work out the perfect framework – this may not be able to resolve issues if things have occurred while we are developing it.
RSN: We may need to look at an adaptive framework – so that we have something in place relatively quickly, but allow for early review of this.

Session 1: Updates

Process – 'completing conversations'

RSN: I have gone over the action points from the notes and identified outstanding questions and topics yet to be addressed. I will develop a schedule/plan for these to be addressed in light of Mary-Anne and Lisa leaving [*post meeting note – council will need to work through this and review the schedule in light of changes to the staff resources].*

Presentation of information

RSN: LM has been working on a variety of ways of presenting information.

LM: I've generated a number of draft diagrams and summaries, mostly to aid development of the meeting notes, however if anyone thinks these might also help them understand aspects further then please let me know and I can send copies through.

PM: I've found the spreadsheets helpful, but question some of the numbers – I've tried the same calculations and didn't come up with the same numbers.

Action: LM to send FLAG an Excel copy of spreadsheet so they can see and check the background calculations.

Email discussions

RSN – As a general rule, please include everyone in any email discussions that share your opinions about FLAG work, so we can all keep up to speed. Obviously if you are working on details concerned with the attribute or consultation sub-groups you don't need to share every email with FLAG.

Consultation subgroup meeting

MAB: There has been some concern that we needed to provide more information to the wider community – a summary of where the FLAG is at is being developed for putting out to the community. The idea was to have this available and then set up an open day (ie from 2pm and into evening) and have key presentation times with FLAG members present during the session to discuss aspects with attendees.

Action: MAB to send draft of summary consultation document to FLAG next week.

AY: Could we have a stab at water quality issues before we talk to the public?
MAB: I think the best we can do is say where the water quality fits in the process.

RSN: Who is to be consulted – is this general Golden Bay - the people who live here [or including absentee owners]?
MAB: Yes, the people who live in GB.
MB: It should be notified in a way that will contact everyone, as even those who don't live here [on a permanent basis] may still be interested.

MB: It is easier to start with finding out people's opinions rather than bombard them with information and then ask them their opinions.

PM: I support Andrew's comment regarding water quality. Is there any way that we can control the number of cows without controlling the irrigation? By focussing on the water quantity we are subsuming the water quality aspects...

[the specific issue of cow numbers was parked for later consideration]

MAB: We need to get all the information, but can't make a decision on everything at once – so we need to break it up into parts to be able to work through all the information – however it is an iterative process.

MLa: To me it has always been clear that water quality is as important [as quantity] – the process was that we would use the quantity decisions to look at the water quality impacts and the outcomes of this would then result in review and change to the quantity framework.

KJ: This won't be the only time we go out to the community, it is about taking them with us through this process.

RSN: The other option is to bring people from the community in to do a half day workshop to ask them key questions.

MAB – One question is how do you specify efficient irrigation and what is a decent security of supply - the Waimea FLAG is also looking at this. The idea is to get members from both the Waimea and Takaka FLAGs together for a workshop on the 26th November with irrigators to discuss this *[the workshop will include Andrew Curtis from Irrigation New Zealand]*.

MLi: I don't understand how we can set [allocation] limits without looking at water quality. The taonga is the quality of the river.

RSN: the water quality is a key aspect of the decision making.

MAB: We need to know the land use impacts on water quality – and land use is affected by the water that is available.

JT: council get advice from staff, but the council are under increasing pressure from users, however consent applications will likely be notified and anyone can submit on them.

RSN: The quality aspect is essential and will be looked at next with the ability to reassess the quantity decisions in light of the quality impacts.

AY: With sharing resources and allocating them – the issues are on the land, but all the trouble has come from intensive farming types. We have around 25tonnes of fossil fuel that each of us can burn or we will push earth beyond the 2 degree limit. We will burn through this in 7 years which is within our 10 year planning cycle. If we say "business as usual, full growth as usual" we will need to justify why we are not taking climate change into account in our decisions. We will start seeing tariffs being applied that we cannot ignore...

MAB: We need to take account of the effects of climate change – rather than managing climate change itself (Section 7 of RMA). That would become a very large project than managing water quality and quantity.

Session 2 – An agreed approach to setting limits

Presentation: How the process and decision making approach can reflect different resource management philosophies (Mary-Anne Baker)

We want to make sure everyone is happy with the framework and the process being undertaken by FLAG.

Key points:

- The NPS-FM provides a process: what are our objectives, what are we managing the water bodies for, what are the important attributes, their current and desired states, threats and risks and affordability of options.
- Currently we are focusing on water flows for ecological values; river flows and availability are important for the range of values identified for the water bodies.

- There is a challenge to compartmentalising how we achieve our philosophy – it is important to remember we are not making the final decisions today, but will come back to look at the decisions we are making to ensure they are consistent and agreed.
- We need to ask the question – what are our cultural and spiritual values? We haven't really looked at this in-depth yet.

  GA: This is an important point – in my discussions with the community I've asked "what are your important values? – which are the most important rivers to you?". Some I asked said the Waingaro and Anatoki – I asked why and they said "it's just holistic – you can't stick a number on it".

- We won't ever have all the information we want and often we will have to make decisions with uncertain information.

  MN: We're not setting things in concrete that will endure for ever – the science changes and the community views change – and we have the ability to change the framework we are developing.

  MLi – What are your views Graham - as a farmer who doesn't use irrigation?
  GB: There is water there to use and we need to look at how this can be used in the future, but we need to do this in a way that ensures we don't harm the rivers. We are only talking about taking water above low flows and as long as we set these [thresholds] correctly there shouldn't be impacts on the rivers.

  MLa – There seems to be an assumption that if there is water to be taken, people will take it and intensify. But this is not necessarily the case – we've had [consented] access to water for years now and haven't even discussed taking it. [For others] it might not meet their philosophy of farming.

- From the work we have done on the values and management objectives – we have identified critical values.
- There are different values for different rivers, but for some, the values are the same:
  - Swimming during summer is important for all rivers
  - Healthy mauri is important for all rivers
  - Drinking water – with no extra treatment is important for all [ground] water
  - Natural and physical characteristics are maintained for all water bodies.
- For some objectives the values vary river by river and have different levels of significance:
  - Native fishery values - much higher in the coastal catchments
  - Irrigation – where there is irrigable land
  - Fishing and Mahinga kai – where valued species are present
  - Hydro-electric – especially where there are current schemes
  - Cultural/spiritual – like the Te Waikoropupu Springs – has many values.
- In terms of setting attribute values we have various different information sources including expert advice, information around fishing and flow data etc. We don't have numbers on what flows are important for cultural and spiritual needs.
- Protecting some values also protects other values – eg providing for swimming water quality also protects for stock drinking water.

  MS: There was an ongoing question of the flow level of Payne's Ford – we weren't sure how the allocation would affect the swimming values.
  [post meeting note from the ecologists - swimming holes will be relatively insensitive to flow – at least until very low flows and even then water will probably remain in deep holes. I don't believe that lower flows change water levels in the swimming holes much but there is likely to be more periphyton due to the warmer water temperatures and lower velocities.]

RSN: Let's assume you agree that ecosystem values are the critical value, and that if you protect this you protect all, or most of, the other values too. Then if you accept that a regime using a minimum flow of 90% of MALF will protect the ecological values, if you want to raise this to 100% of MALF then I suggest you need to ask: is there another value you are seeking to protect here? – eg cultural/spiritual value.

PM: I have reservations using ecosystem values as a driving value as many water bodies are a totally new ecosystem following [historic] change to pastoral land use.

MAB: We may need to consider riparian restoration. There might be an opportunity cost to the decisions that we need to understand.

LM: The FLAG could identify "intrinsic-ness" as a value – something that might sit above ecosystem values as a driver for increased levels of protection.
[Post meeting note – the RMA defines intrinsic values, in relation to ecosystems, as meaning those aspects of ecosystems and their constituent parts which have value in their own right, including—(a) their biological and genetic diversity; and (b) the essential characteristics that determine an ecosystem's integrity, form, functioning, and resilience]

MB: I see it as a buffer approach due to the uncertainty.

MAB: There is work going on nationally looking at how to calculate an equivalent dollar value to social cultural and spiritual aspects – ie how much economic value does clean swimming water have to you? I don't really like this approach, but prefer to look at what are we forgoing when we chose a management approach.
GA: There is a tangible value to what we have here - what we have in Golden Bay is rare and it is becoming rarer globally. People will visit and say "You left a river with nothing happening to it? – how did you do that?" there is value to this.

MLi: You can't put a value on it as it is so precious.

RSN: If what you are saying is agreed by all of FLAG then you will have a strong case to justify that protection of resources based on enabling GB community to provide for social, economic, cultural wellbeing.

MB: There are other uses for land if dairy intensification can't occur. We can't always look at what has gone on before to know what will happen in the future.
MAB: We can only model what we know, but when we set limits this will lead to innovation within the limits.
MS: Everyone has a big dairy cow in their minds when we talk about irrigation. We need to separate out land use [from water use], as it could be other uses such as vineyards etc in the future – the stick is you can only use the water if you can control your discharges.
GA: This is why we need to talk to the irrigators.

MS: The Onekaka Is in the best conditions it has been even though there is now irrigation occurring – the positive changes have come about through riparian vegetation and other improvements.

<tea break>

- If we think of the ecosystem value as a critical value – these can be ranked according to a variety of methods including expert assessment, RiVAS, indexes such as IBI or MCI, recreational fishing data eg angler surveys, DoC threatened species information and national/international recognition.
- Should we be selecting different flow regimes based on the significance of values? And if we don't use a ranking system how would we do it?

- We could set a standard or default minimum flow for all rivers – but this may not reflect what is present or what is possible – and it may result in a need to manage over-allocation.
- The cost benefit analysis would need to identify costs of missed opportunities or restrictions on current economic activity.

MLi: We could set the minimum flow at 100% [of MALF] and the benefits could be that tourists visit more.

MB: Is there a tourist figure we could use?

MAB: It is hard to compare the tourist dollars directly with water aspects. Regarding water – [the tourists] are coming for the same reasons you value the water – however other things such as the exchange rate may also impact it.

MB: The unquantified aspect is the new people moving here that are working from home.
RSN: That is where the group members can bring information to the process as anecdotal information as it is not otherwise available.

MS: The majority of people visiting are here for Payne's Ford – it is publically accessible, but as a result also highly modified. I'd find it hard to defend the ecological values at Payne's Ford compared to streams up in the national park, but Payne's Ford intrinsic values are very high.

RSN: If you set the allocation regime river-by-river and decide you aren't happy with it – you could rank and change the regime to fit the significance of the values. Or do you want to start from a default regime?

MB: What does the percentage of MALF approach protect with respect to ecosystems?
RY: It is protecting the things that live in the water (fish and invertebrates), as well as the ecological processes going on.
MB: Does it include water clarity?
RY: It does in that fish require good water clarity, but this is also a recreational value.

AY: We people have created this environment, we are responsible for it – we have within us the creativity and resources to do good or bad with it and this is to do with water quality. The economics are outside of this. If we can agree as a community what the important values are.
JT: We don't have a formal allocation regime now – by setting limits we are working both ways – we are also creating limits on water use at low flow as well as providing for water use.
MAB: We are deciding what the opportunities and the limitations are.
JT: Once we have a limit people will optimise and innovate to this limit.

- Roger has provided advice on what is required to protect the ecosystem values - MAB showed the group a summary table of ecosystem protection levels [this table was developed by staff using advice from Roger Young- reproduced below]

Aquatic Species Habitat Protection

Attribute State	% Habitat retention	Risk of change to fish* populations	Expected outcome	Example for use
A	>90%	Low	Should maintain existing populations. Unlikely that this change to habitat would cause a noticeable reduction in fish abundance or other instream values given the high natural temporal and spatial variability in fish populations.	High quality fishery of national significance or Threatened species of national or international conservation status.
B	80 - 90%	Low-Moderate	?	Moderately valued fishery of regional significance.
B	70 – 80%	Moderate	?	Low valued fishery of local significance.
C	60 – 70%	Moderate-High	High risk of reducing life supporting capacity.	Species with intrinsic value, but no direct fishery value or special conservation significance. This might be acceptable for widespread species with only intrinsic value. For these species ecosystem functioning should also be taken into consideration (e.g. some species are prey for fish with fisheries value (ie trout and eels) and for birds, some of which have threatened conservation status (eg. black-fronted terns and wrybills).
D	<60%	High	Detrimental effects on populations, especially where densities are high.	

** High flow fish species*

MAB: What are the FLAGs thoughts on the habitat protection table?
RY: There is no national agreement on boundaries between classes A-D and we could spend a lot of time arguing this – so I would focus on the levels of protection.

RSN: If we assume everyone is happy with the protection levels – would you rather set the same level across all rivers or take it river by river?

PM: We have already looked at this for some rivers and they are very different from the top to the bottom of the rivers.
AF: We found this in the WaterWheel discussion – you need to be thinking of a particular point along a river.

MS: I'd like to think we wouldn't go below a B [ie not less than 70%] on the rivers.
MAB: Not all rivers are considered regionally significant.
GA: some people I've talked to don't know much about the Pariwhakaoho – they wouldn't think of it as significant.

AY: Who values the rivers when it is valued? It comes back to these are our values.
MAB: We are trying to put some numbers around attributes to protect your values.

MLi: Where is 100% on the table?
MAB: It is included in the greater than 90% category.

MAB: We can tell you information about the fisheries (number of fish etc) and rank them relative to other rivers – however you need to decide how significant it is to you.

RSN: How is everyone feeling? Do you all understand what MAB is asking of you?
General agreement / no dissent from the group.

RSN: If the FLAG use the river-by-river approach and then look at Roger's recommendations and decide the protection is not high enough, then FLAG need to

ask yourselves "why not?" and provide the justification to support the decision for higher protection (eg other cultural/ social values).

AY: Where does the question of dissolved oxygen come into this? Is this part of the ecosystem values or something we will be looking at separately later?
RY: This comes back to the critical value approach mentioned by MAB – the protection of ecological values includes consideration of these things in that the critical value for ecosystem health is habitat and by protecting habitat we protect other water quality aspects also.

AY: How would the aquifers be affected by dissolved oxygen levels and flows in the rivers?
RY: The Upper Takaka River bounces around 100% oxygen levels – however I think the aquifer will be reasonably unresponsive to the allocation differences in flows in the river.

NM: Are we suggesting we set a level for all the rivers as a bottom level and then we look at it river-by-river?
MAB: No – it is one method or the other. We could set a default and then look at how this fits with other values such as cultural/spiritual values.

RSN: Would you want any river in the 'C' category [referring to the table: 60-70% habitat retention]?
General 'No' from the FLAG members present.

Some group discussion about where the bottom line would be.

RSN: Are you saying: "No water body should be below 80% and some rivers will be at different levels above this"?
MS: Most rivers are already in the top classes already.

RY: We need to think about all three legs of the regime stool – including minimum flow, allocation limit and security of supply. You could also do a similar classification approach for the allocation limit – ie 10% of MALF is an 'A', 20% of MALF is a 'B', 30% of MALF is a 'C'.

GA: Do we have legal implications to consider here? Your comments MAB at the last meeting regarding the Pariwhakaoho suggested we might have legal difficulties with the FLAG preferred approach for protection there?
MAB: We would just have difficulties arguing a greater level of protection of ecosystem values if ecosystem values where protected by a lower level – it would need to be some other value we were seeking to protect to justify the higher regime - eg community values.

RSN: So in summary: FLAG are going to follow a river-by-river approach with a bottom line of 80% habitat retention – and if at any point FLAG members are uncomfortable with the suggested flow and allocation regimes and the level of habitat protection, you will review the numbers in terms of other values to decide if a higher level is justified.

GA: Is security of supply within the legal framework?
MAB: It hasn't been in the past, even though Council have done it – but it is now part of the NPS-FM that requires us to set limits.

MS: Tasman's security of supply is very different to that used in Canterbury...
MAB: A similar industry would have a similar security – but different uses would have different securities – we could look at a security that would allow water to move to the uses that needed it most – but this only works where there are different types of land uses. Here we have very similar land uses so our focus is to have a security of supply that means users are not cut off overly frequently to provide some certainty for investment.

Currently we have used something that has been developed historically – we now need to look at this more closely for something suitable to the local context. This is a driver behind the irrigation workshop later in November.

RSN: So is everyone happy with the suggested approach?

PM: I don't agree that this approach applies well to Upper Takaka.

MN: Yes, it is an ephemeral system and we are talking about the extension of the dry area, not about the wetted habitat.

RY: I think when we are talking about the Upper Takaka we need to also be talking about Te Waikoropupu Springs. When we set limits in the Upper Takaka – we need to consider the effect on the spring flows.

MAB: The spring flow could then be the critical value in the Upper Takaka [rather than ecosystem values in the river].

MS: This issue has been looked at in-depth in the consents affecting this area.

AY: I'm very uncomfortable with this approach for both the Upper Takaka and the Waingaro River.

MAB: The Upper Takaka is quite unique particularly with the effect of the Cobb Dam – so the ecological value may not be the critical value.

AY: The critical effect is what we do with the water and what effect is has downstream.

MAB: We do this next. We can't look at the quality impacts until we understand the likely pattern of land use and we can't understand the potential pattern of land use without understanding how much water might be available.

AY: We could look at the existing allocation and say no more water, until the nitrate management is controlled and levels in Te Waikoropupu Springs fall below say around 0.3mg/L then we can look at allocating more water...

RSN: What are others thoughts on this?

NM: It is a good topic of discussion.

MLa: It is a huge topic.

MAB: We have had a lot of information – some of it conflicting from the experts on nitrates. - Which is the more critical issue?

RSN: I'm going to ask for a round table response to the question of whether we look at quantity or quality first:

- *MS: quantity - as there are too many unknowns about quality – as long as we also include consideration of how the water is used in the process.*
- *MLa: quantity first – then quality, I see it as an iterative process and we can model the quantity to better understand the quality.*
- *PM: quantity first, then quality – I think we may end up with less allocation than we now have.*
- *KJ: the quantity-quality iterative process makes sense to me – however I wonder if we can do this entire process for a single catchment to see how it works and allay fears.*
  AF: perhaps for Te Waikoropupu Springs?
- *MLi; I'm not sure – quantity affects quality.*
- *MB: I like the concept of doing one catchment in its entirety.*
- *NM: I think the only way I can proceed is doing the quantity-quality check.*

- *GA: I'm happy with what we are doing as long as we get to quality soon – I like Kirsty's idea of the single catchment approach.*
- *MN: Quantity – quality iterative approach. It would be easier to do a simpler catchment than the AMA as there are so many other complexities to address.*
- *GB: We're all here for quality at the end and we will get there in the end. Quantity is a good starting point, with quality to follow.*

AY: I'm happy with [the quantity then quality] approach.

RSN: Who would like to do a single catchment for both quantity and quality - rather than going through the quantity for all catchments first? – show of hands please?
The majority of FLAG members raised their hands.

MS: Do we have the data sets available [for water quality]? We have OVERSEER...
MAB: We've used OVERSEER numbers to inform the catchment model.

AF: We have this information in the modelling report, but this is focussed on the Te Waikoropupu Springs rather than any of the smaller sub-catchments.

MAB: We haven't looked at the methods for controlling the effects of land use. We might have new innovative mitigation methods to minimise the impacts of irrigation.
GB: We are also seeing this in the industry now, due to our market needs – our products go overseas where this is a key requirement.

RSN: December might be better timing to allow staff to collate information. What do you think FLAG?
General agreement from FLAG members present.

RSN: Which river/zone?
MAB: We have information for the Upper Takaka system with the Te Waikoropupu Spring as the critical value. We will still look at the Motupipi next week and see where we get to.

FLAG agreed to use Te Waikoropupu catchment and contributing water bodies for water quality review

GA: I got some interesting comments from people regarding irrigation – the type of irrigation is really important – they were not against irrigation – they were against cutting down trees and sticking up metal poles.

MLa: In Canterbury the irrigation was so inefficient in the past that the irrigation recharged the groundwater, but now they are being super-efficient and now the nitrates are going into the groundwater, but not being diluted. They are now looking at putting extra water into the system to dilute the nitrates.

<lunch>

Session 3 – The Upper Takaka River

Presentation: Upper Takaka – recommended options for flow regime & allocation limit (Dr Roger Young & Joseph Thomas)

Key Points:
- *Review of minimum flow and allocation limit definitions:*
  - *Minimum flow is the point at which abstraction must be restricted or ceased to protect in-stream values*

- *Allocation limit is the rate or volume of water that can be extracted – this protects in-stream values by controlling length of low flow period and maintains reliability of supply for abstractors*

- *In some areas a rationing step is possible, but if the flow recedes too quickly for this to be practical then the only step is a cease take. For most rivers (except Waingaro and Anatoki) we are suggesting cease takes only.*
- *In other areas such as the Waimea, the Dry Weather Task Force (DWTF) determines where and when these rationing or cease takes occur.*

MB: So does the DWTF decide if it is rationed or ceased?
JT: The DWTF can decide both rationing and cease take and can do this anywhere.
JT: There is no cease take in any of the current lower Takaka valley permits – except for the one at Onekaka.

Te Waikoropupu

Key features for Te Waikoropupu

- Moderate-high ecological values
- Very high cultural values
- Fed by marble aquifer
- 64 l/s consumptive takes
- Minimum flow: 90-100% of 7-day MALF
- Allocation limit:10-20 of 7-day MALF
- There are takes from surface water in the same catchment
- 6895l/s 90% of MALF at main spring *[measured at groundwater bore GW6013 which has been correlated to the spring flows]*
- 766l/s 10% of MALF at main spring *[measured at GW6013]*
- Rationing step (50%) = 7661 l/s
- Cease take = [7278] l/s

JT: Of the current (interim) 500 l/s allocation limit 231 l/s is from the Takaka River – they get ceased at the 1day MALF - other takes don't get restricted.

[Post meeting clarification: The estimation of contribution of different water bodies to flow in Te Waikoropupu Springs is summarised in the report: Water Resources of the Takaka Water Management Area. Conceptual models reproduced below:]

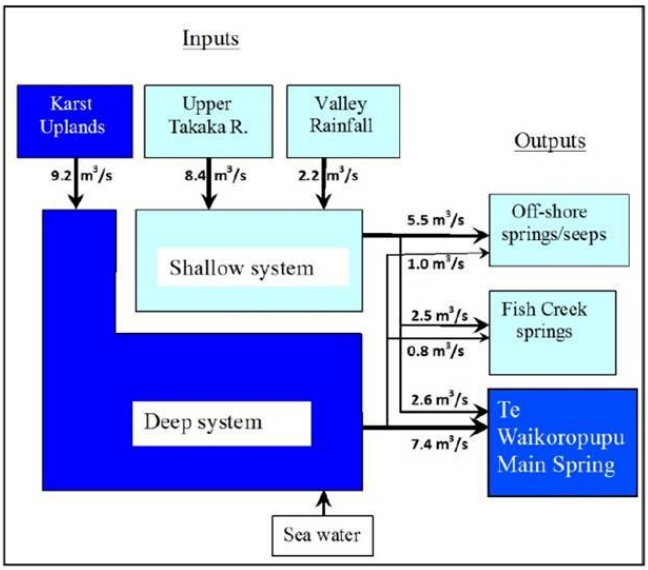

Figure 21: Conceptual Model of Flow in the AMA

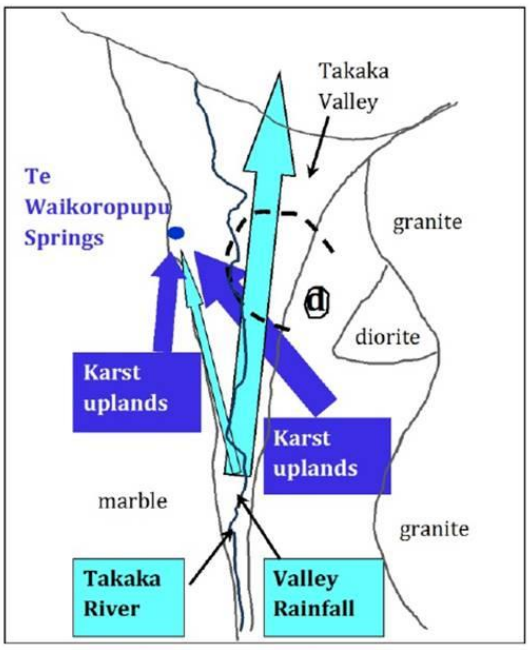

Figure 22: AMA Deep and Shallow Flow Systems

Roger Young suggests the following options:

- Minimum flow = 90-100% of 7-day MALF – based on flows at the main spring
- Allocation limit = 10-20% of 7-day MALF – based on flows at the main spring
- Minimum flow should be a cease take

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 (6895 l/s) and 10% 7-day MALF Allocation (766 l/s) - at the main spring
- This gives a rationing trigger (50% cut) at 7661 l/s, which gives a security of supply where we would expect an average of 13 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 7278 l/s. which gives a security of supply where we would expect an average of 7 days per year when flow would drop below this trigger (ie when water users would have no water)

Summary of Staff Suggested Regime for Te Waikoropupu Springs:

Regime Statistic	Approach for calculation	Actual number	Location where flow would be measured
Minimum flow (MF)	90% of 7-day MALF	6895 l/s	At GW6013
Allocation limit (AL)	10% of 7-day MALF	766 l/s	At GW6013
Rationing step (50% cut)	MF+AL	7661 l/s	At GW6013
Cease take	MF+ 50% of AL	7278 l/s	At GW6013

- *Expected days of 50% restriction = on average 13 days per year*
- *Expected cease take days = on average 7 days per year*
- *Expected days when flow is below the minimum flow = on average 4 days per year*

GA: What is the typical household use per day?

JT: For a middle-of-the-road design for water supply we work on 220 litres per person per day (conservative 150, high end 280)
MAB: In rural areas (on rural water supplies) we allow more for larger gardens, animals etc, so allow for 1.5 - 2m^3 per day

JT: Stock water is unlimited.

GA: How much do cattle stock drink?

GB/MLa: 70 litres per cow per day

AF: The current allocation limit of 500l/sec would be enough for 43,000 households.

Upper Takaka

Key Points:

- JT showed the FLAG the AMA and Upper Takaka zone maps [refer presentation slide 24 and 25].

NM: Where did the [current allocation of] 500l/s come from?

JT/MAB/AF: It came from the regional council in 1991 as an informal number. It was somewhat arbitrary to avoid over allocation.
JT: We have just last week received a water take consent application for a refined, but rather large amount.

- We were looking at having two sub-zones – the Upper Takaka River zone and a Middle Takaka Zone which incorporates the Takaka river drying zone.
- Granting water takes at the top of the catchment may cause the upper boundary of the drying zone to move upstream and potentially affect users in that area.
- The Takaka River up to Lindsay's bridge is considered regional significant for trout fisheries value.
- The Cobb consenting process has provided a more detailed information on the available wetted habitat (as opposed to the flow-equals-habitat approach used for the

other rivers). [Referring to slide 10] There is a lot of debate around IFIM habitat mapping, we are talking about management of flows in the lower part of the graph – where the relationship between flow and available habitat is more linear. This supports our use of the flow-equals-habitat approach used on the other rivers where more flow equals more habitat, and less flow equals less habitat.

GA: When the river goes dry does everything move out?
RY: Those creatures that can will move, but anything stuck to the rocks such as eggs etc will die off.

GA: But they come back?
RY: Yes, they recolonise – invertebrates come down the river with flows.

Key features for Upper Takaka:

- Moderate ecological values
- Significant lost to marble aquifer (up to 100%)
- Significant contribution to Te Waikoropupu (45%)
- Relatively high mean flow (14 m3/s – 14,000 l/s)
- 239 l/s consumptive takes
- Further demand
- Current minimum flow (cease take) = 1657 l/s (approx. 70% of 7D-MALF at Harwoods)
- Large frequent fluctuations in the system from the Cobb Power Station

Roger Young suggests the following options:

- Minimum flow = 70-80% of 7-day MALF – based on flows at Harwoods
- Allocation limit = 20-30% of 7-day MALF – based on flows at Harwoods
- Minimum flow should be a cease take, no rationing trigger.

This regime would mean between:

- *12-16 days per year when cease takes would occur – depending on allocation limit selected*

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

- 70% 7-day MALF minimum flow (1666 l/s) and 20% 7-day MALF Allocation (476 l/s) - at Harwoods
- This gives a cease take trigger at 2142 l/s. which gives a security of supply where we would expect an average of 16 days per year when flow would drop below this trigger (ie when water users would have no water)

Summary of Staff Suggested Regime for Upper Takaka:

Regime Statistic	Approach for calculation	Actual number	Location where flow would be measured
Minimum flow (MF)	70% of 7-day MALF	1666 l/s	Harwoods
Allocation limit (AL)	20% of 7-day MALF	476 l/s	Harwoods
Rationing step (50% cut)	none	none	none
Cease take	MF+ AL	2142 l/s	Harwoods

- *Expected cease take = on average 16 days per year*

- Fluctuations of Cobb hydro scheme complicates the flow in the Upper Takaka – it can go from $1m^3$ to $8m^3$ within a day – this compares to FLAG discussing hundreds of litres – the fluctuations associated with Cobb are far above this.

NM: [referring to graph on slide 30] So when the blue line goes below the minimum flow is the flow really low? –or is the minimum flow really low already? How far down did the river go when the Cobb was off last summer?

JT: It got to around 1000 l/s. The river will look miserable just below Lindsay's bridge [as there are further losses to groundwater below this point].

GA: Where did discussions get between Trustpower and the irrigators?
KJ: Trustpower have left the ball in the court of the irrigators, but they have yet to contact Trustpower about it.

MLa: Does the dam have a legal requirement to release a minimum flow?
JT: There is no requirement for the Cobb to release a minimum flow – there is only an alarm at 15% of the lake level.

MLa: How far would the drying zone get if the Cobb was not there?
JT: Just below Lindsay's bridge.

PM: Why did [the Upper Takaka water user] apply for more water if they can't use their current allocation already?
MLa: They don't irrigate all their land currently.
MAB: you don't want people to sit on water someone else could use, but we can't expect 100% usage of allocation all the time- we could expect up to 80% usage.
JT: We allocate water for the driest time and the soil type – this situation won't occur all the time, so we only see a part use of the allocation most of the time. FLAG could recommend specific factors for consideration in assessing consents. Previously consents have been issued on 35mm/ha/wk, but this has reduced to 30mm/ha/wk (based on soil types).

RSN: When something goes to a consent hearing – do the applicants have to prove why they need the water or do they just have to prove the take won't have adverse effects?
MAB: Yes, they must demonstrate a reasonable need for the water.

- Current allocation [for the three big consents - 239l/s] is about 10% [of MALF at Harwoods]. [Total allocation in Upper Takaka is 333 l/s and is 14% of MALF at Harwoods]
- If you add the waiting list [120 l/s in Upper Takaka – note this excludes a further 105 l/s in the Middle Takaka Zone] and the current [333l/s] you get 453 l/s.

MB: What are the current amounts– for the waiting list and current takes?
The numbers are on the spreadsheet provided [Upper Takaka Zone Summary 28 Oct 2015].

- The increase in allocation may affect the AMA – however there are large fluctuations from the Cobb – does a couple of hundred litres here or there impact the AMA/TWS when there are fluctuations of cumecs (thousands of litres per second) from the Cobb...

MS: So we know takes in Upper Takaka affect the drying reach boundary, but what is the effect on the Te Waikoropupu Springs from the increase/decrease?
JT: What we see out of the 45% of the Takaka River flow – say out of the 10, 000 litres being lost from the Takaka River 4500 litres will be seen at Te Waikoropupu Springs. However, it is not a one for one relationship – ie 1000 litres out of the Takaka River would not cause 1000 litres lost from Te Waikoropupu Spring flows.

MS: Te Waikoropupu Springs flow protection needs to drive the allocation in the contributing catchments...

NM: Te Waikoropupu Springs isn't going to be that simple – it is sitting on 3km^2 of water – with a large fluctuation from the Cobb effect – we are probably not going to see the correlation between the Takaka River takes and the spring outflow.

JT: The 45% is the component of the flow we see at Te Waikoropupu Springs attributable to the Upper Takaka River.

GA: Is it safe to assume no irrigation water makes it back into the aquifer?
JT: It depends when it rains.
[post meeting clarification: AF: All irrigation leaks recharge to some extent.]

MS: Could we have two triggers? – one at Harwoods and one at Te Waikoropupu Springs - So either could be a trigger at cease take?
JT: Yes, you could have both as they react differently with the buffering effects. The bigger the allocations we have the more the cease takes will be triggered.

Presentation: Interpretation of the zone summaries – Lisa McGlinchey

Lisa McGlinchey gave a presentation on interpretation of the zone summaries that were provided to the FLAG (including the Upper Takaka, Waingaro, Anatoki and Pariwhakaoho).

Key Points:

- The summaries take all the data and scenarios and show them in one spread sheet
- The zone summaries include:
  - **Information on water demand including:**
    - Existing water takes
    - Those on the waiting list
    - Future irrigation - calculated from the plausible irrigation map - areas that are not currently irrigated, but could be irrigated and can physically access water.
  - **Flow statistics and default allocations** applicable to the zone and the locations where these are measured
  - **Median flow statistics** indicating the opportunity for takes to storage to occur.
  - **Significance of Ecological Values** – as assessed by freshwater ecologist Dr. Roger Young
  - **Comparison of various flow and allocation regimes** including
    - The **percentage of existing, waiting list and future demand met** by each regime
    - The **level of risk to in-stream values** [in the Takaka River] based on the minimum flow percentage of MALF
    - The **rationing** (where applicable) and **cease take triggers** for each regime
    - A measure of **security of supply** using the percentage of time flows are above the cease take trigger over the summer irrigation period (Nov–April).
- Colour coding has been used for easy comparison for the ecological significance, the percentage of demand met, the risk to in-stream values and the security of supply data. The colour classes are summarised in the key provided to FLAG [and can be modified if desired]. LM has asked TR to discuss with the irrigators to see if the security of supply categories are suitable for their needs.
- The Upper Takaka Zone is only for the upper catchment to just below Lindsay's Bridge. Below this has been called the Middle Takaka Zone.
- The Upper Takaka and Waingaro zone summaries use waiting list amounts that differ from that summarised on the presentation zone maps. These numbers are taken from the plausible irrigation map [which included the waiting list areas also] as this was considered a better estimate of likely irrigation amounts. In particular, there is double accounting in the waiting list for the Waingaro zone due to one of the waiting list applications – if approved - also resulting in relinquishing of part of an existing take.

JT: *The current allocation has high security. We still need to determine ideal reliability for irrigators.*

Does the waiting list include the latest application?
JT/LM: No – this will be added to the revised summaries to be sent out to FLAG

What about takes further down?
All the takes have to be added up and reviewed to ensure effects on Te Waikoropupu Springs are managed.

This zone appears to include the Waitui abstractive amount [90l/s]?
JT: Yes, the Waitui is different because normally the Waitui River does not flow into the Takaka River [it has a drying reach in the lower area]. The hydro/irrigation take diverts [water into this drying area], but it [does not contribute to] the Takaka River flows. However, the Waitui is part of AMA recharge.
JT: There are also very small stock and domestic takes in the side tributaries.

What does a 'C' take mean?
'C' class takes provide for storage takes at times of high flow. 'A' class takes provide for reasonable security of supply. [B class takes have a lower security of supply than A class takes].

> ***MN: B permits worked in Marlborough that provided for environmental flows and takes above. The B option is only potentially viable in upper Takaka River because of the effect of the Cobb Dam, not other rivers because of faster flow recessions.***
> *FLAG could provide a B class regime for the Upper Takaka River – we would also need to consider how it relates to the Te Waikoropupu Springs allocation.*

Where does recharge of the AMA start?
JT: Waitui is where it starts – and below Harwood. It's where the coal measures starts. There are major losses [to groundwater] where the capping layer over the marble is totally breached below Lindsay's Bridge.

Is there a correlation between flow at Hardwoods and recharge of the AMA? / Is the volume of recharge everything left after abstraction is taken out?

JT: Yes, we can calculate this for above Lindsay's Bridge [flows at Harwoods less takes and downstream flows] – below Lindsay's Bridge everything is lost from river.

The deep aquifer is recharged from the hills through valley rainfall and from the rivers. It is very dynamic. The estimation of contributions of different areas and water bodies to flow in Te Waikoropupu Springs is summarised in the report: Water Resources of the Takaka Water Management Area. [Refer also to the flow models reproduced on page 13 of these meeting notes].

Can we use a change in springs flow as a cease take trigger?
Yes, we could do that as there is a pressure response, so the response at the springs is relatively quick – about ten hours.

> *Wouldn't that drive the irrigators crazy to have this extra trigger, as well as the Hardwoods?*
>
> *It is the other takes [not the three Upper Takaka consented takes] that also have an impact on Te Waikoropupu Springs as they don't have controls [cease take triggers] yet. The triggers for these would protect the springs. [Cease take triggers could be applied at consent renewal].*

PM: If we have 248 l/s from Waingaro which contributes 8% to TWS and 45% from Upper Takaka. This is less than the current 500 l/s allocation...
MAB: But the 500 l/s was not based on the current level of knowledge.
JT: The 500 l/s is not based on what was flowing to Te Waikoropupu Springs, but was an allocation limit for the springs recharge area.

We also need to consider what happens if we increase the [AMA] allocation limit and new irrigation is allowed for.

Regarding security of supply – at what point does it really bite? – we had the 5 consecutive cease take days indicated from Tony previously.

AF: The percentage time above cease take might be misleading without considering what kind of rationing blocks could occur.

Staff have been considering the best statistic to use. We've looked at data for at last 16 years and considered using the number of years with cease take periods longer than 5 or 3 days.

For the Upper Takaka [under the 70%-20% scenario] there was one year that had a cease take longer than 5 days and 8 years with cease takes longer than 3 days. For the Upper Takaka they are cut off a lot, but for very short periods at a time because of the Cobb dam influence. We can add the cease take data to the zone summaries.

Action: *LM to add 5 and 3 day cease take data to zone summaries and send to FLAG.*

Can we set an initial flow allocation limit regime to use for water quality consideration?

Group discussion on regime options:

The volume flow regime is important so we can proceed with looking at the quality scenarios.

MS: I think we should go with the suggested option [70%-20%] – it is probably likely to be ok with the irrigators.

NM: We could choose the existing situation [status quo] because it has gone through the consent process. This has been ad hoc, consent by consent. But what we have now is based on those numbers.
[post meeting clarification AF: the consent process didn't set zone limits whereas this plan process must do that.]

The 70%-15% option allows some new irrigation, but is still precautionary.

But we also need to look at quality – if the 70%-15% regime meets the quality requirements then the question will arise - could we also increase to 70 – 20%?...

Where does the 65 l/s future irrigation in the 70%-20% scenario come from?
The mapped area of irrigable land. [This is the land that is not currently irrigated – and is not on the waiting list, but which could be irrigated and has likely physical access to water]

MS: Go with what people want and then see if we can manage it.

MAB: I like Mik's idea.

GA: What happens with the numbers?
We need to add them together and assess the impact on Te Waikoropupu Springs and look at the potential for a cease take trigger.

MN: We have real time data for nitrate and spring flows - which are based on existing use – so why not use this?
We still need to model and refine the outputs. AF will use the model results to interpolate the outputs.

JT: The catchment model is not sensitive at this scale and the delays in the aquifer system mean it is not real time data, as water could be from 10 years ago.

AY: We can assume that the effects from a 70-15 regime will be similar to those existing [effectively a 70%-14% regime].
JT: Their restriction level [the cease take trigger] will go up under either scenario [70-20 or 70-15] – we could look at providing an A and B permit regime with A's for the existing consents and B's for new consents.
MAB: Tony thought that there might be room for more access, but lower security of supply.

Could we look at both regimes? – do we have the data? -how difficult would this be?
This is possible as the modelled numbers will be interpolated.

Group decision: Water quality numbers and impacts on the AMA to be looked at for both Upper Takaka scenarios – the 70%-20% and the 70%-15% regimes.

LM: Do the scenarios selected meet the FLAGs bottom line suggested before [80% habitat retention]?
PM: I think we can justify 70% in the Upper Takaka River.

NM: From a trout fishing point of view where the water goes underground those areas might not be affected, but the fishing near the boundary of the drying reach is really good and if the drying zone receded up past this point then it could affect this fishery.

JT: At the moment they cease take at 1657 l/s – under these regimes this trigger will move up and the river will be better off.

Session 4 – Project Management

Next steps in process / Next meetings

- Next meeting (6 November) allocation for:
  - Motupipi
  - Eastern creeks
- Next meeting (6 November) to be held at Fonterra. Please park in the gravel car park and walk across the road – you will be let in as it is all locked up.

- Water quality for Upper Takaka at the 27 Nov meeting.

Action (amended): LM to add 5 and 3 day cease take data to zone summaries and send FLAG a revised excel copy of spreadsheet so they can see and check the background calculations.

Other comments

MB: Well done and thank you.
GA: Thank you for picking up our confusion and clarifying it.

<End of meeting>

Action Points – Council Staff/Facilitator/Advisor

No.	What	Who
1.	LM to *add 5 and 3 day cease take data to zone summaries and* send FLAG a revised excel copy of spreadsheet so they can see and check the background calculations.	LM
2.	MAB to send draft of summary consultation document to FLAG next week.	MAB

Action Points – FLAG members

No.	What	Who
3.	none	

Action Points – FLAG Sub-groups

No.	What	Who
4.		

Scheduled FLAG and FLAG Subgroup meetings

Date	6 November 2015 (FLAG Meeting 15)
Time	9.30am -3pm
Venue	**Fonterra – NOTE CHANGE OF NORMAL VENUE**
Agenda Items	Allocation [AMA, Upper and Middle Takaka & Motupipi]

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

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'.*