

IN THE MATTER OF the Resource Management Act 1991

AND

IN THE MATTER OF 24 applications by the Aupouri
Aquifer Water User group to the Northland regional Council
to take groundwater from the deep shell bed aquifer of the
Aupouri Peninsula (REQ.596300).

Background Notes and

**Joint Witness Statement
(relating to hydrogeology, freshwater & ecology)
from Expert Conferencing
held on 27 November 2020.**

Attendance: Conferencing occurred as set out below.

Name	Party	Attendance: 27 November 2020.
Marlene Oliver	Independent Facilitator	In-person, Whangarei (10am – 4pm)
Jon Williamson	Applicants	In-person, Whangarei (10am – 4pm)
Katrina Hansen	NRC	In-person, Whangarei (10am – 3pm)
Dr Dave West	DOC	In-person, Whangarei (10am – 4pm)
Brydon Hughes	NRC	Online from 2pm – 3.30pm
James Blyth	DOC	Online from 2pm – 3.15pm
Dr Tom Drinan	DOC	Online from 2pm – 3.15pm

1. This document was drafted by Marlene Oliver after the close of conferencing and circulated to all participants for finalising and signing. Some of the experts clarified their positions during this post-conferencing process. Marlene used emails (copied to her by the experts) to amend the JWS to reflect the experts' stated positions. The Final version was circulated on 11 December 2020.
2. To assist the Hearing Commissioners this document is in 2 parts:
 - a. Background Notes explaining the case management process followed; and
 - b. JWS relating to technical matters of hydrogeology, freshwater science and ecology.
3. **Background Notes from Marlene Oliver as Facilitator:**
4. After being appointed as Facilitator, Marlene Oliver asked the Parties to nominate lead people to liaise with her in relation to case management/process matters for further expert conferencing. The nominated people were: Martell Letica (for Applicants); Stephanie Kane (for NRC); and Tom Christie and Sarah Ongley (for DOC).
Two case management/process meetings were held online on 17 & 23 November 2020.

5. It was agreed (in the meeting on 17 November) that the following process would give effect to the Hearing Commissioners' Minutes:
 - a. The **first matter** to be addressed is for the Parties to get **an agreed list (schedule) of tasks** making up what the Hearing Commissioners refer to as "the wider task list".
 - b. Secondly, this list of tasks is to be accompanied by a timeline.
 - c. Thirdly, Parties to identify whether all or some of the work (in the list) could be completed as part of an adaptive management set of conditions (if granted), or alternatively, could be completed within a reasonable time period and the results confirmed before final decisions are made on the applications.

 6. Draft Task List.

For Item 5(a) above it was agreed that a "Without Prejudice" draft list of Tasks would be prepared. This was on a without prejudice basis because the Parties had not agreed that all tasks/sub-tasks should be included and/or actioned.

Martell Letica prepared a spreadsheet of the Tasks. This was discussed at the 23 November case management meeting.

A copy of that Task spreadsheet was circulated to all technical experts prior to 27 November 2020. (A copy is circulated with this document.)

 7. Sarah Ongley (Counsel for DOC) advised (by email dated 20/11/20) that DOC does not need to discuss further Tasks 2, 3, 4, 5, 7, & 8.

In the Minutes for the 23 November case management meeting Tom Christie further clarified that DOC's technical team had advised that they believe the models presented for Tasks 2 & 3 are reliable and understand that these tasks do not need further technical discussions. If technical discussions were considered necessary by the applicant or NRC they (DOC) are open to having them. Tasks 5, 7 & 8 do not require technical discussion.

A copy of the Minutes of the 23 November 2020 case management meeting were circulated to the experts as part of the draft agenda prior to 27 November 2020.

 8. In the Task List spreadsheet, these tasks relate to:
 - Task 2 – General Head Boundary;
 - Task 3 – Basement Topography;
 - Task 4 – Material Compressibility for Subsidence;
 - Task 5 – Drawdown at FNDC bore;
 - Task 7 – Further Consultation with Wairoa Marae; and
 - Task 8 – Valic and Waterview water requirements.

 9. Therefore the expert conferencing on 27 November 2020 was to be focussed on **Tasks 1, 6 & 9(parts (d), (e) & (f))**:
 - Task 1 – Surface water MALF effects;
 - Task 6 – Potential Wetlands Risk Analysis; and
 - Task 9 – Consent conditions and GMCPs.
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10. **Joint Witness Statement from 27 November 2020.**

11. Agenda setting - The conferencing session commenced with the in-person group finalising the agenda and order of topics.

Agreed by Jon Williamson, Dave West & Katrina Hansen:

The agenda and order for discussion would be Task 6 (Wetlands); Task 9(f) (Threatened species); Task 1 (Surface water MALF effects); and Task 9(d) & 9(e) (Additional DOC requests).

The other experts (Brydon Hughes, James Blyth & Tom Drinan) were primarily involved in Tasks 1 & 9(d) & 9(e) and would be brought into the conferencing via online at 2pm.

12. Jon Williamson confirmed that in his view the technical content of the other Tasks (being 2, 3, 4, 5, 7 & 8) was addressed in his Supplementary Evidence dated 28 September 2020 and that none of the experts or Parties had raised any matters with him in relation to that statement.

13. **Task 6 – Potential Wetlands Risk Analysis**

14. Experts involved on 27 November 2020 were: Jon Williamson, Katrina Hansen and Dave West. Brydon Hughes was briefed and involved via online discussion from 3.15 – 3.30pm.

15. This Task had been the subject of previous discussions between the experts, particularly on 5 October 2020. The draft notes from that session (prepared by Brydon Hughes) had been circulated but had not been agreed to and signed by all participants.

16. **Agreed** by Dave West, Katrina Hansen & Jon Williamson – that the notes from the 5 October 2020 session were relevant as they recorded the process outlined, being steps numbered 1 – 4 and it was **agreed** to include those notes here as part of this JWS:

“6 October 2020.

Aupouri Aquifer Water User Group (AAWUG) Expert Conferencing

Item 5 on the Direction issued by Commissioners for the Aupouri Aquifer Water User Group (AAWUG) resource consent application on 16th September 2020 required that:

“The hydrologists for the applicant, NRC and DoC, together with DoC’s ecologist, and, as necessary the Applicant’s and NRC’s ecologists, are to confer with the intention of developing an agreed plan to address the wetland issue”.

A video conference between the respective parties was held on 22 September 2020. Items agreed at the meeting included a set of tasks to enable to identification of unmapped wetland areas that could potentially be affected by the proposed AAWUG groundwater abstraction. A further video conference was held on 5 October 2020 to review results of the initial assessment and agree a plan to facilitate inclusion of wetland monitoring in consent conditions and/or the Groundwater Contingency and Monitoring Plan (GCMP) for the AAWUG application. Participants in the meeting included:

- Brydon Hughes - NRC Consultant Hydrogeologist
- Katrina Hansen - Biodiversity Advisor, Northland Regional Council
- Jon Williamson - Hydrogeologist for the Applicant
- Dr Dave West - Ecologist for the Department of Conservation
- James Blyth - Hydrologist for the Department of Conservation.

The meeting commenced with Mr Williamson providing an overview of the unmapped wetland risk assessment circulated on 28th September 2020 and the oblique aerial image analysis circulated on 29th September 2020.

The experts agreed that the analysis presented by Mr Williamson provides a good basis for identifying and characterising unmapped wetland areas that have some potential to be affected by the proposed abstraction. However, it was also agreed that determining the type, nature and condition of wetlands present in the higher risk areas identifies requires further assessment to determine the potential value, scope and nature of monitoring at individual locations identified. To facilitate this process the experts agreed on the following steps:

1. GIS coverages of relevant information layers will be added to the existing NRC online map viewer showing the wetness gradient maps. Layers utilised by WWLA for the wetland risk analysis will be provided to NRC including:
 - Combined mapped wetland extends (LCDB5, FENZ, LUCAS) and associated metadata
 - Depth to groundwater
 - Unmapped wetland areas identified by the WWLA analysis
 - Area of interest test area, with drawdown metadata for each area
 2. A draft summary table will be circulated by Brydon Hughes identifying and describing potential wetland areas suitable for monitoring based on these identified by the WWLA analysis. The table will include relevant textural information (modelled drawdown due to pumping, proximity to existing/proposed abstraction, location of features with respect to existing/proposed groundwater monitoring) in addition to ecological information added through Step 3 below.
 3. Dave West and Katrina Hansen will utilise the combined GIS coverages to add details of wetland type and condition, along with comments on the potential value of monitoring and a suggested methodology for investigation/monitoring for individual wetland areas identified to the summary table. A unique identifier will be added to the WWLA wetland risk coverage to enable cross-referencing with the summary table.
 4. The compiled summary table will be circulated to all parties for comment on Friday 9th October 2020.”
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17. Dave West and Katrina Hansen suggested that the first sentence in step 3 above should be amended to read: “Dave West and Katrina Hansen will use the combined GIS coverages to add any existing details of mapped wetland type, significance and condition. ...”

Jon Williamson outlined the process and work carried out to date relating to Steps 1 & 2. He advised that Step 3 (to be carried out by Dave West and Katrina Hansen) had not been completed.

Dave West & Katrina Hansen advised that they had prepared materials and suggested that Step 3 could be completed as part of the expert conferencing.

18. **Agreed by** Dave West, Katrina Hansen and Jon Williamson:

Potential wetland areas that should be subject to further analysis and monitoring as part of any consents, as shown by circles on a map prepared by WWLA titled ‘Land Cover and Wetland risk – Excluding High Producing Grassland’, are :

- (i) Retain areas – D, E, G, H, J, K M, N and O;
- (ii) Add 2 new areas – P (located west of J) and Q (located south west of F); and
- (iii) Delete areas – A, B, C, F, I and L.

19. **Agreed by** Dave West, Katrina Hansen and Jon Williamson:

The next stage includes a 2-step process (Steps A & B) in relation to the agreed list of potential wetland areas (listed in paras 18 (i) & (ii) above).

Differences in the experts’ positions on the details of these steps are shown below:

Step A: To Refine wetland maps

[Jon Williamson’s position] Jon Williamson to provide refined-level site maps for each of the areas showing the extent of unmapped potential wetland areas.

[Dave West’s position] Jon Williamson to provide refined-level site maps for each of the areas adding the potential extent of unmapped wetland area and connected surface water streams/drains, springs and lakes.

[Katrina Hansen’s position] Is consistent with Brydon Hughes’ position (see para 20 below).

[Agreed text as follows:] Jon expects to be able to provide this material to Dave West and Katrina Hansen on Monday 30 November 2020. (Changes shown underlined/cross-through.)
Dave West and Katrina Hansen to review this material beginning on Tuesday 8 December (noting that Katrina is not available between 30 November and 7 December). Any questions/suggested amendments are to be discussed with Jon Williamson as soon as possible.

The set of maps to be agreed by midday on Friday 11 December 2020.

Step A should be completed before the Commissioners make their decision so that the areas can be identified in any proposed GCMP conditions as follows (or similar wording).

[Experts’ Explanations in relation to the differences in the wording of Step A:

Jon Williamson – There was no discussion of adding these elements to the maps or anything other than that provided in the maps on 30/11/12.

Dave West – This reflects his recollection of what he said in the discussions at expert conferencing on 27th and it is also a strong tenant of DOC’s evidence at the hearing.

Katrina Hansen – The focus is on areas defined as potential wetlands and this is consistent with the proposed GMCP which refers to the Wetland Condition Index (WCI) methodology (Clarkson et al., 2004) for change in hydrological integrity, which includes water inflows and outflows.]

Step B:

[Jon Williamson’s subtitle] Step B: Proposed additional condition to be included in the GMCP that provides for an exercise in ground-truthing of the potential wetlands (or similar wording to be discussed by the planning experts)

[Dave West’s subtitle] Step B: Ground-truthing of Potential Wetlands

[Agreed text as follows:] For all of the listed potential wetland areas, a report is to be prepared by suitably qualified, independent expert(s) to ground-truth the extent of the wetland area(s) and to carry out an ecological survey describing the existing flora and fauna. The report is to assess the importance of each wetland and the level of risk.

[Jon Williamson’s position] Areas identified as being of high risk, with due consideration of the ecological value as well as the hydrological risks from the applicants’ proposed activities, are to be recommended for inclusion in ongoing monitoring programmes in accordance with the new conditions/criteria in the GMCP (being GMCP clauses XX (relevant clauses to be identified by planners)).

The report is to be submitted to the Council and the Council is to confirm and certify the wetland areas that are to be monitored in accordance with the GMCP.

[Dave West’s position] Areas identified as being of high risk, with due consideration of the ecological value as well as the hydrological risks from the applicants’ proposed activities, are to be recommended for inclusion in ongoing monitoring programmes. The report is to be submitted to the Council and the Council is to confirm and certify the wetland areas that are to be monitored

[Katrina Hansen’s position] Step B is to require ground-truthing of potential wetlands and subsequent monitoring as part of the GMCP, taking into account ecological values and hydrological risks.

[Experts’ Explanations in relation to the differences in the wording of Step B:

Jon Williamson – The ground-truthing of any wetlands and any subsequent monitoring (if shortlisted and agreed that the wetland may be important enough to warrant it) was to be part of the GMCP and not to be completed prior to the Commissioners’ decision

Dave West - He agrees that the ground-truthing could be a part of the GMCP as an adaptive management type clause but he does not think it is appropriate for the technical experts to specify what part of the consenting framework the work should be undertaken in.

Katrina Hansen – Considers that the ground-truthing and monitoring should be included in the GMCP.]

20. Brydon Hughes was briefed online on 27 November 2020 about the discussions on Task 6 and he agreed with the process and actions as described to him.

In response to the differences between the experts, as subsequently described above, Brydon Hughes observed that his understanding was that the steps in paragraphs 18 & 19 (above) were restricted to areas defined as wetlands, rather than to surface water bodies that may be hydraulically connected to wetlands that are addressed via other areas of expert conferencing. Mr Hughes also observed that, subject to appropriate wording being developed, he considers monitoring of wetland areas identified through paragraphs 18 & 19 could be appropriately

managed via a GMCP and noted such a process was utilised to establish monitoring of the Kaimaumu Wetland in the recent MWWUG GMCP.

21. Task 9(f) – DOC’s reference to Threatened Species.

22. Jon Williamson expressed his view that if there were no hydrological impacts arising from the proposed activities, then there would be no adverse effects on Threatened Species. Further Jon asked for clarification about which species were considered relevant.

23. Agreed by Dave West and Jon Williamson that:

(i) Dave West would review any records DOC had of threatened species covered by NZCPS Policy 11/NPSFM 2020 to identify species and locations of interest.

Dave to circulate his report and locations of threatened species by **5pm Wednesday 2 December 2020** to Jon Williamson and NRC representative (it was acknowledged that Katrina might not be available and so another person in NRC would be sought. In this regard Lisa Forester was suggested by Dave. Dave to liaise with NRC on this matter. Katrina was not present for this part of the expert conference on 27 November 2020.)

(ii) Dave West, Jon Williamson and any NRC representative to then discuss this report and any hydrological effects that could be relevant and to discuss whether there was any issue relating to Threatened Species that should be addressed further.

Dave West agreed to report back on the outcomes of this process, confirming the positions of each expert by 1pm Friday 4th December 2020. To be circulated to these experts and copied to Marlene Oliver.

24. Task 1 – Surface Water and MALF

25. Jon Williamson advised that applying NRC Policy H5 to the data indicated that the assessed level of connectivity between groundwater and surface water was less than threshold level used to require further assessment of impacts on surface water(s). The data was included in a Table in his Supplementary Evidence dated 28 September 2020. Therefore in his view the low levels of connectivity meant that further analysis of the effects on surface water was not required as part of the evaluation and decision-making for these applications. This meant that sub-tasks requested by DOC (1(d) & 1(e)) were not required.

In Jon’s view this was consistent with other the approach of other Councils.

26. Brydon Hughes confirmed that this was his experience with other Councils. He acknowledged that the thresholds might be arbitrary but he concurred with Jon’s view that in this case it meant that the evaluation was to be only in terms of groundwater effects.

27. Tom Drinan and Dave West expressed concern that there could be adverse effects on surface water quantity and ecological effects regardless of the Policy. Tom Drinan noted that surface water depletion (due to groundwater abstraction) could lead to a reduction in stream/river

flows below their default minimum flows set for this river FMU (Coastal river minimum flow = 90% of 7-day MALF (Policy H.4.1), irrespective of these proposed groundwater takes being classified as 'Other' in terms of hydraulic connectivity (Policy H.5). Tom Drinan further noted, as part of his recent involvement with the Proposed Regional Plan for Northland, that streamflow/water level (for lakes) reductions below these default minimum limits increases the risk of adverse ecological effects on these surface water ecosystems.

Dave West agrees with Tom Drinan's position.

28. Jon Williamson responded (to the 2nd sentence in para 27 above) that surface waters naturally recede below their default minimum flow statistic, regardless of whether there is any groundwater abstraction or not. The Policy (H.5) (and others like it this throughout the country) are aimed at establishing the likely degree of additional effect on the natural flow regime due to groundwater abstraction. The "Other" category reflects that groundwater abstraction has negligible additional impact on the natural flow regime. Hence he disagreed on the relevance of Tom Drinan's comment in light of the Policy provision and others like it throughout NZ. Jon Williamson advised that he considered that adequate monitoring was proposed in the applications and the proposed GCMP conditions to safeguard against surface water depletion effects from the applicants' proposed activities, including the shallow aquifer monitoring and also the wetland monitoring (Task 6).

29. Tom Drinan indicated that he had only recently become involved in these applications, and that he was not familiar with the proposed monitoring and GMCP.

30. **Agreed by** Jon Williamson, Brydon Hughes, Tom Drinan and Dave West to schedule an online discussion of these 4 people on Tuesday 1st December 2020 at 10am. To assist that discussion: Brydon would ask Stephanie Kane to pre-circulate the latest version of the proposed GCMP; and Jon would pre-circulate the map of the identified wetland areas. **Tom Drinan agreed to report on the discussion and outcomes by 5pm Tuesday 1st December 2020. To be circulated to the 4 participants and copied to Marlene Oliver.**

31. Tasks 9(d) & (e). DOC's requests for additional modelling and sampling.

32. Jon Williamson advised that he did not see what such additional modelling requested under 9(d) would contribute and he did not see how it would be relevant to deciding these applications or setting any conditions. Jon considered that appropriate monitoring was already proposed. Jon Williamson's view was somewhat similar on the DOC request in sub-task 9(e) – he couldn't see that it would prove anything.

Brydon Hughes commented that additional sampling would not necessarily assist the Hearing Commissioners.

33. James Blyth commented (on task 9d) that while further modelling would be useful, there are limitations to some of the data available and inputs to the modelling, and that refinement of the modelling at this point in time may not resolve some of the modelling uncertainty (for example, that groundwater contributions in localised areas may be present but are not accounted for). Further data collection and refinement in the future would help improve the model.

34. James' thoughts on task 9(e) was that while a number of radon sampling rounds have been conducted to date, this has not been across areas the Department had wanted to be surveyed, primarily the large areas of standing water to the East of monitoring wells KM3 and KM4, and north east of Wetland North monitoring well. Most samples were collected from drains. If localised groundwater upwellings were occurring in hard to access areas, the rapid degassing of radon may mean the groundwater signature is undetectable by the time this water reaches the drains. Further grid-based sampling would help resolve this concern.
35. **James Blyth agreed that DOC's team would review these requests and report back on the outcome by 5pm Tuesday 1 December 2020. To be circulated to DOC experts, Jon Williamson and Brydon Hughes, and copied to Marlene Oliver.**
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Signed:

Jon Williamson 14/12/2020 (Whole JWS (paras 10 - 35)).



Brydon Hughes (Paras 13 - 20; 24 – 35)



Katrina Hansen (Paras 10 – 20)



Dr Dave West (Whole JWS (Paras 10 – 35))



Dr Tom Drinan (Paras 24 – 30)



James Blyth (Paras 31 – 35)

Attachment: Task List spreadsheet (separate document).