NOTES: LAND TECHNICAL ADVISORY GROUP, 26 MAY 2016

Bay of Plenty Regional Council – Te Wai Ariki, 1125 Arawa St, Rotorua, 9:00am

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Chair: Phil Journeaux
Convener: Andy Bruere
Present:

- Land TAG members:
  Greg Lambert, Dave Clark, Suzie Greenhalgh, Neels Botha and David Houlbrooke
- BOPRC staff:
  Alastair MacCormick, Rosemary Cross, Rebecca Burton, Nicky Green, Rob Donald, Ian Morton, Gretchen Sveda
- Others:
  Stuart Morrison and Simon Park

Action Summary:

1. *Gretchen: upload meeting agendas, minutes, reports (eg Landcare Research's FLRC paper and Perrin Ag's NDA update) and presentations; circulate instructions for accessing these online*
2. *Simon: provide updates on (i) OVERSEER Guidance project and (ii) the PC10 reference file method*
3. *Neels: liaise with BOPRC Advice & Support team on understanding their work and developing an engagement / farmer behaviour agenda item for the next Land TAG*
4. *Simon: circulate a template for Land TAG members to highlight key national science research work relevant to BOPRC's science priorities*
5. *Ian: circulate a spreadsheet identifying specific areas of the Freshwater Futures programme where Land TAG could help*
6. *Andy: edit and recirculate Land TAG's Feb 2016 comments on economic modelling for members to comment / endorse (see boxed text below)*
7. *Simon and Andy: summarise P mitigation comments into a statement for Land TAG to review*
8. *Dave Clarke: present Scott Farm research profit effects of reducing environmental footprint*
9. *Andy: invite Mike Scarsbrook to participate in Land TAG as an observer*

NB: There were several additional ongoing actions around Land Tag's modus operandi – see **item 2** below

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Item 1: Welcome, apologies and minutes / actions from previous session (29 Feb 2016)

Apologies: Tim Payn, Gina Mohi

Follow up on Action items from previous minutes:

Item 5: This action regarding the PC10 OVERSEER reference file method has been overtaken by the OVERSEER Guidance project (due August). The reference file report was sent late for the February meeting. While there are caveats on advice Land TAG can give, BOPRC will still seek advice on specific issues.

Action 1 – Gretchen: upload meeting agendas, minutes, reports (eg Landcare Research's FLRC paper and Perrin Ag's NDA update) and presentations; circulate instructions for accessing these online

Action 2 – Simon: provide updates on (i) OVERSEER Guidance project and (ii) the PC10 reference file method

Item 2: Land TAG's current modus operandi

- The scope of this TAG is around the impacts on land use on water in the region
- It will progressively expand from Rotorua lakes to other catchments in the Bay of Plenty as the policies develop i.e. Freshwater Futures and NPS for freshwater management
- Land TAG's Terms of Reference captures a comprehensive list of topics, including alternative land uses, mitigation cost effectiveness and social impacts
- The ToR anticipated specific policy questions but policy for Lake Rotorua had largely been set before Land TAG was formed, so there is less opportunity to inform/influence it
- Expectation of Land TAG members is to be both proactive and reactive.

Discussion points:

- As the focus becomes more regional, what other areas of expertise are needed?
- Someone from Land TAG and Water TAG should attend each other's meetings
- Land TAG members expected more direct/specific questions to be put to them to date
- Need to use Land TAG members expertise in meetings with landowners/public – it may help to raise profile of research and its acceptance
- Documents need to be sent out earlier enough prior to meetings, including to allow members to seek comment from their networks
- More Land TAG / farmers Collective interaction would be useful
- We need Land TAG resolutions to discussions - Council can then decide if to proceed or not
- It is good to have council staff present so we can debate the issues
- Sending out regular update emails and ask for input to inform agendas and keep members engaged
- Useful for members to spend time with council staff – maybe a workshop so staff can tell us what they're doing, we can question them and get a broader view
- We need to invite more 'end users' to better understand how they're affected
- Address economic analysis and impact early, otherwise limits can be set without this assessment

Ongoing actions to improve Land TAG's modus operandi:

1. Review agenda so there are fewer items, more opportunity to discuss and debate
2. Keep report-back items to a minimum time to ensure debate of main issues takes place
3. Pre-circulation of 'information' reports at least one week prior to future meetings to allow members time to read them and cut down reporting time in meetings
4. Invite BOPRC staff to report on what they're doing to add context do the debate
5. Initiate a regular email update to Land TAG members between scheduled meetings to inform on relevant operational issues and seek feedback where necessary
6. Put feedback from Incentives Board on the standing agenda
7. Report to BOPRC and RTALSG (9 Sep 2016) on Land TAG advice and discussions
8. Involve specific Land TAG members in discussions of appropriate issues with planning staff, landowners and community groups to extend advice and context of TAG advice
9. Invite Water TAG member, RLC and TALT to join Land TAG; suggest exchange of members

Action 3 – Neels: liaise with BOPRC Advice & Support team on understanding their work and developing an engagement / farmer behaviour agenda item for the next Land TAG

Action 4 – Simon: circulate a template for Land TAG members to highlight key national science research work relevant to BOPRC's science priorities

Item 3: Land TAG and BOPRC's Freshwater Futures Programme (Ian Morton)

Ian spoke to his precirculated paper. Some key points on the Freshwater Futures (FF) work:

- We have increased pressure on land and water resources: increased water demand, land use intensification and urban growth. We have good land management practices in some areas but we need to improve them in many situations
- Although there is some degradation of water quality in the Kaituna and Rangitaiki catchments, in general it is stable or improving across the region
- Interest in Treaty settlements is progressing – bigger iwi players have changing wants/needs as far as rivers and lakes are concerned
- There are timeframes to meet from a NPS-FM perspective with nine water management areas (WMAs) agreed. The WMA boundaries are a combination of geology, hydrology, treaty boundaries and water quality/quantity issues, with some across multiple catchments.
- Water use varies between catchments and with different irrigation schemes. The current FF focus is on Kaituna and Rangitaiki, will be moving into new areas later (Tarawera, Whakatane etc)
- FF community engagement underway; community group membership confirmed with one councillor on each group
- Over last two years we received additional science resources. Progress has been made on periphyton, water quality of specific tributaries and Kaituna fish studies to fill gaps
- Every region is doing NPS-FM processes differently. Some only do biophysical attributes; others have many considerations/frameworks. Council is concerned with the size/complexity of the task
- There are several community groups for the Kaituna WMA. The formal co-governance group only has authority over the Kaituna itself, other groups are related to Pongakawa etc
- Community group meetings have gone well so far. Identified values include connections to water bodies (relationship and history), specific kai species and recreation
- Capacity to assimilate urban storm water is seen as a 'value' and a 'use'
- Farmers, forestry, power generators are key industry stakeholders included via the regional advisory panel rather than the community groups, to avoid well-funded industry reps taking over the community groups. The next step is to get a wider engagement plan.
- We want Land TAG feedback on:
    - Determining key issues and limit setting processes
    - Identifying attributes and mapping these to values – are they right / are any missing?
    - Modelling strategy, direction and scenario parameters – what the future may look like? [The Chairman noted that the questions need to be defined before we can go to scenarios]
    - Baseline economic analysis and social/cultural analysis - what works/doesn't work?

    - Draft objectives and policies
- We're still working out the questions but we can make decisions based on what other councils have experienced and our own experiences?
- How do we measure 'swimability' e.g. summer, lower reaches, exclude periods after storms?
- Copper levels are related to kiwifruit industry - more a soil quality issue than water

Action 5 – Ian: circulate a spreadsheet identifying specific areas of the Freshwater Futures programme where Land TAG could help

Item 6: Land TAG advice on economic modelling (Suzie Greenhalgh)

- In terms of economic modelling getting started earlier, as the science team puts together their info they need to be cognizant of economic modelling needs. They need to know what they need to know and what they need to collect, especially complex vs non-complex
- Some key points:
    - Scale is important - it's a progression. Make sure the models are all talking to one another or there's a consistent story from farm scale level to catchment level to regional level
    - There needs to be a good land use model/layers beforehand.
    - Typical model components are representative farms and mitigation options so you can assess differences e.g. from the uptake of better management practices
- Council should work out their inventory of data needs with advisors so they'll be ready when they need to use them. Land TAG can assist here but will need more horticultural input
- Consider how the biophysical model will link with the economic model – an awareness from the council that they need to know what the outputs of one are vs the inputs of the other
- Consider categories within drystock farming and property size distribution – the latter was addressed very late in the Lake Rotorua policy process
- We now have a better idea of the uptake of different management practices, what farmers are actually doing across the land blocks
- Your regional advisory group will start putting pressure on you for information
- Other councils are going through the process also – do we need to know what they're doing?
- This is all pre-policy. At some point you move to implementation. So what else would it make sense to collect that will help on the implementation side?
- Useful agent based models exist but don't give all the social attributes you want - not everything can be modelled. If you don't have models, what is your group comfortable with?

Land TAG members agreed with the February modelling notes with minor changes, as per Action below

Action 6 – Andy: edit and recirculate Land TAG's Feb 2016 comments on economic modelling for members to comment / endorse (see boxed text below)

NB: the boxed text below has been amended since our 26 May 2016 meeting to add the NPS-FM context, use more specific language and re-order the points.

Land TAG members are to email Andy Bruere if they support the following statement:

Land TAG advises BOPRC that, in regard to catchment economic modelling to help implement the National Policy Statement on Freshwater Management:

1. The time and effort devoted to economic research and modelling is usually much less than that devoted to science research, and often at a late stage in the process i.e. BOPRC needs to start work on economic modelling early in the NPS-FM process.
2. Get input data buy-in from stakeholders to minimise subsequent disputes.
3. Economic reports need to be simplified for non-experts to understand them.
4. Create a library of alternative land uses for landowners.

Item 5: Reducing Lake Rotorua Catchment phosphorus load by 10 – 15 tonnes

5A: Context – "Anthropogenic P Load" report (Grant Tempero, University of Waikato)

Grant joined the meeting by video and spoke to his co-authored report

Discussion points:

- Is particulate P in sediment inputs more of a problem than previously thought?
    - Possibly, since when it gets into the lake it adds to the internal loading of the lake under stratification conditions where it becomes dissolved p and fuels cyanobacterial blooms
- To achieve targeted reductions of 10-15 t P from agricultural management changes, you'd have to take 50-80% of the particulate P out. Is that reasonable?
    - It'd be more like somewhere between 50-60% i.e. challenging
- Is there anything that forestry or agriculture can do about that?
    - The local volcanic geology means groundwater is naturally high in P. There is little dissolved P from fertilisers so we need to focus on particulate P loss from agriculture and forestry
- Has sediment fingerprinting to ID particulate P sources (stream bank, bed or paddock) progressed?
    - No update at this stage, but it remains an investigate option

5B: Forestry P loss, OVERSEER estimates & research (Alastair MacCormick)

- Forestry is considered a good mitigation for N and P loss but consider implications if we're wrong
- Note that OVERSEER predicts P loss from block, to boundary of second order stream
- Some OVERSEER experts advise its basis for N and P losses were canvassed in the Lake Taupō variation evidence but this isn't available

- 1986 Cooper and Thomsen study shows forestry N and P loss data similar to what's in OVERSEER but this study doesn't appear to take harvest into account, based on timing of tree planting.
- It isn't clear that we should only look at long term averages, considering that forestry can cover a very large catchment area and episodic harvesting can impact water quality

Discussion Points

- Forest harvest practices have improved since 1986, possibly lowering P loss risk.
- Do the forestry operations in the catchment all harvest at the same time? Harvesting activity may peak in response to high log prices even in a mixed age forest.
- Need to clarify which lakes are P limited, and what proportion of forest is in the catchment?
- Lake Rotokakahi TLI spiked after forest harvest i.e. it seems like forestry does have an impact
- 1986 forestry study used median P loss instead of mean
- There are risks with a single focus on nitrogen and less emphasis on other factors such as P

5C: SFF 'P-Project' proposal (John Paterson)

John outlined the recently approved phosphorus mitigation SFF project (story here)

Key points:

- The SFF project builds on past work on detainment bund performance
- All pastoral sectors are involved with co-funding plus BOPRC and Ecan
- Industries have adopted environment management systems (EMS) and detainment bunds can fit within an EMS approach and industry farm plan templates.
- Farmers don't like the auditing component of EMS but it project farmers will have plans and checklists of mitigations to help keep them on the ball
- Some reports refer to stormwater P as minor but it can be significant in major runoff events – in Rotorua we often have up to five major storm event per year
- A science advisory panel has been appointed and is reviewing sample and measuring methods
- Some storms greatly exceed what bunds can capture despite high storage ratios
- New project will try to change from proof of concept to being sufficient for reporting performance
- Low earth bunds are built across the best paddocks on the farm so they can only tolerate about three days of ponding – after that, the paddock is drained and a lot of the silt will settle
- How farmers look after paddocks before and immediately after storms is really important
- Past work had three bunds in one catchment; new work covers three separate catchments, aiming to have a bund on dedicated deer farm; limited to six in total due to cost of sampling equipment
- Considering alum dosing close to P source (c.f. in streams) but risks with grazed pastures
- Testing to see if detainment bunds tackle E. coli
- This is a farmer initiated project, not regional council driven
- Produce report on likely suitability of this form of mitigation in other regions
- Bunds cost $1,000 – $20,000 depending on the amount of work involved and the size

5D: P mitigation tools (David Houlbrooke)

David covered a range of P mitigation options, drawing on AgR colleagues like Richard McDowell

- Generally, P loss from soil > dung P > fert P
- P fert loss is about timing, with losses higher from May – October
- Effluent P is very important on dairy farms
- Higher Olsen P improves production until you get to a critical point where P loss risk goes up considerably with very limited production gain. The production Vs P loss risk varies for different soil types, with steeper curves for soils with a lower P absorbance capacity
- ***Question***: if a farmer does a soil test, is Olsen P easy for them to understand?
    - Yes, it's something that farmers have to know about particularly in high production farming, so they are familiar with it and it's regularly reported on
- There are differences between agronomic optimum and economic optimum Olsen P.
- Sources: Urine is N, effluent is both, fertiliser is mainly P
- When comparing P and N sources, P is mainly surface flow rather than groundwater related
- Depending which contaminant you're looking at, you need to look at differences between land uses e.g. sheep vs deer vs beef
- You want mitigations with high contaminant reduction for the lowest cost. Sediment traps are at the bottom of the [Rich McDowell] list in terms of cost vs TP effect, however John hopes that this will change as the SFF work progresses
- Alum to pasture is on the list in Rich's report but there are risks with animal grazing and it may not work in a rotational grazing system
- BMP Tier 1 – Low hanging fruit – things are easy to change, rather than requiring wide spread changes, looking for high cost effectiveness (as opposed to low cost)
- BMP Tier 2 – require major changes on the farm and may not be practical to implement

Discussion points:

- ***Question*** – how does the farmer sit down and work out what they're actually going to do?
    - It really needs to be tailored to the specific farm system, soil types etc
    - Consultants used to be all about production but the focus is changing to include environmental impacts as well – they need to be able to look at the fuller picture
    - Fodder crop comparison between two Southland catchments side by side: control and strategic grazing with critical source areas grazed last - this showed good P loss reduction. We are not sure if this was a difficult grazing regime for the farmer to manage
- Farm management around strategies like this are important – people doing the actual work need to understand why, and actually do it

5E: Land TAG recommendations on reducing Lake Rotorua catchment P load (Andy Bruere)

Andy led discussion - key points raised:

- What valid methods do we have to estimate P loss? MitAgator is delayed and even that is based partly on OVERSEER.
- There is criticism of the OVERSEER P sub-model but that can relate to the quality of input data
- Forestry – is it a good/bad land use in terms of P? Is it nutrient peaks or long term of most concern?

    - The key is understanding how to manage it and how it relates to pastoral uses over the full forest cycle, including harvesting
- What mitigations reduce both N and P and are we quantifying those?
    - Yes but we need to check if they fit what people are actually doing.
    - Some mitigations are weighted to one or the other contaminant
    - If a farmer plans feed properly, they'll reduce both N and P losses. We often jump straight to mitigation options without considering this i.e. stocking rate and feed budget is critical
- Hierarchy of P reduction techniques - see info from Dave Houlbrooke and Rich McDowell
- Cost effectiveness covered at a generic level, but can vary a lot between farms and regions
- For special or new practices – value/cost/effort is key
    - e.g. grazing patterns to maintain grass cover in lower sections of paddock until last grazing
- Sources – target? High/low
    - E.g. effluent has more P than N in it so it's not even; Identify CSAs
- Consider how to apply learnings via farmers and specialist advisors.
- It is often complicated for a farmer to actually work out what they're trying to do and they have to become a specialist or bring a specialist in. What happens after that? This is why auditing is important to make sure that something actually happens
- Need to reduce the variety of messages out there – needs to be simplified and coherent
- Holistic environmental management plans are important
- Farmer catchment groups enable farmers to compare notes and support each other

Action 7 - Simon and Andy: summarise P mitigation comments into a statement for Land TAG to review

Item 7: Rotorua Lakes project updates

Initial data on farm N reductions needed in Lake Rotorua Catchment (Rosemary Cross)

- As of last week we had 31 'current state' files submitted
- The dairy current state data shows some large reductions to pNDAs needed by 2032
- Most drystock reductions modest except for one outlier drystock farm with a lot of cropping
- Drystock below 40 ha face few reductions but it's a very small dataset so far
- Question – how hard is it to get from 95 to 65 kgN/ha on dairy farms?
- Dave Clarke: DairyNZ's Scott Farm work shows those N savings with little effect on profit
- Suggestion for next Land TAG – present 4-5 years of results from Scott Farm study
- Dave Houlbrooke noted that a full calibration of OVERSEER is coming up over the next year

Action 8 - Dave Clarke: present Scott Farm research profit effects of reducing environmental footprint

High rainfall Overseer calibration trials (Andy Bruere)

- Two field trials underway (podzol and pumice) with support from DairyNZ and AgResearch
- Keen interest from OVERSEER management who expect the results will be useful for calibration
- Dave H advised that staff found signs of runoff at the podzol site and possibly a high water table. This could impact site suitability and will be monitored so leachate is sampled, not groundwater

Low N Land Use Fund (Andy Bruere on behalf of Anna Grayling)

- The first round is underway; BORPC called for expressions of interest and 27 were submitted. Anna reviewed each submission against criteria and all 27 invited to submit a full proposal by June 30
- An assessment panel with 3 Land TAG members will assess the full applications

Rotorua soils info, scope for improving S-map including soil drainage (Alastair McCormick)

- The context is Rotorua N allocations are based on OVERSEER v6.2.0, including S-map soil drainage parameters. Changing those could change relative allocation
- Staff visited Landcare and canvassed S-map data reliability, its legacy information (which has gone through different classifications) and map 'line work' (S-map Vs LiDAR suggests anomalies)
- The question is do we improve S-map in this catchment or are there other priorities – there are multiple opinions on that. Landcare Research work presented in February 2016 comparing S-map with detailed auger surveys found relatively minor differences in soil drainage factors

Rotorua proposed rules: land science / economics submission points (Rebecca Burton)

Rebecca noted that 91 submissions were received on the proposed nutrient rules for the Lake Rotorua catchment. These are being summarised and will be published in July, followed by a period for further submissions. Hearings are scheduled for November.

Submission themes included:

- TLI 4.2, consistency with the NPS-FM, including its community engagement method
- Alum dosing, nutrient loss hotspots, sub-catchment approaches and more P emphasis
- Engagement, including with small land owners
- Adequacy of the economic analysis, science reviews and their timing
- Attenuation, OVERSEER, versions, soils data and the reference file method
- Alternative N allocation approaches, rules activity status, trading and the role of NMPs

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Item 8: Landowner engagement prior to notifying Lake Rotorua rules (Simon Park)

- A long history of landholder engagement, most beyond minimum RMA requirements
- The rule framework changed through the engagement process with some farmer gains e.g. the Integrated Framework (sharing N reduction) and science review
- However, many don't see it this way, including not accepting the science. Part of that is because the alum dosing was so successful - some now think that it's all we need to do to fix the problem
- StAG was relatively late in the piece given 4.2 TLI and 435 tN lake target already set in plan, RPS
- The public views policy evolution differently from council – evolution can be appear indecisive
- Some don't trust OVERSEER given N loss changes between versions and lack of local calibration
- Several lessons on engagement were noted (see presentation)

Discussion:

- Awareness vs acceptance - there's a huge effort going into awareness, but many farmers don't seem aware of what's about to hit them
- There's a difference between making information available, and actually telling someone
- Collaboration has been restricted around N when it should have been wider than that
- Question: was there effort to engage with the broader community outside of farmers?
- Yes, via billboards, articles, radio ads but the wider community wasn't particularly engaged
- It is partly about time vs money, other councils/countries face similar issues
- Councils and industry can do better on engagement. Consultation is not just telling people what you're going to do, it's also about hearing what people think about it
- Need to be aware of groups not represented in meetings – who isn't turning up?
- The very long time policy development period contributes to an impression of nothing progressing or to people feeling that they've missed something

Other Business

1. Suzie Greenhalgh has a PhD student coming from the University of Vermont, who is doing comparisons between lakes Taupō and Rotorua in NZ, and Lake Champlain in USA. Suzie will be emailing people and asking them to talk to the student
2. Next meeting will be 9am – 4pm in two sessions
    a. Some of the presentations were too long and could have been much shorter. It's preferable to have a shorter presentation with more time for discussion and questions
    b. The next meeting originally 18th Aug but due to clashes 16th August preferred

Action 9 – Andy: invite Mike Scarsbrook to participate in Land TAG as an observer

NP: The next meeting has been rescheduled for 16th August 2016