

## TAKAKA FLAG MEETING 16 NOTES: 27 November 2015

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| <b>Purpose:</b>  | Takaka Freshwater and Land Advisory Group (FLAG)– Meeting 16  |
| <b>Date:</b>   | 27 November 2015  |
| <b>Time:</b>   | 9.30am-3.00pm   |
| <b>Venue:</b>  | Takaka Fire Station   |
| <b>Present:</b>  | <p><b>FLAG members:</b><br/>           Graham Ball (GB)<br/>           Mirka Langford (MLa)<br/>           Mike Newman (MN)<br/>           Mik Symmons (MS)<br/>           Piers MacLaren (PM)<br/>           Neil Murray (NM)<br/>           Hika (Matt) Rountree (HR)<br/>           Kirsty Joynt (KJ),<br/>           Greg Anderson (GA),<br/>           Andrew Yuill (AY) (co-opted member)<br/>           Martine Bouillir (MB- council representative on FLAG)<br/>           Margie Little (MLi- iwi representative on FLAG)</p> <p><b>Staff:</b><br/>           Mary-Anne Baker (MAB – Senior Environmental Policy Planner)<br/>           Joseph Thomas (JT -Resource Scientist - Water &amp; Special Projects)<br/>           Steve Markham (SM – Environmental Policy Manager)<br/>           Lisa McGlinchey (LM – Environmental Policy Planner)<br/>           Jonathan McCallum (JM - Environmental Monitoring Officer)</p> <p><b>Other</b><br/>           Rochelle Selby-Neal (RSN -Independent Facilitator)<br/>           Andrew Fenemor (AF – Landcare Research)<br/>           Tim King (Deputy Mayor) – present after lunch</p> |
| <b>Apologies:</b>  | Tony Reilly (TR),<br>Trevor James (TJ- Resource Scientist – Water Quality & Aquatic Ecology)  |
| <b>Notes taken by:</b>   | Lisa McGlinchey (supplemented by other staff)   |
| <b>Definitions and Abbreviations</b>   | FLAG = Freshwater and Land Advisory Group<br>NPS-FM 2014 = National Policy Statement for Freshwater Management 2014<br>NOF= National Objectives Framework – under the NPS-FM<br>TRMP = Tasman Resource Management Plan (the Plan)<br>TWMC = Takaka Water Management Catchments<br>SOE = State of the Environment<br>WCO = Water Conservation Order application for Te Waikoropupu Springs and recharge area<br>AMA = Arthur Marble Aquifer<br>TLA = Takaka Limestone Aquifer<br>TUGA = Takaka Unconfined Gravel Aquifer<br>MALF = Mean Annual Low Flow<br>TWS = Te Waikoropupu Springs<br>l/s = litres per second   |
| <p><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></p>                   |   |
| <p><b>FLAG MEMBERS PLEASE NOTE:</b> If you have any questions or need anything between meetings, then please contact Mary-Anne Baker by email: <a href="mailto:marya@tasman.govt.nz">marya@tasman.govt.nz</a> or by phone ddi 03 543 8486.</p> |   |

## **Purpose of Meeting**

- Scope water quality issues and information needs
- Agree nutrient limits for Te Waikoropupu Springs and upstream zones
- Reconcile nutrient limits with quantity limits to reach a final position on quantity and quality (nutrient) limits for Te Waikoropupu Springs and upstream zones

## **Welcome and Karakia**

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

## **Check-in**

No check-in issues raised by the group.

## **Session 1: Updates**

### **Irrigators meeting**

GB: I think the irrigators got a good grip on where the FLAG was heading. Steve Breneger from Irrigation NZ was clear on spelling out his experiences in Canterbury. The irrigators seemed quite happy with the FLAG methodology of working with minimum flows.

MAB: There were a lot of good questions asked. The irrigators will have a discussion amongst themselves and identify any further issues they would like addressed. There was a suggestion that one of the irrigators attend a FLAG meeting to discuss these.

GB: Yes, they have questions for us and we have questions for them.

JT: We will be providing information to the irrigators so they can look at the implications for themselves.

MS: I think both sessions [the day meeting and the evening meeting] were useful, particularly to get the Irrigation NZ perspective. I found Nick Patterson's comments on allowing farmers to manage their own risks, based on their own financial decisions interesting.

MLa: Yes, I think this was a key outcome of both meetings – that council should provide the information and allow the farmers to manage their own operations.

GB: Yes, ratepayers shouldn't be paying for a lot of compliance monitoring – particularly as [the irrigators] are already meeting market requirements for auditing. Councils involvement should be left for the end of process if it is needed.

JT/RSN: Yes, most growers are already having to comply with industry requirements, such as Global Good Agricultural Practice (Global GAP).

MAB: We had members of both FLAGs present at the meeting and they will need to maintain contact as the planning provisions are progressed to maintain consistency – particularly around any provisions relating to good management practice.

## **Report back to EPC**

MS: There is some concern about why we are doing a FLAG process when we still have to go through the Schedule 1 process.

SM: We also reported to the EPC on the Progressive Implementation Plan (PIP) for the implementation of the NPS-FM. This included reference to progress on the two FLAGs. The Council accepted the PIP which indicates that they are unlikely to be changing the processing being undertaken as identified in the PIP.

SM: Minister Nick Smith has introduced a bill to parliament which includes changes around collaborative processes which look remarkably similar to the Takaka FLAG process being undertaken.

JT: Steve and I highlighted to Council that they will have to provide for the operation / implementation of the Plan – otherwise it is a waste of time.

MS: I also raised the issue of there not being S329 directions used on the Takaka Rivers.

RSN: The FLAG may need to workshop with the Council over the summary outputs before the public open day, rather than just providing the outputs for them to read, so they can better understand the process the FLAG has been through.

**FLAG: General agreement this was a good idea.**

SM: The FLAG need to talk with the wider community, the Council and the local iwi.

MN: We can take lessons from the Kapiti situation where they didn't take the community with them.

**Action:** Staff to arrange a FLAG-Council workshop prior to the public open day to go over the summary outputs to date.

### **Recommendations re S329 restrictions for Waingaro River**

MAB has provided the draft of the recommendations to the FLAG for comment.

MAB: There was a question of inviting someone from Golden Bay to go onto the Dry Weather Task Force (DWTF).

#### **Who is on the DWTF now?**

*Dry Weather Task Force membership is currently:*

- *Dennis Bush-King (TDC E&P Manager)*
- *Joseph Thomas (TDC Resource Scientist - Water)*
- *Tim King (TDC Deputy Mayor)*
- *Richard Kempthorne (TDC Mayor)*
- *Kit Maling*
- *Graham Thawley*

*Plus representatives from:*

- *Iwi*
- *Fish and Game*
- *Rural Fire*
- *Nelson City*
- *Waimea Plains Water Committee*
- *Ministry for Primary Industries*
- *Rural Support (when it is really dry).*

*And when they are affected representatives from:*

- *Upper Motueka*
- *Motueka/Hau Plains*
- *Moutere*
- *Riuwaka*

JT: There is also a recommendation to add a Federated Farmers representative. We don't have a Water User Committee in Takaka – they would normally provide the representative on the DWTF when the area is affected.

**RSN: Who would be a good representative for Takaka?**

MS: I think Corrigan Sowman would be a good representative as he understands things from a farming perspective.

FLAG: General agreement this was a good idea.

**Action:** Staff to talk to Corrigan Sowman about being the Takaka representative on the DWTF.

SM: Once the plan change gets legs, one of the progressive steps in the implementation plan would be setting up a Water Users Group in Takaka.

**Action:** Staff to send the S329 recommendations to Dennis Bush-King as there are no further EPC meetings this year.

*[GA wasn't aware of the email from SM regarding S329 recommendations. Martin and Andrew Y also accidentally left off the email list]*

**Action:** Staff to resend email to those missed and they are to feed back to staff on any issues before it goes to Dennis Bush-King.

### **Water consent applications prior to notification of plan changes**

RSN: I received an email from the resource consent officer at TDC regarding some confusion over the consent process – however I think the confusion has come from others in the community rather than the FLAG members themselves.

### **Gunsboro Hearing on Water Take Consent Application**

AY: I was there representing Friends of Golden Bay – we got a lot of questioning from Nigel McFadden that none of us was there representing FLAG. We mentioned in our introductions that we are members of the FLAG, but we made it clear that we were not there representing FLAG.

MLa: The confusion came about as the Forest and Bird representative introduced them as being FLAG representatives.

JT: The commissioner has closed the hearing and they have 15 days to make a decision. The council is forced to notify the consent as the application was complete – if there are any other consent applications they would also be notified.

**NM: So FLAG couldn't submit on the Gunsboro consent as they had not been original submitters on the consent...**

JT: Yes. But if there was another consent lodged, it would be notified and the FLAG could then submit on it.

### **Community consultation**

RSN: KJ has been working on the community consultation document – which has now become more of a community update. The document can also go to Council.

### **Engagement with local iwi**

**MLi: We've had a lot of expertise on other issues, I think it would be good to have someone other than myself to talk to the FLAG about the Māori perspective on water.**

SM: I guess the need is for the Mohua iwi to understand the FLAG direction.

MLi: I think before the FLAG meet with Mohua iwi they have someone else other than me talk to them, to give the FLAG the perspective of how Māori think. Iwi is evolving, we need to have the other iwi their too.

**SM: So who is the tikanga person you had in mind Margie?**

MLi: Kura has suggested someone (?? Lawson) who lives in Hamilton.

**MAB: Margie, do you think the FLAG don't understand, or is their understanding getting in the way of the decision making? Do you see specific problems that need to be addressed?**

MLi: We've had a lot of people talking on other aspects and to balance things out you need more than just me talking about Māori perspectives.

MAB: We have talked to the [other experts] as there have been specific issues identified to be resolved.

**RSN: What do other FLAG members think of Margie's suggestion?**

MLa: Personally I think it is a good idea, but that is because I don't fully understand how this works in the NZ situation.

MN: We don't want the situation that occurred in the Gunsboro consent - were the person who signed it off, was later said to not have iwi consensus and agreement to sign.

RSN: I think the suggested process will help protect Margie in her FLAG role.

MLi: It would be helpful even to myself to get confirmation from another source on iwi views.

MB: I think it would be valuable and provide balance. Do you think it is something we could do all in one day? ie have a discussion and then followed by a meeting with iwi?

MLa: At the hearing the commissioner grilled Nigel McFadden about how he chose the iwi representative he did for consultation – we need to be mindful of this.

MS: I think Barney Thomas would be good as he has involvement in a lot of areas. I feel it would be good to be speaking first with mana whenua.

MLi: Barney Thomas has to wear a lot of hats, we could ask him and he may do it. We also need to be talking to all the iwi.

SM: If Barney is able to put his DoC role aside and just wear his tikanga hat – that would be a good first session. Then followed by a FLAG specific situation to be talked through with the three other iwi reps and mana whenua.

**Action:** Staff to organise iwi engagement with a preceding session with Barney Thomas if he is available.

**AY: Being involved in the Water Conservation Order process has been a good experience for me and I would like the FLAG members to be able to have this experience if they wish to. I want this process to be a two-way process. The feedback I'm getting from community discussions is vastly different from where FLAG is getting to and we need to consider this in our process.**

RSN: The consultation document is seen as a way to let the community know where the FLAG is at, but also highlights that we want to hear from the community and to talk about their views at the open day.

**MB: When are we thinking of doing [the public consultation] and where will we be in the FLAG process?**

RSN: we were talking in Feb-March 2016 but this may be too soon. We have changed the approach from consulting on decisions made, to more engagement to get feedback and to

get discussion going with the community. This would then be followed later by more specific consultation on the specific outcomes.

MS: You can spend a lot of time getting a perfect process, while people are causing adverse effects while you are doing it – we need to balance getting the process right to getting provisions in place to avoid adverse effects.

AY: These kinds of collaborative groups have strong internal communication which keeps the group together – however if they don't have sufficiently strong external communications they can end up drifting away from the wider community view, but if the external links are too strong it can also pull the group apart. We need to find the balance in between.

### **Recap on 2015**

RSN has gone through the work done in 2015 and gave the FLAG a recap of the work done, methods used, key topics and repeated topics raised, and milestones reached.

MB: I think [the 2015 recap] would be a good snapshot for providing to people on what FLAG have been discussing and doing.

MAB: It would be good to summarise discussion by topic as we only have them by meeting so this is a good summary to have.

*RSN: Yes, I've looked at doing this for specific topics such as nitrates, as we will need this kind of thing for the Section 32 analysis.*

*KJ: This could be a good summary to have on a poster at the open day.*

**Action:** RSN to summarise discussions by topic in 2016 for both consultation and Sec 32 analysis requirements.

*[place holder added to agenda for discussion on the FLAG process plan for 2016]*

### **AY: Where did the clarity monitoring in Te Waikoropupu Springs get to?**

*RSN: TJ sent out an email explaining the issues being experience with getting reliable readings of clarity using the transmissometer being used in the Salmon Farm compliance monitoring. The problem is arising as the spring water is so clear. Trevor is working to find a solution for this.*

*[AY didn't receive Trevor's email on the clarity monitoring]*

**Action:** Staff to update mailing lists for FLAG to ensure Andrew Yuill is included.

Jonathan McCallum introduced himself to the FLAG. He is sitting in for Trevor James while he is away. He has a background in water quality monitoring and data analysis and did his masters thesis on the risk of didymo in NZ rivers. He has a lot of knowledge on working with statistics and can help the FLAG in this regard.

Jonathan went over how clarity is measured using the black disc approach.

*<morning tea>*

### **Future FLAG programme**

MAB: We've had a look at the future process plan and think that the remainder of the FLAG work could be achieved in 7-8 meetings. The FLAG will need to be disciplined at the meetings to keep on track.

RSN: However, this approach would take a lot more work behind the scenes by staff.

MAB: a sub-group to look at good agricultural practice could be helpful in speeding up this aspect of the work – this sub-group could work with the Waimea FLAG on this issue also.

RSN reminded FLAG members they could talk to staff behind the scenes on any specific issues or concerns they had, rather than using time at the meetings.

### **Quality issues and information**

RSN handed out a summary of feedback received from FLAG members and discussed the topics raised.

#### **Key issues raised:**

- Nitrates in all catchments of the Takaka River system
- Levels of Nitrogen (and possibly Phosphorus) showing up in the Waikoropupu Springs
- E.coli in all catchments of Takaka River system
- Faecal coliform bacteria in all rivers
- Periphyton in all rivers

**PM: Nitrates aren't an issue in itself, but in combination with phosphorus leads to periphyton issues. It is the resulting effects of nitrate that are the issue.**

AY: I have also provided the NIWA view on nitrate issues and a precautionary approach to the FLAG.

**RSN: MAB can you provide comment on the additional attributes raised (organic carbon, dissolved oxygen, nitrate, ammonia)**

MAB: Further work on the attributes will be determined by the available resources and the risk posed by the attribute. For example, with Dissolved Oxygen, if we are protecting the levels in the rivers through our regimes then this will be protecting these levels elsewhere in the system. Ammonia levels are very low [so the relative risk is also low].

**GA: Do we have historic nitrate data for other areas such as underneath town and in Fish Creek Springs?**

JT: All the data we have is in my report (Water Resources of the Takaka Water Management Area, Thomas and Harvey, 2013).

## **Session 2 – Te Waikoropupu Springs Overview**

### **Values, management objectives, attribute states and limits overview (Mary-Anne Baker)**

#### **Key Points:**

- Some further work is required around the significance of different values – we need to be clear about defining the values in the springs as 'significant' and use the terminology in the NPS-FM around outstanding waterbodies.
- The FLAG need to be clear about what the cultural and spiritual values are and how these differ between Te Waikoropupu Springs and other water bodies in Takaka.
- Our personal approaches to risk differ based on our experiences, beliefs and other factors. We need to account for these in our considerations.

**MLi: Te Waikoropupu Springs is listed at Wahi Tapu – it is the only one listed in Tasman.**

MAB: There is no question about the significance of the springs – but we need to be clear about their significance in the Plan [significant values of outstanding water bodies are specifically addressed in the NPS-FM].

PM: Can we separate out quality and quantity here? There is more water in the springs now than under natural conditions, but the quality is excellent.

## **Session 3 – Modelling land use and water allocation implications for water quality at Te Waikoropupu Springs**

### **Presentation: Recap on modelling approach (Andrew Fenemor)**

Andrew Fenemor gave the FLAG a recap of the modelling approach used and thanked Mirka for her assistance in providing data analysis on the dairy farm information for use in the modelling.

#### **Key points:**

- Eigen modelling for river flow and groundwater levels by 'stress zone' – these are 'buckets' where you are putting in the inputs to the system (eg nitrates and rainfalls)
- Model calibration done (the model has been modified to fit existing data – but has not yet been validated – ie run to see if the model then matches further existing data). The calibrations have shown the model is ok, but not perfect.
- Model assumptions and uncertainties include:
  - Water in = water out (water balance)
  - Nitrate in = nitrate out (there is no attenuation) we don't think the karst systems have any significant denitrification processes occurring.
  - The marble aquifer plumbing is as expressed in Stewart and Thomas (2008)
  - Dairy farm N-leaching rates are from OVERSEER – version 6.1.2 which has an approximate uncertainty of 30%  
MLa: There seems to be a 20% jump in nitrate in the latest version of OVERSEER which is just from the difference in the model versions.
  - Nitrate rates for other land uses are taken from literature
- Various scenarios run through the model
- WaterWheel outputs produced for the scenarios

#### **AY: Why is nitrate concentration thought to be an indication of water age?**

AF: *It is assumed that with intensified land use if there is higher concentration then it is younger water.*

#### **MLa: Could it just be dilution rates from aquifer mixing?**

AF. Yes. In the model we have made the assumption of uniform mixing, but there could be plumes of nitrates moving through the aquifer.

AY: The Stewart and Thomas report concludes that there are two aquifer sources – rather than uniform mixing.

#### **GB: There is also an issue of the spring measurement - particularly at Fish Creek Springs - being a mix of surface and spring flows...**

JT: *We normally sample in low flow. We don't actually have flow measurements of Fish Creek Spring flows – we have flows in Fish Creek itself. We do measure nitrates in the Fish Creek Springs itself and in the Fish Creek. Graham is correct at times of higher flow water from the Creek gets into the Springs.*

AY: *At the moment the Fish Creek overland flow is negligible and flow is dominated by what is coming out of the ground.*

#### **AY: Do the numbers from OVERSEER add up to match that estimated in the nitrate loading calculations?**

AF: *We have yet to do this, but can look at this.*



## Presentation: Predicted changes in nitrates at Te Waikoropupu Springs (Andrew Fenemor)

### Key Points:

- Have used the plausible irrigation map including:
  - Existing irrigation
  - Proposed irrigation (that on the waiting list)
  - Likely irrigation – areas that are not irrigated, but could be and where water is readily accessible.
  - Unlikely irrigation – areas that are not irrigated, but could be, but it would be very expensive to access water
- Assumptions included:
  - All irrigation was for dairying land use
  - Irrigation areas excluded small lifestyle blocks
- Three soil types used based on soil water holding capacity (MLa: there are four categories, but one was so small in area that it has been left out)
- MLa has overlaid the plausible irrigation map with the soil map and her data on farm nitrate levels to produce the likely leaching across the area. [refer slide 16]
- The results show there is a big increase in leaching from irrigated farms – this is likely due to more cows
  - MLa: There is a higher stocking rate of about half a cow for irrigated farms – there is also more supplements used – it is just more intensive. “Irrigated cows” produce more [milk and waste] than a non-irrigated cow.
  - For some of the results there was a limited data set for some soil types – there is a big question around the 109 result [refer table on slide 16]
- The outputs from Mirka’s work were put into the model. [refer slide 17 for results]
  - The allocation amount looked at in TWS of 10% of MALF (7661 l/s) is 278 tonnes/yr Nitrogen - just above the current and proposed, but below the current + proposed+ plausible irrigation.
  - The flow through of nitrates is calculated to be 509 tonnes/year with:
    - 152 coming out through the AMA,
    - 190 from the Takaka Lower Aquifer
    - 167 from the Takaka Upper Gravel Aquifer
- The model shows if [refer graph on slide 22]
  - all the dairy was converted to dry-land dairy – levels in springs reached 0.35mg/l
  - if you add the waiting list – levels in springs reached 0.49mg/L
  - all plausible irrigation – levels in springs reached 0.56mg/L
- The errors in the modelling are constant across the results so the relative differences between the scenarios won’t change

### **GA: What land uses are the likely irrigation areas?**

*MLa: Mostly they are dry land stock (ie sheep and beef farms).*

### **Which soil type is most leaching?**

*AF: The gravelly soils*

**PM: I understand denitrification processes require organic carbon - could we work out how much denitrification is occurring by determining the amount of organic carbon going into the system?**

### **MAB: What are the roles of the caves?**

*JT: They are conduits for organic carbon to get into the system.*

**MAB: So determining organic carbon inputs is fraught with what may be happening in the cave systems?**

AY: We know there are undetectable levels of organic carbon where the water comes out at the springs.

**But determining the inputs is difficult.**

AY: There will be an amount of nitrogen bound up in the bodies of stygofauna, but this will be in an equilibrium and will not change.

**MAB: Is it worth getting information from an expert on this? Where they have been doing work on this elsewhere?**

AY: That is why I got the information from NIWA.

**MAB: But this is a risk consideration - elsewhere they are dealing with significant pollution which is not what we are dealing with here – is it a significant enough risk to spend a lot of time on this for Takaka?**

AY: I think it is a significant enough risk to consider.

**RSN: Should this issue be addressed through another avenue, rather than at the FLAG meeting?**

MAB: I suggest we have an offline meeting to discuss this issue for everyone to get their heads around the issue and come back to the FLAG with a summary.

AY: I'd be happy to discuss this with others.

**Action:** Staff to organise a smaller meeting with interested people to discuss the issue of organic carbon and feed a summary of findings back to FLAG.

**RSN: There are levels of error in the models and information we are working with – there is a question of whether FLAG members are happy to work with these as the best information we have. Do you trust the information sufficiently to proceed with the process? We need to make sure everyone is happy with this...**

PM: I don't think we have to trust the specific numbers, but we can trust the relativity between the scenarios.

HR: It can be hard to follow and trust the numbers when there are comments that some of the numbers are less reliable than others.

MLa: The numbers will never be 100% reliable, but it is the best information we have to work with.

PM: Some of the more questionable numbers are not that important to the outputs – even if they are out, they don't impact on the final outcomes that much.

MAB: There are other ways of dealing with uncertainty – such as further monitoring and changing where we monitor.

GB: The risk of using OVERSEER as a regulatory tool and the uncertainties is something we will need to consider, monitoring will assist in reducing uncertainty.

AY: My concern over the nitrates is the relative nitrates levels compared to the ANZECC guideline are already at the highest levels we would want them to go to and we are proposing more irrigation.

PM: The problem seems to be too many cows. There are other ways to restrict the number of cows than controlling the level of irrigation. How can you legally or morally tell people how many cows they can have on their farm?

AY: We know how much nitrate is coming out of the area and what is causing it –perhaps we can say to farmers the numbers coming out are as high as we want them to go – how can we reduce the levels? And once reduced, then we can look at more irrigation.

MLa: We are getting into solutions and getting ahead of ourselves. Personally I think if we are going to restrict development or cow numbers or ask farmers to reduce their nitrate levels drastically, I need to have good justification that there is a problem and at the moment we don't have this. In addition, the industry is already addressing these issues – that is why I have the numbers I have.

AY: We shouldn't keep the solutions completely separate from the analysis.

MLa: We just need to be clear on cause and effect first before we jump to solutions discussions.

**RSN: In terms of the process, the group was looking at allocation and then looking at water quality and then would look at solutions in further steps. Does the group want to jump ahead and look more at the cause and effect and solutions?**

MS: I'd like to look more at effects if possible.

AF: this is the next slide in my presentation.

MAB: We need to be careful in what we are discussing – in Canterbury more water means conversion to dairy. Where as in Takaka the land use is already dairy.

JT: We are dealing with uncertainty. We can debate the science till the cows come home – even the scientists within NIWA disagree on the science...

**AF: The nitrate levels are being looked at in terms of the periphyton risk in the springs...[not nitrate toxicity as in the NOF]**

AY: There is also the impact on the stygofauna which is unseen.

**MAB: There are ecosystems we can't see, perhaps this is a question for the scientists - if we are managing the surface waters, are we then also managing the systems we can't see?...**

AY: We are dealing with a karst system.

**RSN: So Andrew, do you think that if we are looking after the surface water systems we will be looking after the groundwater systems?**

AY: I think we will be as long as we are also looking at the quality of the water going into the aquifer through the land. We will see these effects in the springs.

**SM: There is an assumption in your logic that the land management is unchanged – when there could be combinations of land management that result in no change to nitrate levels.**

AY: We do need to look at on-farm management options.

**RSN: We have two discussions here – how we go about the process – looking at how quality impacts and/or solutions should affect the allocation limits, and whether everyone agrees with the argument that more irrigation = more cows = more nitrate...**

PM: We need to discuss the other options for alternative farming systems.

MLa: I think we should be looking at the modelled water quality levels – then we ask ourselves is this appropriate for the allocation regime we have selected, and if it is, then

the next step we would look at if we are sticking with the allocation regime is then looking at mitigation options to reduce the nitrate levels modelled.

AY: I'm concerned that by agreeing to an interim outcome that this gets cemented in people's minds as the final outcome.

GA: There is another way to look at this, of asking new industry in Golden Bay to prove they will not be causing the nitrate levels to increase.

NM: I'd be uncomfortable choosing a line in the sand that is above the current level and relying on future land use management to mitigate this. Looking at the numbers - if you irrigate land you increase cow numbers by 15% and nitrate numbers appear to be increasing by 15% also which seems to be a fairly linear relationship.

MLi: I'm with Neil.

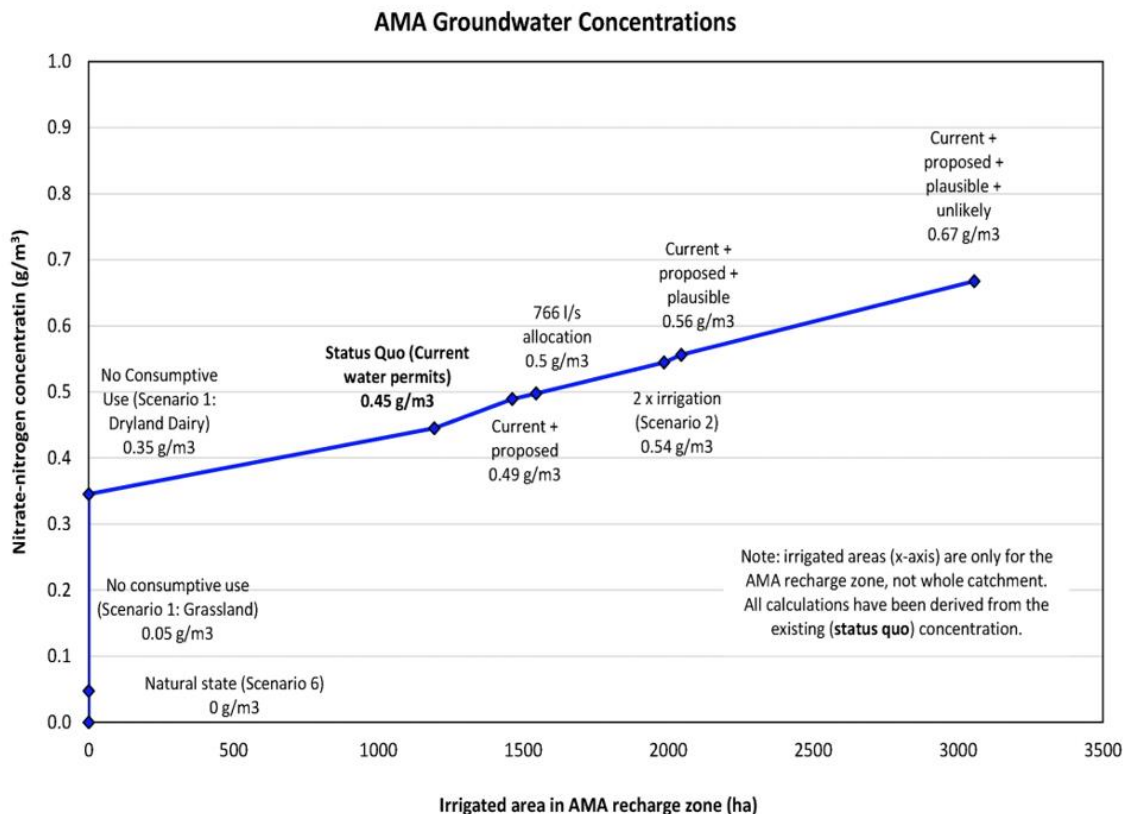
<lunch – Margie had to leave meeting>

**RSN asked the FLAG to state their position based on the graph on slide 22 – reproduced below:**

1. Pick which of the following scenarios you are happy with:
  - Status quo
  - Current plus waiting list (current + proposed)
  - Tentative TWS allocation regime (766l/s)
2. For your scenario what are the risks – and to what values?
3. Is there a control on the cause of these risks to mitigate the risk that might change your decision?
 

*Eg. The modelling that Mirka has is at current land practice – a mitigation might be that land use is all at best practice (whatever this might look like)*

Slide 22– Graph of relative nitrate-nitrogen concentrations in TWS under different scenarios



**GA: For the waiting list/proposed area – is it a matter of them just shifting existing irrigation gear around or will it require new infrastructure?**

*MLa: No they will have to invest in infrastructure and get resource consent – it would take a good two years to occur.*

**FLAG responses:**

RSN: Margie had to leave, but earlier she states she wished to stay with the status quo.

*[Margie and Tony R responses to be added post meeting if they are happy to]*

**[Tony (added post meeting):**

- 1. Preference: Consider the 766 l/s TWS allocation to be appropriate. This allocation will take time to be taken up, may not be into dairy or even livestock. The FLAG must take into consideration not only environmental, and also social and economic values.*
- 2. Risk: It is important to keep the nitrate change in perspective. The change would be 0.05 mg/l if FLAG agreed on a 766 l/s allocation. The National Policy Statement for Fresh Water for nitrate, has an annual mean level of 1.0 mg/l as giving a HIGH conservation value to the system and unlikely to show effects, even to sensitive species.*
- 3. Mitigation: Environmental Management Plans for all farms above minimum size. All cattle, both dairy and beef excluded from major water bodies.]*

**Neil:**

1. Preference: stay with status quo (for level of nitrate at TWS)
2. Risk: is to ecological and spiritual values at the springs
3. Mitigation: I'd like to see clear proof that nitrogen can be reduced through mitigation, before we rely on mitigation.

**Greg:**

1. Preference: I feel similarly to Neil. Stay with current nitrate levels. The NPS-FM says improve or maintain.
2. Risk: to ecology and cultural values (no man-made pollution in taonga)
3. Mitigation: I'm happy to give out more water if we can show the nitrate trend can continue to flat line.

**Mik:**

1. Preference: [TWS has] bounced around the nitrate levels being discussed. But a limit needs to be something we don't go above – I think the limit should be 0.5mg/L. We are talking about very low numbers.
2. Risk: I'm not sure about ecology values - there seems to be some head room. Cultural /spiritual values coincide with our science - as it is only because we can measure these very low values that we can say they are impinging on the cultural values.
3. Mitigation: I'd like to see supply agreements and run-off blocks, best practice and meeting IrrigationNZ requirements and less supplementary feed.

**Kirsty:**

1. Preference: Acknowledging the significance of the springs, from Irrigation NZ meeting progress is being made on farms. I'd go with the 0.5 along with use of best management practice.
2. Risk: [not captured]
3. Mitigation: There could be phasing-in as the change in nitrate levels wouldn't happen overnight and monitoring could pick this up.

**Mirka:**

1. Preference: I'd go with the TWS allocation (766l/s) – I don't necessarily believe this will equal nitrate levels of 0.5mg/l in TWS. If it does, I don't think we will be able to detect a

difference to the ecological values. Any new water use won't automatically go into dairying and changes in dairying also won't happen overnight – it will take a good 5-10 years. If we don't allocate any water we also take away opportunity from the Takaka community to use the water for something other than dairying. If the trend of nitrate in TWS is flat lined, yet irrigation has increased – then we don't really understand the relationship anyway.

2. Risk: to tourism value

3. Mitigation: 2018 is when run-off blocks come into the dairying accord – they will be treated the same as dairy platforms.

#### **Piers:**

1. Preference: Hold status quo at 0.45mg/L. The level of spring flow is not important as it is above natural levels.

2. Risk: is to clarity which allows tourist and cultural values.

3. Mitigation: farmers policing themselves to keep nitrates at 0.45mg/L and require monitoring: 5-year median, monitoring daily for larger data sets with understanding that consents won't be renewed if nitrates go above 0.45 mg/L in TWS. Allow farmers to find their own ways to reduce nitrate levels.

#### **Hika:**

1. Preference: Stay with status quo from a cautionary view. Guided by NPS-FM = no degradation.

2. Risk: values are not at risk as long as we stay with the NPS-FM guidelines

3. Mitigation: No problem with further water use, as long as it doesn't impact on downstream environments. Technology moves very fast...

#### **Martine:**

1. Preference: Status quo – I'm precautionary also.

2. Risk: Ecology/spiritually most important values.

3. Mitigation: There are other aspects that come with greater irrigation that I'm concerned with (eg antibiotics in water). I'd like to see more biologically healthy land use models. People need to prove themselves before we allow things to happen, especially as they are investing money in this. From the Irrigation NZ meeting I was interested that farmers are going back to more biodiverse systems – I'm concerned about monocultures. We need to see better practice before we allocate more water.

#### **Mike:**

1. Preference: 0.45mg/L as a precautionary approach - although this is a blunt instrument.

2. Risk: to all four values – perhaps not as much effect on economic values.

3. Mitigation: I'm open to more allocation within the level of 0.45. We should provide management processes and use a more wholistic approach. I think we can achieve both.

#### **Graham:**

1. Preference: I'm going to echo Mirka (10% allocation regime). Given considerations of economic growth. The trend of Nitrate seems to be going down and I'm keen to see this monitored.

2. Risk: to economic value – if we stick to status quo would dry up a lot of water right

3. Mitigation: best on farm practice and self-regulation are good tools

#### **Andrew:**

1. Preference: Status quo of allocation of water – the 0.45 is already above both limits we've been given on best scientific advice. For risk to fauna in aquifer – advice is to keep it below 0.45. For risk to spring from pond slime – advice to keep below 0.44. NPS-FM says to maintain water quality

2. Risk: Risk to mauri of the springs

3. Mitigation: How to do it – I'd like to suggest farmers who are irrigating on AMA recharge get together to improve their management of nitrate leaching at their discretion – farmers

know better than anyone what to do to change practices and if nitrate levels reduce to 0.3 in the springs we can allocate more water in the springs catchment.

Two considerations – how much impact the ecology can handle and how the water rights are equitably distributed between existing and future water users – I don't like the argument that "this is unfair to so and so – so the ecology needs to take the hit". There are only ever 10-12 ppm of oxygen in water – without which life can't survive - and ppm are not insignificant – a small change can give rise to significant effects even if we can't see the change. The numbers are our best estimate. Monitor nitrates at Kotinga and TWS. Once people have spent a lot of money on their farms it is hard to reverse this if nitrate levels increase. I still have concerns over the regimes we have been encouraged to accept by Roger Young.

#### Summary of FLAG member positions:

| Status quo for nitrate levels in TWS<br>(0.45mg/l)   |  |  | TWS 10% allocation regime (766l/s)<br>(0.5mg/L) |
|--|--|--|---|
| No further allocation unless mitigation is first undertaken that reduces nitrate levels to 0.3mg/L | No further allocation unless mitigation is proven to keep nitrate levels at/below 0.45mg/L | Further allocation allowed, provided no increase in nitrate levels |   |
| Andrew   | Neil<br>Piers<br>Martine   | Greg<br>Hika<br>Mike   | Mik<br>Kirsty<br>Mirka<br>Graham<br>[Tony]      |

<Tim King arrived>

#### **SM: Just to confirm – is the assumption that for those picking the status quo as their preference, that the existing allocation regime would change?**

*RSN: There are two aspects – some want the nitrate level to stay the same, but this could be with or without more allocation if mitigations could keep the nitrate levels the same. Others want the allocation to remain the same until the mitigations can be proven to reduce nitrate levels.*

*MAB – There is also a suggestion of claw back [of nitrogen load] to a lower number (not just status quo) before further allocation could be given.*

Tim King introduced himself to the FLAG and discussed some key aspects:

- I'm here to observe the process.
- If there are issues the FLAG just cannot agree on, the council would prefer to know this – rather than everyone reaching a 'claytons agreement' of consensus and then have everyone leap back to the position they really want to be at during the Schedule 1 process.
- Time frames are important for everyone.
- Bring the information / output to the council in chunks rather than just as the final recommendations
- Look at the situation just for Golden Bay - the solution does not have to be the same as that used in other locations

#### **MAB: I'm keen to hear Jonathan's thoughts on the status quo...**

*JM: If I went out and got a sample from the springs and sent it to the lab – it does not tell me the current state of nitrate concentrate as it is a single measurement – at a minimum you would want 4 samples taken in different seasons. Nitrate varies across the year in different situations – there is also an error in the lab results. You can't take a single sample as an absolute value.*

**PM:** If there was sufficient resources we could sample every day and the uncertainty would disappear. The issue is lack of funding and lack of focus on this issue.

*JM:* More measurements are better.

**MB:** Isn't the 0.45mg/L statistic based on a longer record?

*JT/AF:* The number is based on the 2013-14 results.

*JM:* The period of time you look at is very important for looking at trends – if you look at the last 6 years there is a decline, if you look over the last 10 years there is an increase, if you look over the entire period it also shows an increase. I am more confident about the trend over the entire data period, than the trend over the last 6 years. However, while we can be more confident about the trend over the longer term – we can't say if this trend applies to the more recent data.

*JM:* Ideally we'd like over 60 data points for trend analysis – we have 27 points so far, so we need to be cautious in looking at trends unless they were completely obvious trends. Trust the trends over the longer period of data.

*MLa:* So does this mean we need to have more monitoring? - we can't ask farmers to take an economic hit if we can't trust the limited data we have...

**RSN:** So I'm hearing that there is a desire for more monitoring at the springs?

**Group response:** Yes - no disagreement from members present.

**MAB:** Would we say the 10-year average is what we are aiming for to take into account the variation?

*JM:* At quarterly sampling (4 times a year) ten years should be long enough to establish a trend. But if you sample more often then you could shorten the time for the trend analysis.

...

**AY:** I'm not suggesting a claw back of allocation, I'm seeking the status quo for irrigation levels and see if changes to best practice can reduce the 0.45mg/L level...

*MLa:* This would take at least 10 years [to see change].

*MAB:* I meant a claw back of nitrate load. [Note: the term allocation is used in the NPS-FM for both quantity and quality aspects]

**RSN:** So some want the nitrate level to stay at 0.45mg/L and some are happy for the level to go up to 0.5mg/L

- Status quo (current irrigation and land management practices) = 0.45mg/L
- Allocation up to 766l/s, with existing practice = 0.5mg/L
- Allocation up to 766l/s, with best practice if nitrate levels could be maintained at/below 0.45mg/L.

*MS:* I'd be disappointed if we reached 0.5mg/L, but we need a limit to work to.

**MAB:** There is an idea that we are reaching a threshold – if this is the case then we need to discuss the science more – but what I'm also hearing is that there are other issues (cultural/spiritual) [driving decisions], other than the science – this is a different discussion than the debate over the science.

*HR:* The NPS-FM says maintain or improve

*MAB:* The NPS-FM provides for attribute states within bands.

**GB:** If nitrates hit 0.5mg/L would this result in allocations cuts?



*SM: No – this is an objective, not a limit. You would still need to discuss what the implications and responses would be – options could include land use controls or allocation changes.*

**RSN: I suggest that the two approaches could be drafted up so the FLAG can see how these would look like:**

- 1. Keep allocation now and see if levels can be reduced through best practice*
- 2. Increase allocation now and see if best practice keeps levels the same*

**JT: I'm unclear on what the [nitrate] threshold is for – is it for ecology, or is it for something else?**

*[Post meeting clarification: the nitrate level was identified at the FLAG attribute sub-group Meeting 12a on 29 July 2015 as an indicator of risk for effects on periphyton growth in the main spring and stygofauna health in the aquifer. There is some remaining debate around the science that underpins this approach.]*

*AY: I hate the idea if you can't put a number on something it doesn't count. We have to say something specific to those who are investing money. If we allow allocation up to 766l/s and then find we have to claw back if nitrate levels go up – people have already invested and it is hard to say they can no longer use the water in that situation.*

*MLa: We can't compare OVERSEER numbers between catchments due to the differing rainfall. It is possible for farmers to do better – but we can't compare this to numbers elsewhere.*

*MLa: The most important value is the cultural value – but I don't think we can sense or feel the change proposed in the springs, but we can see and sense the change in the number of irrigation pivots in the catchment.*

**MAB: There is no point debating the science, if the driver is cultural and spiritual.**

*AY: I disagree with this.*

**MB: I mentioned the spiritual, but ecology is the most important value, as if the ecology is protected then the mauri is protected.**

*MAB: Then we need to go back to the scientists and debate the ecological thresholds for nitrates.*

**RSN: The science says “at this level the ecology is protected” - how can you address cultural/spiritual values in a Section 32 analysis?**

- Decisions made on a precautionary approach
- Decision made on science around ecology and how this relates to cultural and spiritual values
- Decisions made on cultural/spiritual values

**PM: We don't have any information on the [aquifer] ecology.**

*AF: There is some information – but we do need to make some assumptions.*

**HR: At the beginning of the approach the FLAG agreed to take a precautionary approach, and now some of us are being precautionary and others are not.**

*RSN: This can come down to different people's approach to what is precautionary.*

**MB: In terms of justifying cultural and spiritual decisions– where does the outstanding value aspect [in the NPS-FM] come in?**

*MAB: It depends on why we say it is outstanding – if it was for ecological values this would be a science based argument. Clarity is an outstanding value – based on measurements.*

*AY quoted NIWA on the subject of outstanding ecological values of Te Waikoropupu Springs.*

*SM: There is a three-way relationship between values, allocation limit and land management practices.*

**GA: Even if we go from a cultural aspect – can't we just pick a number to work with?**

*MS: You could have a rainfall at perfect times [to cause nitrate leaching], so there is not a direct link between nitrate and land use practice.*

**TK: If you are just setting the objective – then you don't have to link the science to the number – especially if you are seeking to achieve this over a long timeframe. However, if you are setting this as a limit which will affect farmer activities then you do have to link the science, as this will be contested.**

*SM: Under the NPS-FM you must link the numbers with the values being protected.*

*AF: In south Canterbury they are setting leaching blocks and setting a limit for high leachers that must come down and providing flexibility for low leachers to intensify.*

## **Session 4 – Project Management**

### **Next steps in process / Next meetings**

**RSN – Will this be the last meeting of the year – do you want to come back on the 18<sup>th</sup> Dec?**

*SM: If the FLAG can make it we should push on.*

**FLAG members agreed to meet again on 18<sup>th</sup> December.**

### **Other comments**

**GA: I'd like to get going on the TWS sampling – we could get some training.**

*JM: If we did increase the frequency of sampling now we would have a good view of status for 2016, but for comparison with 2015 we would be limited by the existing quarterly sampling.*

**Action:** Staff to discuss further sampling and look at training of FLAG members to take the samples.

*[Post meeting clarification TJ: Quarterly sampling for groundwater is reasonably standard across NZ, including the national groundwater monitoring network. The sampling frequency is less than surface water due to considerably lower variability. Having said that, if more, subtle trends need to be elucidated, monthly sampling would be useful.]*

<End of meeting>

## Action Points – Council Staff/Facilitator/Advisor

| No. | What   | Who |
|-----|--|-----|
| 1.  | Staff to arrange a FLAG-Council workshop prior to the public open day to go over the summary outputs to date.                                  | SM  |
| 2.  | Staff to talk to Corrigan Sowman about being the Takaka representative on the DWTF.  | JT  |
| 3.  | Staff to send the S329 recommendations to Dennis Bush-King as there are no further EPC meetings this year.                                     | SM  |
| 4.  | Staff to resend email to those missed and they are to feed back to staff on any issues before it goes to Dennis Bush-King.                     | SM  |
| 5.  | Staff to organise iwi engagement with a preceding session with Barney Thomas if he is available.   | SM  |
| 6.  | RSN to summarise discussions by topic in 2016 for both consultation and Sec 32 analysis requirements.  | RSN |
| 7.  | Staff to update mailing lists for FLAG to ensure Andrew Yuill is included.   | ALL |
| 8.  | Staff to organise a smaller meeting with interested people to discuss the issue of organic carbon and feed a summary of findings back to FLAG. | JT  |
| 9.  | Staff to discuss further sampling and look at training of FLAG members to take the samples.  | ALL |

## Action Points – FLAG members

| No. | What | Who |
|-----|------|-----|
| 10. | none |     |

## Action Points – FLAG Sub-groups

| No. | What | Who |
|-----|------|-----|
| 11. | none |     |

## Scheduled FLAG and FLAG Subgroup meetings

|              |   |
|--------------|---|
| <b>Date</b>  | <del>18 December 2015 (FLAG Meeting 17)</del> <i>[this meeting was cancelled]</i> |
| <b>Time</b>  | <del>9.30am -3pm</del>  |
| <b>Venue</b> | <del>Takaka Fire Station (TBC)</del>  |

### Agenda Items

|                     |                                   |
|---------------------|-----------------------------------|
| <b>Date</b>         | 29 January 2016 (FLAG Meeting 18) |
| <b>Time</b>         | 9.30am -3pm                       |
| <b>Venue</b>        | Takaka Fire Station (TBC)         |
| <b>Agenda Items</b> |                                   |
| <b>Date</b>         | 26 February (FLAG Meeting 19)     |
| <b>Time</b>         | 9.30am -3pm                       |
| <b>Venue</b>        | Takaka Fire Station (TBC)         |
| <b>Agenda Items</b> |                                   |

Future meetings also scheduled for:

- 18 March 2016
- 15 April 2016
- 29 April 2016

### 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'.*