



Collaborative Stakeholder Group (“CSG”) Workshop 13 Notes

(Day one) 2 July 2015, Don Rowlands Centre, Lake Karapiro,
9.30am – 6.45pm

Attendees:

CSG: George Moss (Dairy), Gwyneth Verkerk (Community), James Bailey (Sheep and Beef), Phil Journeaux (Rural Professionals), Ruth Bartlett (Industry), Stephen Colson (Energy), James Houghton (Rural Advocacy), Sally Davis (Local Government), Jason Sebastian (Community), Sally Millar (Delegate for Rural Advocacy), Garry Maskill (Water supply takes), Michelle Archer (Env/NGO’s), Weo Maag (Māori Interests), Alan Fleming - part (Env/NGO), Charlotte Rutherford (Delegate – Dairy), Garth Wilcox (Horticulture - Delegate), Alamoti Te Pou – part (Māori Interests), Evelyn Forrest (Community), Patricia Fordyce (Forestry) , Gayle Leaf (Community), Graeme Gleeson – part (Sheep and Beef – Delegate), Gina Rangi (Maori Interests), Brian Hanna – part (Community), Chris Keenan – part (Horticulture), Liz Stolwyk – part (Community), Dave Campbell – part (Delegate for ENV/NGO), Don Scarlet (Delegate – Tourism/Recreation)

Other: Bill Wasley – part (Independent Chair), Helen Ritchie (Facilitator), Janine Hayward (WRC), Jackie Fitchman (WRC), Will Collin (WRC), Janet Amey (WRC), Bruce McAuliffe, Billy Brough (River Iwi Co-ordinator), David Payne – part (MRP)

TLG: Mike Scarsbrook, Liz Wedderburn, Graeme Doole, Tony Petch - part

Other staff (part): Alan Campbell (WRC), Vicki Carruthers (WRC), Emma Reed (WRC), Ruth Lourey (WRC), Ben Ormsby (WRC), Justine Young (WRC), Jo Bromley (WRC), Jon Palmer (WRC)

Apologies:

CSG: Rick Pridmore (Dairy), Matt Makgill (Community), Alastair Calder (Tourism and Recreation), Dr Bryce Cooper (Chair), Dr John Quinn

Item	Time	Description	Action
1.	9.30am	<u>Opening waiata</u> The group opened with the waiata himene.	
2.	9.35am	<u>Intro to CSG13 process</u> The new Iwi Technical Advisor, Billy Brough was	

		<p>introduced to the CSG. His role is to liaise with River Iwi.</p> <p>Jo introduced some of the Waikato Regional Council staff who were present for the first time at a CSG meeting.</p> <p>Helen provided an overview of the agenda for the two days.</p>	
3.	9.40am	<p><u>What to expect from models (DM# 3445650) Graeme Doole</u></p> <p>Overview of what the modelling for the project will and won't cover.</p> <p>Key points included:</p> <ul style="list-style-type: none"> • Importance of the modelling in order to determine potential costs • Solutions to water quality problems lie on the land, with the people. The model tries to integrate the water with the land to understand the impacts. • Management of the land results in profit and pollutant loss. Pollutant loss affects water quality which in turn affects our values. • Profit will be modelled at a farm level and at a wider economic level. • The model will set levels as per the attribute bands CSG chose through the scenarios and work out the potential impacts of scenarios. <p>The goal of the model is to identify the relationship between economic outcomes and reducing contaminants</p> <p>Graeme then talked about the model structure.</p> <p>Inputs to the model will include:</p> <ul style="list-style-type: none"> • Income and pollutant load relationships • Attenuation information <p>Outputs to the model will include:</p> <ul style="list-style-type: none"> • Management • Profit • Production • Employment <p>We can't model every farm so representative farm types (developed in collaboration with sectors) will be used for the model. A range of mitigation options for each representative farm type are included in the model.</p> <p>There is a load to come in terms of nitrogen coming in through groundwater. This has been factored in to the model, as well as estimates of attenuation.</p> <p>Discussion on how models should be viewed. Key points:</p> <ul style="list-style-type: none"> • Modelling is part of the conversation; not the 	

		<p>whole conversation</p> <ul style="list-style-type: none"> • We shouldn't over emphasise the role of modelling • Economics is important but the social and cultural values are important too • Models all have assumptions which limit their effectiveness • An understanding of the assumptions is integral to understanding the limits of the model • Modelling shows one way of achieving your goals but complexity on farm makes things complicated. <p>Water quality limits impact businesses across both space and time. Modelling tries to highlight these impacts.</p> <p>Models can provide:</p> <ul style="list-style-type: none"> • A set of insights, subject to a number of assumptions • Capacity to test alternative scenarios • Exploration of trade-offs between factors <p>Models cannot provide:</p> <ul style="list-style-type: none"> • Precision • Perfection • Consensus – will not give answers but will inform the discussions <p>From the economic study you will get:</p> <ul style="list-style-type: none"> • Understanding the assumptions • Contribution to the Integrated Assessment Framework • A report on the scenarios including tables and spatial effects • Intensive discussions with lots of questions for understanding. • Sensitivity analysis. This can highlight how scenarios would change if some of the assumptions change. <p><u>Questions:</u> Q – How do non-market values get incorporated into the JEV modelling? A – (Note JEV was an earlier model finished last year)</p> <ul style="list-style-type: none"> • NMV assesses \$ value of water quality improvements • Was done as part of JEV • Shows how people value different parts of the of river by how much they would pay to go there • Difficult to bring into the HRWO model – CSG comes up with the possible improvement to river values. 'These are our aspirations'. Then the model looks at the cost to achieve it. 	
--	--	--	--

		<p>Q –Does the modelling include point source discharges, within sub catchments? A – Yes – as inputs/current loads and as potential for mitigating/ reducing Usually find cost effective gains for point sources have already been done. May be significant locally.</p> <p>Q – When will we get to see an example of the modelling? A – Have to discuss that through TLG. Want to provide full and accurate picture.CSG14 (August 10/11) will have intermediate results and CSG15 August (26/27) will have the full set of results of the 1st round of modelling.</p> <p>Q – Attenuation varies depending on which part of the catchment you are talking about. Does the model assign different rates of attenuation to different parts? A – Yes there is variability spatially throughout the catchment for attenuation – model uses 74 sub-catchments.</p> <p>Q – Catchments, sub catchments and freshwater management units have all been mentioned as different spatial units. Can the model measure them all? A –</p> <ul style="list-style-type: none"> • Catchment = Waikato / Waipa • FMU – Upper, Mid, Lower and Waipa. • 74 sub catchment s – each has a monitoring station – for water this is the finest scale used. <p>Q – Does the model include any assumptions around climate change? A – No assumptions have been included around climate change. This is due to the difficulty in understanding the relationship between climate change and contaminant effects on water quality.</p> <p>Update on modelling working group Gwyn Verkerk has developed Terms of Reference (ToR) for modelling working group. Anyone from CSG is welcome to join in. Moving forward, Graeme will advise a time to meet in next two weeks. Gwyn to advise other working group members of the timeframe. The Terms of Reference (TOR) are on page 18 of the Agenda Pack.</p>	
	10.15am	Morning tea	
4.	10.45am	<p><u>Integrated Assessment Framework (“IAF”)</u> <u>(DM#3445649) Liz Wedderburn and Graeme Doole</u></p> <p>Update on the IAF development.</p> <p>The working group on Integrated Assessment indicators has met and looked at the Integrated Assessment Framework. Thanks to Ruth Bartlett, Charlotte Rutherford, Gwyn Verkerk and Sally Davis who met with</p>	

		<p>Liz Wedderburn. Liz has taken the feedback on board.</p> <p>Discussion on the following points regarding the model and how it will contribute to the IAF.</p> <p>How can the model inform the Integrated Assessment?</p> <p>Positive social/community benefits</p> <p>Model will tell us:</p> <ol style="list-style-type: none"> 1. Employment from a social perspective. What happens to the labour/jobs: where do they end up (existing industries)? <ul style="list-style-type: none"> • By FMU <p>Hard to know what new things will start up from better water quality or under different scenarios</p> 2. Infrastructure: Security of key regional infrastructure is also another key item i.e. waste, water, energy. Affordable (over time) and reliable. Find other ways to get that info – not out of modelling Nothing 3. Access: Nothing 4. Community vitality: types of economic activity <p>Economic – won't show visitor economy changes</p> <p>Model will tell us:</p> <ol style="list-style-type: none"> 1. Jobs created and lost – yes 2. Resilience shows range of land use only in terms of business income and the buffering that provides – other things matter e.g. debt 3. Debt level – is variable – could try – need industry support EFS - yes definitely 4. Industry investing – is this existing or general 5. Retained industry confidence – is this existing or general 6. Change in land value – No Being done in LAWF – is a gap (WRC rating database) 7. Economic opportunity for new business – no e.g. tourism 8. Allow resources to go for high value – yes optimises forestry/ dairy/ horticulture/ dry stock 9. Creation of new industry - no 	
--	--	---	--

- It was noted that a report on how land has changed over time will be available in six months - this may be helpful to the project.
- Consider resilience to farms – not putting eggs in one basket.
- The Tourism/Recreation sector advised that they have helped fund a new visitor strategy, with plans to grow the economy. This information to be provided to Liz Wedderburn.
- Concern regarding Flood plains – if take out stop banks it will cause problem. The 'flood plains' indicator came out of Values process
- This assessment will deal with a range of issues including 'solving one problem and creating another problem regarding access i.e. fencing planting can exclude access.'
- Concern regarding the community indicators - duplication.
- Is there an indicator for flexibility – maintain robustness – could fit under resilience.

Activity:

Which three indicators will be most useful to the CSG to understand the key implications of different modelled outputs/scenarios? Looking at 4 areas of interest:

- Cultural/Maori aspirations – we will leave this one until we hear back from Antoine
- Economic
- Social/community
- Wider environmental (beyond water quality)

Specific Indicators – Environmental

Measure proportion / % streams
or wetlands protected

- Percentage increase in streams fenced (needs more thought – e.g. not feasible for all drystock streams to be fenced)
- % of unique habitats protected
 - peat lakes
 - Riverine lakes
 - Karst Environments
- Percentage increase of stock exclusion from wetlands
- Measure of % of native species – e.g. fish/ macroinvertebrates/ vegetation/terrestrial and instream.
- Use of River going up or down – people days/use/tourism

	<p>3 preferred environmental indicators:</p> <ul style="list-style-type: none"> • Riparian ‘effective for the land use’ • Habitat – wetland, unique • Native species – aquatic/ terrestrial <p>‘Effective riparian management’ could include</p> <ul style="list-style-type: none"> • % including streams fenced (define) • % unique habitats protected • % stock exclusion wetlands <p>Economic/Social Boundary</p> <ul style="list-style-type: none"> • Don’t double count but recognise the community/national investment in infrastructure (economic?) <u>And</u> the social community benefit/implication of resilient infrastructure • Relied on by people/communities essential for business • Ability to afford cost of infrastructure dependent on ratepayer base/investment/reinvestment/population growth/decline (prosperity/ability to pay) • Ability to afford the service Water rates/power bill etc <p><u>Social/community</u></p> <ul style="list-style-type: none"> • Employment <ul style="list-style-type: none"> ○ Types/ diversity of income/jobs leading towards national average income • Security of infrastructure <ul style="list-style-type: none"> ○ Reliable and affordable over time while improving • Enhanced recreational use of the river <p>3 preferred social/ community indicators:</p> <ul style="list-style-type: none"> • Employment <ul style="list-style-type: none"> ○ Types/diversity and security of jobs ○ Average income • Infrastructure secure <ul style="list-style-type: none"> ○ Reliable, affordable to consumers, with investment/reinvestment • Recreational use of river <p>(Vitality and population and ratepayer base will flow from employment and income).</p> <p>Economic</p>	
--	---	--

		<ul style="list-style-type: none"> • Not farm should be land use • Resilience <ul style="list-style-type: none"> ○ Not just \$ made <p>We think also need to take into account</p> <ul style="list-style-type: none"> ○ Adaptability - farm - catchment ○ Debt levels (indicator become part of resilience) ○ Change land use and farm management practices to respond to adverse events ○ Industry is actually about economic activity <p><u>3 preferred economic indicators</u></p> <ul style="list-style-type: none"> • Employment – total value (no of jobs x income) • Profitability of land use • Regional GDP <p><u>Process to do the Integrated Assessment:</u> The CSG were offered 3 options: have an expert panel ‘populate the circles’, have a sub-group of CSG work with experts to do this, or have an extra CSG meeting to do this all together. CSG opted for option 2, a sub-group to work with the panel.</p> <p>Integrated Assessment subgroup (Liz Wedderburn to convene) – Sally Davis, Trish Fordyce, Stephen Colson, Jason Sebastian, Gwyn Verkerk, George Moss, Weo Maag, James Bailey, Alastair Calder, James Houghton, Al Fleming. Aim to populate circles by 26/27 August 2015.</p> <p>Q: River iwi – can they attend and be involved in this sub group? To be discussed further on day 2.</p>	
5.	12.00pm	<p><u>Update on approach to lakes (DM#3433691) Mike Scarsbrook</u></p> <p>Mike Scarsbrook showed the group a map of lakes in the The CSG have developed and agreed on 5 FMUs. What has been discussed currently with shallow lakes, refers to a subset of lakes in region. There are 62 lakes in catchments (3 of those are geothermal but have been taken out). Only 13 of those lakes are monitored. WRC usually have representative sampling – different types of lakes have different characteristics etc, dune lakes (at Port Waikato end) there are a large number of peat lakes. Many are very small. Most have catchments that are strongly modified. NOF in NPS provides some bottom lines for attributes – these must be applied to lakes in these catchments.</p>	

		<p>Options for CSG to discuss in relation to resolving the issue of lakes currently sitting outside an FMU include:</p> <ol style="list-style-type: none"> 1. Lakes FMU include only the monitored lakes and their catchments 2. Lakes within the river FMU's 3. One lake FMU for all lakes 4. One lake FMU for monitored lakes that are in D band 5. 4 lake FMU's (1 for each lake type) 6. Lake FMU/s based on management requirements (if that differs from the river FMU they're in) <p><u>Lakes questions:</u></p> <ul style="list-style-type: none"> • WRC are reviewing existing monitoring but it is not possible to monitor everywhere for both costs and other reasons. • NOF attributes don't apply differently to different lake types however, management may be different. • NPS says all lakes have to be included in an FMU. • The implications for modelling are that modelling looks mostly at the river. The TLG could do add-ons to give rough estimate for lakes. • Why were the currently monitored lakes chosen? Most critical, most valued ecologically and most likely to be improved. • All options would comply with FMU • Unlikely to get exemptions under NPS. <p>Action: CSG requests that TLG come back with refined pros and cons and guidance on a preferred option (s).</p>	
	1.15pm	Lunch	
6.	1.45pm	<p><u>Groundwater and Hydrology</u> <u>David Payne (DM#3433579) and Tony Petch (DM#3445652)</u></p> <p>Presentation from David Payne from Mighty River Power (MRP) on Lake Taupo water level, rainfall and flow stations.</p> <p>Key points:</p> <ul style="list-style-type: none"> • There are variations in annual lake level which are due to climatic influences. <p>By way of example;</p> <ul style="list-style-type: none"> • 2004 is considered a wet year and the lake level was above average for the majority of that year. • 2010 experienced drought for the summer & autumn months, then experienced a flood in September but the annual mean worked out to be an average year. 	

		<ul style="list-style-type: none"> • The level of Lake Taupo must be managed within the minimum and maximum operating levels shown. If the 2010 drought had continued for another 10 days the lake level would have dropped below the minimum operating level. If the lake level drops below the minimum operating level then the flow below Karapiro would constrain many users' ability to abstract water for industrial and public purposes given their current infrastructure. <p>Modelled dam residence times: The dam residence times below are based on Opus modelling for the report "<i>Waikato Catchment Water Quality Model</i>" (2000), Rutherford et al</p> <ul style="list-style-type: none"> • Residence time for a natural catchment from Taupo to the sea is 5 to 6 days • Residence time for low flows to pass through the hydro system (Taupo to Karapiro) is 30 days, from Taupo to the sea it is 35 days • Residence time for mean flows to travel from Taupo to the sea is 23 days • Residence time for high flows to travel from Taupo to the sea is 15 days <p>Storage:</p> <ul style="list-style-type: none"> • Mighty River Power is required to maintain a minimum flow at Karapiro at all times. • There are times during the year when Lake Taupo storage is used to generate when inflows are lower and at other times of the year when inflows are greater Lake Taupo storage is replenished. • As a result the Lake Taupo level is restored to approximately the same level each year by the start of the next calendar year • In dry years inflows into Lake Taupo and the hydro dam catchments can fall below the minimum flow at Karapiro which means the lake level drops. • The minimum flow from Karapiro ensures that a higher flow than natural is maintained below Karapiro from approximately March onwards during drought events. <p>David Payne stated that "I recently commissioned ENVCO to undertake flow velocity measurements for the calibration of our Forecast Inflow model for the WHS (Taupo to Karapiro). Based on the velocity measurements attained the travel time worked out to be 9 to 11 days for water to pass through the hydro system which differs from the modelled residence time of 30 days. It was noted that only two or three velocity measurements were taken at each dam so further</p>	
--	--	--	--

		<p>measurements may be required to verify the difference in travel time between actual measured and modelled velocities”.</p> <p>The CSG were prompted to read Ed Brown’s presentation as it provides base information on hydrology. (DM Ref# 3426929)</p> <p>Discussion on how climate change could increase the amount of rainfall in the area – would that have an impact on the river and in Taupo? It is unpredictable and hard to pick a trend.</p> <p>Huntly Power Station has a monitoring site and a resource consent to keep water at certain temperature. The maximum temperature is 25 degrees. In summer this is hard to maintain as the ambient river temperature can get up to 25 degrees. It is also shallow there. Genesis Energy can’t discharge any heat during that time.</p> <p><u>Tony Petch – Presentation (DM#3445652)</u></p> <p>See Appendix 1 - Summary document Interim summary of ground water information for consideration by the Collaborative Stakeholder Group DM#3433606</p> <p>In October 2014 the TLG gathered together six groundwater experts to understand more about ground water. A gap analysis was carried out – what we need to know in 6 months, 1 year and 2 years? This started a range of investigations.</p> <p>Groundwater investigations- Waikato and Waipa Catchments:</p> <ul style="list-style-type: none"> • Short term field investigations of groundwater • Groundwater resource characterisations • Estimation of lag time of water and nitrate flow through the unsaturated zone • Predicting the denitrification status of ground water • Steady-state catchment model • How has land use changed over time? <p>Discussion points:</p> <ul style="list-style-type: none"> • Of the total water flowing out at Port Waikato each year, about 75% comes from groundwater • In the Waikato we are generally not losing groundwater to neighbouring catchments. • After centuries, groundwater will extend into the long-term flow paths. • Impacts of that will take time to be expressed in 	
--	--	--	--

		<p>water and streams.</p> <ul style="list-style-type: none"> • Geology of the Upper Waikato is highly permeable. • Waipa has old basement terrain. This is from old marine sediments. Volcanics overlaid such as Pirongia and Hauapuka. The geology is like a bathtub – once it's full, it flows out. • Middle and Lower Waikato has moderately permeable soils. <p>Discussion on chemistry and the groundwater lag times.</p> <ul style="list-style-type: none"> • Total travel times <ul style="list-style-type: none"> – < 10 years for low lying areas and low hills in lower and middle Waikato and Waipa and Reporoa area – 10 – 30 years for rolling land above 100 m asl – longest travel times (50 – 100+ years) under ranges and elevated terrain • Mixing in the upper aquifer zone <ul style="list-style-type: none"> – 2.5 – 6 years (mean 17 per cent of total travel time) <p>Water age (Waikato and Waipa):</p> <p>Surface water</p> <ul style="list-style-type: none"> • Stream water <15 years (average 10 years) in lower, middle Waikato and Waipa • Stream water older (average 52 years) in upper Waikato • Waikato River main stem water is younger (12 years) because of inflow from Taupo <p>Ground water</p> <ul style="list-style-type: none"> • Ground water age much older than surface water • No clear relationship with depth • Age highly variable – depends on hydraulic properties, flow paths, fracturing • Very shallow lowland ground water 1-2 years • Upper Waikato springs 11 to 60 years • Deeper ground water 150 to 250+ years <p>Q: Why were the nitrogen lags not increasing in the Upper Waikato bores that were sampled? A: Data is episodic – might have only one of two observations over 12 months. There are bores in some parts of Upper Waikato that some show increased nitrogen – some don't.</p> <p>Impacts from the original reduction of forests may not have been seen yet (due to very long lag times).</p> <p>Denitrification: Waikato and Waipa</p>	
--	--	---	--

		<p>This is a process where nitrate as it enters the ground water converts into nitrogen gas under reducing conditions (no oxygen). No strong regional pattern in where reducing conditions occur.</p> <p>Implications for the CSG to consider:</p> <ul style="list-style-type: none"> • Groundwater quality <ul style="list-style-type: none"> ○ Impacted by land-generated N – N especially in shallow aquifers • Lag time and water age <ul style="list-style-type: none"> ○ Stream water quality not in equilibrium with land use yet ○ Upper Waikato stream water not yet impacted by conversions ○ Other areas showing slow increase in groundwater N ○ Deep ground water not yet affected but this can take centuries • Denitrification <ul style="list-style-type: none"> ○ Exists but is spatially variable: consistent patterns hard to establish at a property scale <p>Discussion points:</p> <ul style="list-style-type: none"> • There is not any mapping of hot spots of nitrate levels. It is fair to say that younger water in the Hamilton basin carried higher levels of nitrogen than older ones. • Thinking about land use change over time and the loads that are applying to groundwater and streams. Historical land use data is from 1972. A lot of forestry was planted in the 1920s. • Shallow 0 -10 meters, deep 200 metres down. Water over 100m classed as deep. • The two reports from Aqualink have been referenced by other reports Tony Petch has written. Aqualink were part of groundwater panel. <p>Q: Climate change question for Ed Brown. Clarify difference of IPO and climate change</p> <p><u>Where to next:</u></p> <ul style="list-style-type: none"> • Summary report for phase one. • Tony Petch is managing the groundwater work. <p>Action: The CSG would be interested to know information on how groundwater influences the operation of the model. This will help with messaging to HRWO and stakeholders.</p>	
7.	2.30pm	<p><u>Nutrients (DM#3445653) Mike Scarsbrook</u></p> <p>The results of the expert review on nutrients were presented by acting independent chair of the TLG Mike Scarsbrook. The report was written by TLG member Dr</p>	

		<p>John Quinn.</p> <p>Key points:</p> <ul style="list-style-type: none"> • A number of studies have been done in this area and we are now at a point where there is a good picture of nutrient limiting dynamics • From the monitoring site information we know that where there is a strong correlation between both TN and TP and Chlorophyll A [indicator for phytoplankton] • One piece of analysis asked does increasing TP and increasing TN always lead to an increase in Chlorophyll A? The answer was yes for TP but not for TN. • Bioassay work was done [multiple studies]. The different studies showed different outcomes. At times N was more important than P and at other times P was more important than N, in regards to algal growth. • This suggests that variation both temporally and spatially occurs in regards to which nutrient is limiting. <p><u>Conclusions</u></p> <ul style="list-style-type: none"> • The evidence suggests that phosphorus is more important than nitrogen in controlling the annual median phytoplankton biomass in the Waikato at present • However, nitrogen is likely to exert limitation of phytoplankton biomass at times. • Therefore efforts to control phytoplankton biomass should be primarily focussed on phosphorus, but still have a secondary focus on nitrogen. • Controlling nitrogen would also be prudent for a precautionary approach as a large weather event could result in an influx of phosphorus [leading to algal growth if the river was P limited] <p><u>Questions:</u></p> <p>Q – What are the wider implications of the TN and TP attributes beyond phytoplankton?</p> <p>A – TN and TP are primarily a concern in regards to algae. Phytoplankton has affects on water clarity which affects swimming. TN and TP are required attributes for ecosystem health too under the NOF for lakes and lake-fed rivers.</p> <p>Q – If P is the more important nutrient to focus on, as we manage P down it will still be important look at N. How do we find the balance, e.g. if there is a flood of P etc?</p> <p>A – The thinking the CSG has done around the attribute bands will address this. Chlorophyll A, N and P are all being looked at together through the scenarios.</p>	
--	--	---	--

	<p>Q – Why would you not include TN and TP in the Waipa? The effect is seen in lake fed rivers as algae have time to grow there but the Waipa is not impounded so there is no retention time for algae to grow. There are also mixing and light issues in the Waipa that make it difficult for algae to grow.</p> <p>Q - Has P gone down in recent trends? A –In the latest report P has trended down in a number of sites.</p> <p>Q – Why has P improved at many sites? A – NO – hypotheses are: better effluent point source control, riparian, erosion control, climate variability – but we can't know . Reducing sediment run off certainly helps to reduce P. Improving effluent management also reduces P inputs.</p> <p>Q – Is there any increase in P solubility as N increases? (If N rises will it at some point release more P?) A - P bound to sediment can be released under some chemical conditions. It would be worth investigating this further.</p> <p>Action: (Question for TLG) Can increases in N lead to more release of P from sediment? If so, will this influence the nutrient limiting of N/P?</p> <p>Q – The CSG still hasn't seen the bioassay reports. Can this happen? Action – Follow up on when CSG can get bioassay reports.</p> <p>Q – Is coastal/ estuary environment a risk at Port Waikato/ Waikato River? A - It's a general view that coast and estuarine areas are more at risk of N than freshwater. Could look at specific effects for Waikato.</p> <p>Q; Climatic effects – wouldn't the P bound to sediment be trapped in the dams in a dry climatic event? A - Relates more to anoxic phases during stratification of water in a dry period, when P is released from bottom sediments</p> <p>Q: Is there a report showing what percentage of the P load is manageable? (Vs already in bed sediments) A - Bill Vant may have done this – need to check</p> <p>Q – Would phytoplankton still occur naturally? (Without human activity?) A – Yes still would be phytoplankton in a natural river,</p>	
--	--	--

		<p>even a river without dams. But to grow lots, time and nutrients are required</p> <p>Q - How do we deal with groundwater delay factor? A - Will go into model. Critical info is historical land use. Will provide projections, over time as things head for equilibrium. Some work to predict this is underway</p> <p>Q - Is one bioassay in Autumn sufficient? A - Other bioassays were done; showed response to N and P. Use word 'precautionary.' If N can be limiting at times, need to think about what activities might be going on at that time that affect N</p> <p>Q - Could there be sediment accumulation sites at stream mouths, not just dams? A - Possibly</p> <p>Q - Do we know enough about what is happening in the whole water column during stratification times? A - it is largely theoretical - little evidence of any stratification in Karapiro.</p> <p>Q - If you improve clarity by removing sediment, will effects of N change? If you drive the system to P - limitation by removing sediment A -</p> <ul style="list-style-type: none"> ○ Algae might grow more due to light ○ You might still have dissolved P (not attached to sediment) ○ You could still get macrophytes (because they draw P from bed sediment) ○ More macrophytes might provide more habitat, but might also reduce Dissolved Oxygen and impact ecology and reduce quality for swimming. <p>Important point – if we improve clarity, what are the impacts for other attributes</p> <p>Action: (Question for TLG) If water clarity improves due to reduced sediment; will this lead to more phytoplankton due to increased light climate? How would the nutrient limiting dynamics be affected by this, either positively or negatively?</p> <p>Q – How can test the robustness of studies to ensure that when we build in this information for policy development we can justify it? A –In general the TLG is keen to have independent peer review for sensitive work.</p> <ul style="list-style-type: none"> ○ Expert caucusing on first two reports ○ Publishing detailed experimental work ○ 2 additional pieces of work ○ Independent peer review ramped up 	
--	--	--	--

		<ul style="list-style-type: none"> ○ Need to document this process <p>Q - Will CSG see S32 material and backing reports. A -Yes</p>	
	3.15pm	Afternoon Tea	
8.	3.45pm	<p><u>Point and non-point source mitigations – microbes and nutrients (DM#3433551) Mike Scarsbrook</u></p> <p>Report (DM#3433551) pre circulated to CSG.</p> <p>Mike Scarsbrook gave a verbal update on DNA sourcing work – early results show no human contamination in samples. Ruminant animals (sheep, cattle), and water fowl were the main sources.</p> <p>The CSG then completed a workshop session to draw on experience of CSG members. Three stations were set up for N, P and microbes. The TLG interacted with the group.</p> <p>Workshopping notes</p> <p><u>E. coli</u></p> <p>Where does it come from?</p> <ul style="list-style-type: none"> • Sheep/cows/other livestock • Birds/waterfowl – pukeko, ducks etc • Possums/land-based animals • Septic tanks (? groundwater factor?) • Farm effluent (discharges of untreated material to land) • Point sources - ? <ul style="list-style-type: none"> ○ 2 pond systems discharging to water • Storm water run-off • Sewage – urban discharges (if processing incomplete) <p>How does it get into water?</p> <ul style="list-style-type: none"> • Overland flows to streams etc • Animals (stock and birds) directly to water • Groundwater flows – re-emerging. NB - general view they only last for 5 days • Point – source pipes <p>What can be done to reduce it?</p> <ul style="list-style-type: none"> • Sunlight • * Matching LUC to stock class • * Riparian margin (width important) • * Fencing to exclude stock • Fewer cows/cattle/stock/manage better base flow • No deer wallows that lead to watercourse • Waste water treatment • Wild fowl control!!! (eliminate) 	

		<ul style="list-style-type: none"> • Effluent disposal by spray irrigation • Pest control • Compulsory doggie bags (pooper scoopers) • * Retention areas/wetland – depends on topography <p>How effective is this (what does it depend on)</p> <ul style="list-style-type: none"> • Disinfection • Reducing overland flows and direct input • Not effective forestry (riparian margin) • Grass better than trees • Depends on level of financial investment re bells and whistles or low cost approach • Storm water control • Irrigation management • Locally highly significant at base flow (effluent disposal by spray irrigation) • Bunds along streams • Unintended consequences, creates dams • Issue large area land and storage needed – Rotorua discharge to Whaka forest is to be discontinued (effluent disposal by spray irrigation) <p><u>N</u></p> <p>Where does it come from?</p> <ul style="list-style-type: none"> • Urine • Direct from animals to ground (pee) <ul style="list-style-type: none"> ○ sheep, cattle, deer, pigs ○ birds, wildlife • Run off to streams • Drain into ground water • Dairy effluent e.g. wastewater, irrigation • Wastewater treatment plants • Industry point source discharges e.g. dairy factories <ul style="list-style-type: none"> ○ pigs ○ industry fertiliser ponds e.g. Kinleith • Mineralisation following cultivation (e.g. cropping on pastoral farmland) • Stormwater • Fertiliser aerial/runoff • Native trees • Forestry, gorse, N-fixers • Lightning • Compost, silage <p>How does it get into water?</p> <ul style="list-style-type: none"> • Leach through ground water • Surface runoff • Discharge from poo ponds to watercourse 	
--	--	--	--

		<ul style="list-style-type: none"> • Direct from stock to waterways • Pumped out • Point source discharges • Leaching • Runoff <p>What can be done to reduce it?</p> <ul style="list-style-type: none"> • Reduce urbanisation on cropping land • Improved N-efficiency through grazing, genetics etc • No till • Maintain organic matter • Band and incorporate fertiliser not broadcast - cropping <p>(a) Reduce runoff to streams (lower effectiveness than (b))</p> <ul style="list-style-type: none"> Riparian planting Stopbanks, sediment ponds Prevent stock entry to waterways Reduce or have appropriate stocking rates Appropriate fertiliser applications Use effluent storage pond and contents to capture N Fertiliser with effluent at appropriate rates rather than discharge to streams Shoot/poison birds <p>LUC to stock class</p> <ul style="list-style-type: none"> Timing/rate of fertiliser – important for hort Winter cropping/fodder crop management (high N loss if grazed in situ) <p>(b) Nutrient management on farm</p> <ul style="list-style-type: none"> Use low protein feeds Effective use of stand-off pads Use liners for storage of N-rich materials e.g. compost/silage Off pasture systems Low impact systems, less intensity = lower N Use DCDs (currently banned) Moratorium on conversions Use of wetland plantings/wetland construction/protection Grow watercress Wastewater treatment all point sources – 6% Maize Soil additives – gibberelic acid Gorse control Improved pasture species <p>How effective is this? (What does it depend on)</p>	
--	--	---	--

		<p>(a) Yes. Use appropriate species, width. Not effective for forestry.</p> <p>(b) Yes. Lower intensity. Effective until production system becomes uneconomic</p> <p>Depends on level of treatment. Ponds → Carbon dosing → barriers/fillers</p> <p>P</p> <p>Where does it come from?</p> <ul style="list-style-type: none"> • Sediment and erosion • Earthworks • Overland water flow • Fertiliser use • Point source and non point • Sewerage • Natural/background • Animal excretion • Supplementary feed • Compost piles • Dissolved Phosphorous eg anoxic sediment at base of dams • Forestry harvesting • Dishwashing powder <p>How does it get into water?</p> <ul style="list-style-type: none"> • Erosion • Stock in waterways • Stream bank erosion • Need to consider lag effect of P • Overland flow sediment • Overland flow from exposed soil/pugging • Stormwater • Point source discharges <p>What can be done to reduce it?</p> <ul style="list-style-type: none"> • Maintain soil organic matter *hort • Stock out of waterways *dairy • Farm planning → target hotspots *hort, sheep, beef • No effluent pond discharge to water *dairy • Riparian strips <ul style="list-style-type: none"> - Set backs site specific • Encouraging wetlands retirement retention dams/sediment traps • Erosion management 	
--	--	--	--

		<ul style="list-style-type: none"> - Trees on hills e.g. - retire steep land *sheep and beef • Tracks and races <ul style="list-style-type: none"> - management → run off <p>All earthworks, cultivation, setback from perennial streams * forestry earthwork controls</p> <ul style="list-style-type: none"> • Precision application of fertiliser and timing • Managing Olsen P * if high (soil dependent) – dairy • Limits on strip grazing of stock • Good management <ul style="list-style-type: none"> - Buffers - Direction of strip • Dose waterways with alum • Timing and type of fertiliser • Hard stand pads *hort • Matching LUC to stock class *sheep and beef <p>Wastewater treatment</p> <p>Subject to the technology used:</p> <ul style="list-style-type: none"> • Ponds • Mechanical dosing with allum • Filters barriers <p>How effective is this? (What does it depend on)</p> <ul style="list-style-type: none"> • Set back/class of stock • Permanent or temporary fence • Ease of fencing/hill country → sheep options • Problem what mean by riparian? should be setback from top bank • Slope/type of vegetation • Depth of riparian strip • Very – provided it's maintained (Encouraging wetlands retirement retention dams/sediment traps) • Earth bunds/ interception drains *hort <p>Day 2 will look at how we encourage people how to do these practices.</p>	
9.	5.15pm	<p><u>Feedback from our networks (DM#3080587)</u></p> <p>Written feedback was provided from Rural professionals, Community, Env/NGO and Sheep and Beef sectors.</p>	<p>Action: CSG members to complete the feedback template</p>
10.	5.30pm	<p><u>Approvals and updates session</u></p> <p>1. Confirm CSG12 workshop notes</p> <p>The workshop notes were confirmed by the CSG:</p> <p>Stephen Colson/ George Moss</p>	<p>Action: Availability of the technical reports – TLG to create a programme of release of</p>

		<p>Carried</p> <p>2. Receive research update</p> <p>The TLG update report was received by the CSG.</p> <p>George Moss/Sally Davis Carried</p> <p>3. Further discussion/ confirm attributes</p> <p>Bill Wasley outlined that feedback from the Sheep and Beef sector and ENV/NGO sector had been received. The intention for this session is to confirm the attributes. Once confirmed, the attributes will go to HRWO Committee for endorsement.</p> <p>The Sheep and Beef sector representative has had further discussions with TLG and the issues stated have now been resolved.</p> <p>Sheep and Beef sector key points:</p> <ul style="list-style-type: none"> • Part of the role of the members of the CSG is to provide confidence in the process of setting limits to their respective sectors. The drystock sector wanted time to explore the reasons and implications for adopting attributes and site selection • The choice of attributes is more than just a benchmarking or a reporting mechanism. • Choice of sites to report on progress or compliance is important because this will influence modelling and public perception. • Drystock sector have critical role to play in improving water quality. • Large scale land use change to production forestry from sheep and beef not considered a legitimate N loss reduction mitigation. • Release and reference to Beef + Lamb New Zealand principles for the allocation of nutrients. • Develop a scenario that does not involve regulated wide scale land use change and models adoption of known on farm good management practice for N and P. <p>Env/NGO sector provided a paper on “MCI as an attribute in the Waikato and Waipa River Catchments.” (DM#3458720)</p> <ul style="list-style-type: none"> • Extra information provided to CSG as to why MCI should be an attribute. Prior to last workshop the Env/NGO sector had meeting and endorsed this position. • The TLG recommended that MCI not be an attribute. • The CSG was asked by the Env/NGO rep to 	<p>technical reports that provide basis of decisions to be made.</p> <p>Action – Justine Young to provide DO info to TLG.</p> <p>Can increases in N lead to more release of P from sediment? If so, will this influence the nutrient limiting of N/P? TLG/Vicki Carruthers</p> <p>If water clarity improves due to reduced sediment, will this lead to more phytoplankton due to increased light climate? How would the nutrient limiting dynamics be affected by this, either positively or negatively? TLG/Vicki Carruthers</p> <p>What is the difference between effects on rainfall from Pacific Oscillation and climate</p>
--	--	--	---

		<p style="text-align: center;">reconsider if MCI be an attribute</p> <p>An excerpt from the above paper is noted below to show reasons for MCI as an attribute:</p> <p>1 Support for including the MCI as an attribute in NOF</p> <ol style="list-style-type: none"> 1. Contrary to the TLG’s recommendation there is large support for inclusion of the MCI as a compulsory attribute in the National Objectives Framework for Freshwater Management (NOF). This support comes from scientists, environmental groups and various other parties. 2. The New Zealand Freshwater Sciences Society (NZFSS) states in their 2014 submission to the “Proposed amendments to the NPS for Freshwater” that: <p style="margin-left: 40px;">“The MCI was developed as an index of pollution tolerance and has been shown in numerous studies to respond in a predictable way to land use and nutrient enrichment”.</p> 3. The NZFFS recommended that MCI be adopted as a NOF attribute and provided an attribute table that included banding and associated limits. 4. Various other scientific reports support the use of MCI as an attribute to assess ecosystem health including “Collier et al 2014. A macroinvertebrate attribute to assess ecosystem health for New Zealand waterways for the national objectives framework – Issues and options. Environmental Research Institute report 36, University of Waikato, Hamilton.” 5. This report was prepared for the Ministry for the Environment and includes an assessment of whether a MCI attribute would satisfy the guiding principles for NOF attribute development. These principles are similar to the list of principles used by the TLG in their assessment and subsequent recommendation that MCI should not be an attribute. 6. The recently released report by the Parliamentary Commissioner for the Environment (PCE) entitled “Managing Water Quality – Examining the 2014 National Policy Statement” recommends: <p style="margin-left: 40px;">“The Minister for the Environment amends the NPS to include MCI as a compulsory attribute for measuring ecosystem health.”</p> 7. Stark JD 2014 states: 	<p>change? Ed Brown</p>
--	--	---	--------------------------------

“... In this report the focus is on the use of the Macroinvertebrate Community Index (MCI) developed by Stark (1985, 1993, 1998) because of its long history of use in New Zealand and in Taranaki, proven strong negative responses to increasing enrichment (such as nitrogen, periphyton chlorophyll ‘a’ and ash free dry weight), **sedimentation**, and changes in land-use along the native bush – agricultural – urban gradient ...”

Further discussion within the CSG.

The Decision Making Framework (DM#3436809) was handed out to CSG.

- 1) Has there been robust discussion? Yes
- 2) Test for unanimous discussion: No (Env/NGO and Horticulture sector not agree)

Further discussion from CSG:

Attributes

- Concern if MCI monitoring resources reduce. Is there a way to ensure that it gets its due weight?
 - want to see this secure
 - part of what we recommend.
- What can we manage vs measure?
- Manage nutrient enrichment
- NOF didn't land this – should we wait until its resolved there?
- Can it apply to mainstem/ soft-beds (there is a version that can)
- Concern of process - bringing in science that's counter to TLG
- Share sentiment of concern for mahinga kai, mauri and MCI as an indicator of healthy ecosystems and natural environments - also important to visitors
- Important to keep 'looking up' into the tributaries

Possible resolution – MCI

- CSG sees MCI as an important indicator of ecosystem health and want to see it given weight in the wider policy process and monitoring regime.
- It is included in SOE monitoring
- It could come into the Integrated Assessment and Anticipated Environmental Results for HRWO.
- WRP review can take into account any changes in NOF from 2016 review.

TN/TP – 2 alternative wording suggestions

- TN/ TP in tributaries to

1: be set as

2: be reconsidered as

		<p>attributes once modelling results are available</p> <p>Proposed wording - CSG to revisit/reconsider tomorrow.</p> <p><u>Dissolved Oxygen</u></p> <ul style="list-style-type: none"> • TLG has assumed this was already monitored below point source discharges – this is not currently the case • Is not fully in scope of 4 contaminants (not a robust cause –effect link) • TLG yet to consider this • NOF requires continuous monitoring for 7 days • Consent process provides for discharges to present evidence etc – makes sense to let individual consent holders work through this process. • Might not be relevant to these 4 contaminants but WRC would still have to pick it up in some way as a compulsory NOF attribute. <p>Dissolved Oxygen (DO)</p> <ul style="list-style-type: none"> • Request the TLG to come back to CSG with a report on DO as an attribute related to cause and effect link with 4 contaminants. <p>Ruth Bartlett/George Moss Carried. Note Rural Professionals disagree. (Reason: Do not want to delay the decision).</p> <p>Agenda items: Plan template working group and Information release are deferred until Day 2. Further discussion on Attributes on Day 2.</p>	
	7.15pm	Workshop closed. Dinner	



Collaborative Stakeholder Group (“CSG”) Workshop 13 Notes

(Day two) 3 July 2015, Don Rowland Centre, Lake Karapiro
8.30am – 4pm

Attendees:

CSG: Alan Fleming (Env/NGO), Garry Maskill (Water supply takes), George Moss (Dairy), Gwyneth Verkerk (Community), Phil Journeaux (Rural Professionals), Ruth Bartlett (Industry), Stephen Colson (Energy), Garth Wilcox (Delegate – Horticulture), Patricia Fordyce (Forestry), Sally Davis (Local Government), Michelle Archer (Env/NGO’s), Weo Maag (Māori Interests), Charlotte Rutherford (Delegate – Dairy), Sally Millar (Delegate – Rural Advocacy), James Houghton (Rural Advocacy), Evelyn Forrest (Community), James Bailey (Sheep and Beef) Liz Stolwyk (Community) Gayle Leaf (Community), Graeme Gleeson (Delegate – Sheep and Beef), Brian Hanna (Community), Chris Keenan (Horticulture), Dave Campbell – part (Delegate – ENV/NGO’s), Don Scarlet (Delegate – Tourism/Recreation), Gina Rangī (Māori Interests)

Other: Bill Wasley (Independent Chair), Helen Ritchie (Facilitator), Janine Hayward (WRC), Will Collin (WRC), Jackie Fitchman (WRC), Justine Young (WRC), Janet Amey (WRC), Vicki Carruthers (WRC), Alan Campbell (WRC), Jon Palmer (WRC), Bruce McAuliffe (WRC), Ben Ormsby (WRC), Tony Quickfall (WRC), Emma Reed (WRC), Jonathan Cowie (WRC), Patrick Lynch (WRC)

TLG: Mike Scarsbrook, Tony Petch

Other (part): Tracey May (WRC), Alan Livingston (HRWO Co-chair), Lakimini Karunathilake (TARIT), Ngaroma Maika (TARIT), Grant Kettle (Raukawa), Simon Barsdell (MMTB), Tim Manukau (Tainui), Billy Brough (Iwi Co-ordinator) Jacqui Henry (WRC) Jo Bromley (WRC),

Apologies:

CSG: Matt Makgill (Community), Alamoti Te Pou (Māori Interests), Jason Sebastian (Community), Rick Pridmore (Dairy), Alastair Calder (Tourism and Recreation), Roger Pikia (HRWO Co-chair), Bryce Cooper (TLG), John Quinn (TLG)

Item	Description	Action
	8.30am	Waiata
11.	8.35am	CSG-only time – Reflect

12.	9.15am	<p><u>Policy options – nutrients and microbes (DM#3425911)</u></p> <p>Policy Options – Nutrients and Microbes</p> <p>For this session, the CSG were asked to keep in mind:</p> <ul style="list-style-type: none"> • the policy selection criteria (think about options). • the Vision & Strategy (to give effect to this as well as the RMA). <p>Key questions:</p> <p>If you are thinking about a performance or effects based method (like a property cap)</p> <ul style="list-style-type: none"> • Can you measure the amount of microbes/nutrient from a property (or from a point source)? • Can you measure it directly or use a model (and what issues come with each of those options) <p>If you are thinking about asking for specific practices or mitigations:</p> <ul style="list-style-type: none"> • What matters for effectiveness? • Can you observe the practice? • What are the implications for wide-scale implementation? <p>Recap sediment policy options</p> <p>Policy A Rule – CSG have set this aside for now</p> <p>Policy B – Rules-some activities specified that apply everywhere (e.g. earthworks restricted on steep slopes – existing)</p> <p>Staff are looking at options from last CSG to bring back</p> <ul style="list-style-type: none"> • Cattle and deer exclusion from water • Steep slopes/waterbody setback for heavy stock • Sediment traps (e.g. As seen at Bill Garland’s farm) • Setback for strip grazing from waterbodies in wet periods <p>Policy C – Subsidies - money or expert help available to undertake activities</p> <ul style="list-style-type: none"> • Could also do things like run competitive tender or pay more for certain things (Policy E & F) <p>Policy D – Rules – activities that suit each specific property, as set out in property plan</p> <ul style="list-style-type: none"> • Range of CSG views about whether every property must have a plan and a timeline for achieving • Could have an industry approved plan with WRC regulatory backstop <p>CSG feedback themes so far:</p> <ul style="list-style-type: none"> • Need to know the size of the change required before we can nail down which options • The end package will probably have aspects from a few 	

of these options.

Ideas for microbes policy options

- Same as sediment options
- PLUS detail about which practices are promoted or required
 1. Continue to control point sources
 2. Stock exclusion/setbacks to prevent runoff of microbes into water (sheep matter as well as cattle for microbes)
 3. Ways to manage farm effluent – ponds and irrigation
 4. Attenuation options – die off of microbes

Ideas for phosphorous policy options

Same as sediment options PLUS

- Detail about which practices are promoted or required e.g. Track/road design on slopes
- Soil or input limits on P e.g. could have a rule: permitted if soil test results supplied showing Olsen P doesn't exceed limit for different soil types
Market instrument: tax on P fertiliser – not considered feasible at a regional scale

Ideas for N policy options

Same as sediment options PLUS

- Detail about which practices are promoted or required eg. Could include promoting attenuation using boggy areas, wetlands
- Market instrument: tax on N fertiliser – not considered feasible at a regional level
- Rule: property level limit of root zone nitrogen OVERSEER model in background to determine the limit or within rule and used in monitoring/compliance
- Rule: property level limit on main N inputs eg. Amount of brought-in feed, fertiliser

There is a trade off between going for simple, easy to understand, option and an option that has greater flexibility and information.

A key question is - what does it take to implement these?

Jon Palmer then talked about the WRC experience of Variation 5 (V5) in the Lake Taupo catchment.

Key points from Jon's presentation included:

- For V5 they used OVERSEER to set a Nitrogen cap and trade scheme.
- Farms have nitrogen management plans and every year farms supply data to ensure compliance.
- A lot of work was done to ensure the implementability of V5. It needed to be enforceable and to give the ability to defend a case in court; otherwise there was no point in

		<p>having rules.</p> <ul style="list-style-type: none"> • 80 N cap consents have been granted to date. • The work in Taupo started with a lot of education and relationship building. • An independent third party (AgResearch) did the benchmarking of farmers. The data was also taken back to the farmers to check on the ground. • They created a database of farms but when things changed on farms this created complexity. • To use the OVERSEER model protocols were needed, for example what should be entered for soils, what to do when there was missing information etc. • Took 3.5 years to benchmark all the farms in the catchment but to start N trading they had to do the benchmarking first. • They use a set version of OVERSEER (5.4.3). Farmers like certainty and this helped people to be able to go forward and make changes on their land. • Monitoring of farms used to take a very long time but nowadays most farms get monitored in 2-3 hrs and it costs farmers a lot less than it used to. <p>Alan Campbell then talked about the results of a pilot study that was conducted in the Little Waipa and Waipapa in the Integrated Catchment Management project.</p> <p>Key points from Alan's presentation included:</p> <ul style="list-style-type: none"> • A key purpose of the pilot study was to understand what can be achieved in terms of change on land. • There are ~100 farms in the two pilot catchments. • The study worked with all the willing farmers (60 farms) in those catchments to see how they could reduce their nutrient discharges. • The study used OVERSEER to determine what N leaching was occurring. They then ran scenarios using OVERSEER to see what options would lead to lower N leaching. • N was a key focus of the pilot study but other contaminants were included too. • Some practices that farmers readily undertook included: <ul style="list-style-type: none"> - improving effluent systems - stopping winter N leaching - dealing with hot spots. • Some practices that there was lack of uptake from farmers included: <ul style="list-style-type: none"> - installing stand-off pads - reducing stocking rates - reducing Olsen P levels <p><u>Summary</u> Farmers tended to favour easy to integrate practices; practices that were affordable and provide financial benefit, and practices that were supported by strong evidence.</p>	
--	--	--	--

		<p><u>Conclusions:</u></p> <ul style="list-style-type: none"> • Farmers will make voluntary changes, when they are given support and advice • Voluntary agreements alone are unlikely to lead to significant nutrient reductions • On farm changes were limited by the uncertain policy environment <p>It was noted that more recent work has been undertaken by industry and farmer groups, e.g. Sustainable Milk Plans. Members were asked if the same conclusions largely hold and they confirmed this and also made the following comments:</p> <ul style="list-style-type: none"> • Decisions made by farmers that rely on models have a trust component associated with them. • For the pilot study they didn't explain the Vision and Strategy to farmers [wasn't in law at the time of the study]. Once you explain to the community what you are trying to achieve you get much greater buy in. • People have a much greater understanding of their nutrient contributions nowadays than they did before. 	
	10.00am	Morning tea	
13.	10.30am	<p><u>Workshop nutrient and microbe policy options</u></p> <p>Part I:</p> <ol style="list-style-type: none"> 1. Can we have an in-stream measure for nutrients or microbes to attribute back to a source/ property? 2. Is there a robust model for attributing property-level contributions? 3. Alternative to a model is to limit or cap key 'proxy' measures (more like an activity rule). <p>Small group notes – Group 1</p> <ol style="list-style-type: none"> 1. Yes – but it is difficult and expensive <ul style="list-style-type: none"> ○ What property ○ Renewal or existing 2. No for microbes Yes for N & P But depends what you do with the 'number' so the question is 'is it robust enough for the end use' Hard number enforcement or productivity change or increase or a trend over time e.g. 10% over 10 years 3. Proxy or input controls not first choice for N <ul style="list-style-type: none"> ○ could work for P + dairy <p>Small group notes – Group 2</p> <ul style="list-style-type: none"> • Overseer has some limitation but is best tool we have at moment • Confidence will grow as model accuracy improves • Could work in Overseer bands to test relative changes: 	<p>Sub group of Forestry, Horticulture, Sheep and Beef and Dairy CSG reps to work with policy workstream and WRC enforcement/extension staff to look at the feedback from CSG nutrient workshop and farm plans.</p>

- Getting better
- Getting worse
- How would the Overseer bands then relate to WQ bands?

Microbes/P
Looking for critical sources

Summary Workshop Part 1

1. Instream measure

No – fraught

Can DNA test microbe sources
P + source – can be monitored at discharge/mixing regime

2. Robust model

Microbes – no

P

- Overseer + Mitigator – (a farm tool developed by Ballance – will become public) – keep on the table for now
- Better for some sectors/only certain practices entered
- Limited (Overseer)
- ‘Robust’ depends on end use
i.e. ‘hard’ number – tricky
trend over time – more robust
for dairy, for P are you better to use ‘proxy’ changes?

N models – Yes

- Overseer limited – depends on use (number vs trend)
- Issues with variable years – shouldn’t be used year by year
- Use as a ‘drafting gate’ to identify risk/bands or direction of change
- To help a catchment meet a limit (in-stream measure)
- Only tool that gives a degree of information
- Need ability to be flexible - move with science
 - issue with locking in 1 version
- Consider it to create ‘headroom’ flexibility for new entrants

3. Proxies

Restrict innovation potentially, for P, for dairy (focus on key farm practices)

- Opposed to input controls
- Not for N

		<ul style="list-style-type: none"> • Over simplify <p>Microbe/nutrient workshop – Part II</p> <ul style="list-style-type: none"> • Are there any practices that might lend themselves to rules that apply generally (all of catchment/ all of FMU/ high risk areas/ certain stock types)? <p>Summary in large group – Part 2: General Rules</p> <ul style="list-style-type: none"> • Remove rules that inhibit good practice eg cleaning out and creating sediment traps • No more pond direct discharges <ul style="list-style-type: none"> ○ Might be targeted to catchments • Stocking rate cap to limit intensification <ul style="list-style-type: none"> ○ Issue is it stifles innovation ○ How do you define it? ○ Won't stop conversions ○ Farmers work round it – per cow production • Need to reconsider when we have set the limits • Winter cropping? – or just use model that takes this into account • Direct discharges N + P • Require farm plan and record keeping <ul style="list-style-type: none"> ○ cost and scale issues – who pays? • 'Enterprise Rules' – treating blocks that are the same together • Nutrient user groups <ul style="list-style-type: none"> ○ collective management of nutrients within a catchment • Need to consider small blocks/other landowners • Need to consider enforcement • Third party auditing – is there a legal option for it under RMA? • Is in some plans – states that auditor must be approved by CE of the RC 	
		<p><u>Follow up on Attributes (DM# 3458965)</u></p> <p>Mike Scarsbrook provided further information on attributes. This helped clarify what CSG is recommending regarding TN/TP bands and use of bands.</p> <p>A map was provided to the group, showing P and bands provided in catchments. The concentration you see in tributaries is only part of the story. It's about the loads e.g. Mangamihi – high TN and TP but small river, so small load contribution. Monitored sites are a subset of total tributaries. The TN and TP attributes in the NOF have been developed for lakes and lake-fed rivers. A graph was displayed, showing TN/TP in streams – everything would be D band according to those.</p> <p><u>Recommendations re attributes:</u></p> <ul style="list-style-type: none"> • Request the TLG to come back to CSG with a report on DO as an attribute related to cause and effect 	

link with 4 contaminants.

Ruth Bartlett/George Moss. Unanimous Agreement

The CSG confirmed the following list of attributes:

Value	Attribute	Explanation
Human Health	<i>E.coli</i>	
	Clarity	Include with modified A-B threshold
	Cyanobacteria (planktonic)	Include in Shallow Lakes FMU only
Ecosystem Health	Phytoplankton (lakes and lake fed rivers)	
	TN	<ol style="list-style-type: none"> 1. Apply proposed TN/TP bands at mainstem sites 2. Do not apply A-D bands on TN/TP concentrations at tributary sites 3. Loads of TN/TP from tributaries are accounted for in the catchment model and individual land users can still be held responsible via various policy options
	TP	
	Nitrate	
	Ammonia	
Mahinga Kai	<i>E.coli</i>	
	Cyanobacteria (planktonic)	Apply as for human health (above)

Phil Journeaux/Brian Hanna.

Dave C stood aside. Alan F was against the proposal. The chairperson Bill W determined there was sufficient agreement in order to proceed with the proposal. Agreement.

Macroinvertebrate Community Index (MCI)

recommendations:

- CSG sees MCI as an important indicator of ecosystem health and want to see it given weight in the wider policy process and monitoring regime.
- That it be included in SOE monitoring
- That it be ~~considered~~ included as part of the Integrated Assessment and Anticipated Environmental Results for HRWO.
- It is noted the Waikato Regional Plan review can take into account any changes in NOF from 2016 review.

Sally Davis/Chris Keenan. A motion was made to use the word 'included' instead of 'considered' in bullet point 3 above.

George Moss/Chris Keenan. Unanimous Agreement.

TN/TP recommendation:

- Recommendation that TN and TP in tributaries to be reconsidered as attributes once modelling results are available.

		<p>Chris Keenan/Brian Hanna.</p> <p>Alan Fleming was against the proposal, preferring the word 'set' rather than 'reconsidered'.</p> <p>The chairperson Bill Wasley determined there was sufficient agreement in order to proceed with the proposal. <u>Agreement.</u></p>	
	1.15pm	Lunch	
14.	1.30pm	<p><u>Update on Values (DM#3421947)</u></p> <p>Discussion points:</p> <ul style="list-style-type: none"> • Clarification sought on what 'protection and security' meant on page 231. TARIT can't provide answer today but Chris from TARIT can. TARIT are trying to map up all the info over several years to visually see fishing and cultural sites. Looking at 'what is your history, what did you like to do?' but does not capture 'what would you like to do in future, what do you want to see in future?' Oral history picks up on cultural associations and memories – include a statement in 'hononga' value? TARIT is working with Antoine Coffin on this. • 'Sense of place' - making clear that it is part of values – suggest layout change to include it within the table. • Redrafted section on primary industry focuses on economics: failed to recognise what stems out of that i.e. food production. Wider value to that i.e. community, generations, connection with land. Value production for high quality safe food. Pride and culture for those communities. • Hard to connect mauri with this document. Past present and future. • CSG have been through this process, taken the list back to community. • Ecosystem health – flood plains – where does it fit in? Would have to take out stop banks. All wetlands and flood plains serve those purposes – Whangamarino wetland etc bunding along Waikato river. Maybe in future need to reinstate flood plains? Whitebait laying eggs in grass - areas that flood. Stop banks have a place in existing environment. Agreed to leave this in. • Do we acknowledge flood protection? Whole extra – value? Change water supply to water infrastructure and add under that? • Include TPS flows as part of river value • Natural form and character – the rivers are a corridor. Want changed to 'river as a corridor' 	<p>Values actions:</p> <p>Make the overarching value 'Hononga ki te wai, Hononga ki te whenua' more obvious as a value.</p> <p>Liaise with Antoine re values gaps identified from TARIT plan [Chris - TARIT]</p> <p>Change water supply wording to water infrastructure in values list</p>

		<p>have ecological corridors..... concept of 'river corridor' have concern with. Agreed to take out word 'corridor' and leave just 'river.'</p> <ul style="list-style-type: none"> • Sense of place – still feel it needs an addition. About an emotional historical connection/ can be personal, groups, families, organisations with connection to a place. • Human health for recreation – first bullet point has lots of active stuff – don't need to active to be near river. Agreed to add in place 'to relax' • River iwi– feedback o direction. Tim Manukau – Acknowledge the work that has been done. River iwi have a level of comfort with this new version. • The Electricity value is too detailed - synthesise. Energy sector rep to work with staff on wording • Community member Gayle Leaf to come up with ideas on her views and how to incorporate. • Change water supply wording 'The catchment surface and subsurface water is of a quality'. <p><u>It was noted that the feedback would be considered and reported back to the next CSG</u></p>	
15.		<p><u>River Iwi input on Vision and Strategy</u></p> <p>Deferred to CSG14.</p>	
16.	2.45pm	<p><u>Scoping community engagement (DM#3431526 and DM#3445648 presentation) Will Collin</u></p> <p>There are only two CSG workshops between now and when the CSG start engaging with sectors and the community. CSG's engagement plan has had some minor amendments as noted in presentation. Highlighted in yellow in DM #3411909</p> <p>Outline of the breakdown of the 2nd Intensive Engagement Period:</p> <p>Key engagement period dates were highlighted during this time including tight timeframe for turning feedback around. Part 1: 7 Sept– 21 Sept 2015 Part 2: 12 Oct– 16 Oct 2015</p> <p>Resolutions:</p> <ol style="list-style-type: none"> 1. That the report "New Amended Community Engagement Plan and the 2nd Intensive Engagement Period" (Doc 3431526 dated 19 June 2015) be received for information. 2. That the Collaborative Stakeholder Group agrees upon and approves a finalised new amended Community Engagement Plan which will be provided to the Healthy Rivers Wai Ora committee, subject to any agreed further amendments being made, and agree that the website version of the Community Engagement Plan 	<p>Jackie F to craft a presentation on the story so far.</p> <p>Gina Rangī and Jacqui Henry to communicate regarding iwi engagement.</p>

		<p>can be replaced with the new amended version.</p> <ol style="list-style-type: none"> 3. That the Collaborative Stakeholder Group confirms the date for the next large stakeholder workshop as being 13 October 2015. 4. That the Collaborative Stakeholder Group consider the questions posed by council staff and provide responses to the questions marked 'needing an answer to proceed'. <p>Items 1 -3 George Moss/ Sally Davis Carried</p> <p>Discussion on the four proposed engagement event types</p> <ul style="list-style-type: none"> • Large Stakeholder Workshop • 'Out and about' days • Community workshop • Online survey <p>Jackie Fitchman (WRC Communications) provided the CSG with ideas on how to reach the public and the objectives:</p> <ol style="list-style-type: none"> 1. Awareness/interest Increase awareness of and interest in the project. 2. Information Provide background and context to enable people to engage. 3. Involvement Promote attendance and involvement in engagement activities. <p>Discussion points:</p> <ul style="list-style-type: none"> • CSG to get ideas/comments to Jackie Fitchman directly. • Parallel iwi engagement. Concern re community / iwi expectations – potential risk. Jacqui Henry (WRC) is liaising with iwi in rohe. Gina and Jacqui to discuss further. • CSG requested a generic power point presentation that CSG can all utilise with timeline. • Need materials for out and about days • CSG requested more information regarding out and about days. See Stakeholder Engagement Strategy. <p><u>Community Engagement</u></p> <ul style="list-style-type: none"> • Include a story of how we got to here e.g. attributes etc and relate it to V & S and NPS/NOF. • First model run results – can't commit to that until we see results. • Warm people up to model – how it works 	
--	--	---	--

		<ul style="list-style-type: none"> • Have to all do the same • Dairy prefer to go with first results • Busy time – horticulture, sheep and beef sectors. <p><u>Still to discuss with CSG:</u></p> <ol style="list-style-type: none"> 1) Maori interests – do they want their own sector day? 2) Learnings meetings 3) Pilot review as per last online survey 	
		<p><u>Approvals session – follow up</u></p> <p><u>Plan change template – Sally Millar ((DM#3435649)</u></p> <p>Resolutions:</p> <ol style="list-style-type: none"> 1. That the report be received by the Collaborative Stakeholder Group and 2. That the Collaborative Stakeholder Group agrees to the amended headings for the Plan Change Template. <p>Chris Keenan/Charlotte Rutherford Carried</p> <p><u>Public release of documents from the CSG portal – workshop notes and summary section (DM#3431167):</u></p> <p>A - Documents marked with A – suitable to make public now B – Need more work – check with author C – Not suitable to be made public now.</p> <p>The CSG supported public release of documents but noted that anything relating to the CSG only session, draft items, iterative documents (uncompleted and works in progress), internal discussions and ‘brain dump’ notes were not to be released.</p> <p>Action: CSG members to send in their queries regarding documents to Healthy Rivers Inbox</p> <p>Action: Bill Wasley to work with staff to address those matters outlined above and that subject to this the documents be released.</p> <p>Resolutions:</p> <ol style="list-style-type: none"> 1. That the CGS approves the release of documents deemed suitable for proactive release (refer to Attachment 1) as per criteria outlined above and with approval of the Chair 2. That all PowerPoint presentations are converted to PDF files containing only slides, with the notes removed. 3. That where multiple iterations of documents exist, the final version of the documents are proactively made public (if not already public). 4. That where documents are already publicly available 	

		<p>(see part 3 of Attachment 1) a link to the source location of the document is provided on the CSG website.</p> <p>Don Scarlet/Chris Keenan Carried</p> <p>Feedback from networks to be discussed at CSG14.</p>	
16.	3.15pm	<p><u>HRWO Co-chairs update and Feedback from Project Sponsor (Tracey May) (DM#3444359)</u></p> <p>Alan Livingston and Deputy Co-Chair Kataraina Hodge present. Apologies from Roger Pikia.</p> <p>HRWO Co-Chair Alan Livingston provided an update on the HRWO meeting held Friday 26 June 2015.</p> <ul style="list-style-type: none"> • Alan acknowledged those who attended: George Moss, Stephen Colson, James Bailey, Bill Wasley, Matt Makgill and Alastair Calder. • Members had a workshop prior to the meeting. This was a valuable exercise. HRWO Committee will now meet monthly and also have a workshop prior to each meeting to cover a specific subject. • It is anticipated that some CSG members can represent the group at these workshops and give HRWO committee members a level of understanding of what they are doing. • If there are any recommendations – please note any dissensions. • Acknowledge and appreciate Billy Brough (Iwi Co-ordinator) coming on board to co-ordinate the five river iwi. This is an important role for the project. • The HRWO Committee minutes have been provided to CSG. These outline the concerns raised regarding the PSC for CSG to consider. The suggestion of having workshops prior to the committee meetings is the chance to have things aired and considered so there are no hold ups. <p>Discussion on the CSG decision making process. The CSG make a decision, this then goes to HRWO and then to Council for approval. HRWO are urging councillors that aren't on HRWO Committee to come to workshops to learn along the way.</p> <p><u>Tracey May – Project Sponsor</u></p> <ul style="list-style-type: none"> • Acknowledge those who attended last HRWO workshop and the work that has been done to date. The councillors valued and appreciated the free and frank discussion and would like this to continue going forward. • MfE visited WRC this week. There is interest in what are we doing to implement NPS FM. WRC were able to 	<p>Janine H to circulate further dates for HRWO committee and workshops</p>

		<p>talk through the different things that council are doing. There was a heavy focus on the CSG and what they have achieved to date and some of key challenges. Feedback provided on evaluation report. An offer was extended to MfE to sit in on a CSG workshop.</p> <ul style="list-style-type: none"> • Tracey has been invited to a WRA Board meeting next week to provide an update on the Healthy Rivers Project. Alan Livingston and Weo Maag are board members. • Information flow between parties in project needs to be co-ordinated better. Billy Brough will step into this role. 	
17.	3.30pm	<p><u>Wrap up session</u></p> <ul style="list-style-type: none"> • The group was referred to the 'Milestones and Focus' document (DM# 3394155) on page 243 which outlines what will be discussed at CSG14. • Allocation principles to be discussed at the CSG14. • Note that Beef and Lamb NZ have a list of 'Principles for the Allocation of Nutrients' in this agenda pack. Do any other sectors have documents that they can circulate? Dairy and horticulture do. • PSC needs to be reviewed • Allocation is large topic – need more information • Helpful to have allocation discussions with policy ideas talked about today. • Defer CSG13 feedback from networks to the next workshop • PSC agenda item for next meeting regarding HRWO concerns re PSC • HRWO committee members and MFE attendance discussion deferred to CSG-only session at next workshop 	<p>Allocation actions:</p> <p>Chris K to look into allocation principles work from LAWF.</p> <p>WRC staff to look at how allocation has been done elsewhere.</p> <p>CSG will look at policy options in light of the allocation principles developed.</p>
18.	3.55pm	<p><u>Chairperson closing reflections</u></p> <ul style="list-style-type: none"> • Bill referenced the items raised regarding Attributes. • Acknowledgement and appreciation to Mike Scarsbrook for stepping in while Bryce Cooper away. • The timing of the agenda approvals session to be reviewed (allowing more time /not evening) 	
	4pm	Meeting closed with karakia by Helen Ritchie at 4.15pm.	

Table of documents received by the CSG at CSG13:

Document name	DM Reference #
CSG13 Agenda	3430074
Modelling workgroup	3435772
The Lakes conundrum session	3433691
Groundwater and hydrology	3433606/3433579/3426929
Nutrients session	3433551
CSG12 workshop notes	3419983
TLG Update	3344942
Attributes feedback paper	3426927
Sheep and Beef sector report and nutrient principals – James Bailey	3437178/3437175
MCI attribute paper from Al Fleming	3458720
Plan Change template feedback	3435649
Public release of portal documents - report	3431167
Nutrient options against PSC report	3425911 plus optional reading
Values Report	3421947
CE report and amended CEP	3431526
Tracey update report and HRWO minutes 19 June 2015	3444359/3429334
Milestone and focus CSG12 – 20	3394155
Tony Petch presentation and summary – Ground water	3445652/3433606
Justine Young presentation - Policy options and case studies	3445651
Graeme Doole presentation – Economic modelling	3445650
Liz Wedderburn presentation – IAF	3445649
Will Collin – CEP presentation	3445648
Approvals session from Day one slides – Bill Wasley	3445647
Background and ToR for CSG Modelling Subgroup – Gwyn Verkerk	3435772
David Payne presentation (MRP) – Hydrology	3433579
Ed Brown presentation - Hydrology of the Waikato Catchment	3426929

Actions List – CSG13

Action	From	Person / people responsible	Due date	Done?
1	Integrated Assessment Framework – option 2 – sub group work with experts. Liz W to convene. Comprised of Trish F, Stephen C, Jason S, Weo M, James B, George M, Alastair C, James H, Sally D, Gwyn V, Alan F.	CSG		
Outcome				
2	Facilitate getting the tourism data re visitor economy from Don S to Liz W	Don S		
Outcome				
3	Can the CSG have access to a spreadsheet form of monitoring site data – data for each site over time since monitoring began. (LGOIMA request?)	George M		
Outcome				
4	TLG to come back with a preferred option for the lakes conundrum	CSG		
Outcome				
5	Question for TLG – Can increases in N lead to more release of P from sediment? If so, will this influence the nutrient limiting of N/P?	CSG/James B		
Outcome				
6	Follow up on when the CSG can get the bioassay reports	CSG/Trish F		
Outcome				
7	Question for TLG – If water clarity improves due to reduced sediment, will this lead to more phytoplankton due to increased light climate? How would the nutrient limiting dynamics be affected by this, either positively or negatively?	CSG/Chris K?		
Outcome				
8	Question for Ed Brown – Difference between effects on rainfall from Pacific Oscillation and climate change?	CSG/ Stephen C		
Outcome				
9	Put Gwyn’s river swim feedback in the feedback template	Gwyn V	Will C	
Outcome				
10	Recommendations re attributes: <ul style="list-style-type: none"> Request the TLG to come back to 	CSG/Bill W		

CSG with a report on DO as an attribute related to cause and effect link with 4 contaminants.
 Moved by Ruth B, seconded by George M. **Unanimous Agreement**

The CSG confirmed the following list of attributes:

Value	Attribute	Explanation
Human Health	<i>E.coli</i>	
	Clarity	Include with modified A-B threshold
	Cyanobacteria (planktonic)	Include in Shallow Lakes FMU only
Ecosystem Health	Phytoplankton (lakes and lake fed rivers)	
	TN	4. Apply proposed TN/TP bands at mainstem sites 5. Do not apply A-D bands on TN/TP concentrations at tributary sites 6. Loads of TN/TP from tributaries are accounted for in the catchment model and individual land users can still be held responsible via various policy options
	TP	
	Nitrate	
	Ammonia	
Mahinga Kai	<i>E.coli</i>	
	Cyanobacteria (planktonic)	Apply as for human health (above)

Moved by Phil J, seconded by Brian H. Dave C stood aside. Alan F was against the proposal. The chairperson Bill W determined there was sufficient agreement in order to proceed with the proposal. **Agreement.**

Macroinvertebrate Community Index (MCI) recommendations:

- CSG sees MCI as an important indicator of ecosystem health and want to see it given weight in the wider policy process and monitoring regime.

	<ul style="list-style-type: none"> ○ That it be included in SOE monitoring ○ That it be considered included as part of the Integrated Assessment and Anticipated Environmental Results for HRWO. ○ It is noted the Waikato Regional Plan review can take into account any changes in NOF from 2016 review. <p>Moved by Sally D, seconded by Chris K. A motion was made to use the word 'included' instead of 'considered' in bullet point 3 above.</p> <p>Moved by George M, seconded by Chris K. Unanimous Agreement.</p> <ul style="list-style-type: none"> ○ Recommendation that TN and TP in tributaries to be reconsidered as attributes once modelling results are available. <p>Moved by Chris K, seconded by Brian H. Alan F was against the proposal. The chairperson Bill W determined there was sufficient agreement in order to proceed with the proposal.</p> <p>Agreement.</p>				
Outcome					
11	Concerns noted as part of the attributes agreement process will be noted in the official workshop notes.	Bill W			
Outcome					
12	Sub group of Forestry, Horticulture, Sheep and Beef and Dairy CSG reps to work with policy workstream and WRC enforcement/extension staff to look at the feedback from CSG nutrient workshop and farm plans.	CSG			
Outcome					
13	<p>Values actions:</p> <ol style="list-style-type: none"> 1. Make the overarching value 'Hononga ki te wai, Hononga ki te whenua' more obvious as a value. 2. Liaise with Antoine re values gaps identified from TARIT plan [Chris] 3. Change water supply wording to water infrastructure in values list 	CSG			
Outcome					
14	Community engagement recommendations:	CSG			

	<ul style="list-style-type: none"> That the CSG confirm the date for the next large stakeholder workshop as being 13 October 2015. That the CSG agrees upon and approves a finalised new amended Community Engagement Plan which will be provided to the Healthy Rivers Wai Ora committee, subject to the suggestions provided, and agree that the website version of the Community Engagement Plan can be replaced with the new amended version. <p>Moved by George M, seconded by Sally D.</p>				
Outcome					
15	<p>Plan change working group recommendation:</p> <ul style="list-style-type: none"> That the CSG agree to the amended headings for the Plan Change template <p>Moved by Chris K, seconded by Charlotte R</p>	CSG			
Outcome					
16	<p>Documents for approval recommendation:</p> <ul style="list-style-type: none"> That CSG chair Bill W be authorised to make a decision on this matter using the principle that draft, discussion, iterative or 'brain dump notes' documents should not be released. <p>Moved by Don S, seconded by Chris K</p>	CSG			
Outcome					
17	<p>Deferred items:</p> <ul style="list-style-type: none"> Defer CSG13 feedback from networks to the next workshop PSC agenda item for next meeting regarding HRWO concerns re PSC HRWO committee members and MFE attendance discussion deferred to another time 	Bill W			
Outcome					
18	Janine H to circulate future dates for HRWO committee and workshops	Bill W			
Outcome					
19	Allocation actions:	CSG			

	<ul style="list-style-type: none"> • Chris K to look into allocation principles work from LAWF • WRC staff to look at how allocation has been done elsewhere • CSG will look at policy options in light of the allocation principles developed 				
Outcome					
20	Jackie F to craft a presentation on the story so far	CSG			
Outcome					

Approved