

From: [Tony Jack](#)
To: [Natasha Pritchard](#); [Will Nicolson](#)
Subject: RE: Pioneer Energy Limited - audit of further information - RM18.004
Date: Monday, 13 September 2021 2:41:41 p.m.
Attachments: [image002.png](#)
[image003.png](#)
[image004.png](#)
[image005.jpg](#)
[image006.jpg](#)
[image007.png](#)
[image008.jpg](#)
[image009.jpg](#)
[image010.png](#)
[Onslow Average outflow.pdf](#)

Hi Natasha.

In the discussion relating to limitations of effective outflow from Lake Onslow at various depths the flow limits indicated refer to the effective maximum average outflow. In the example you reference the $3\text{m}^3/\text{s}$ is referring to the maximum average outflow over the 7 day period.

The consented maximum of $6\text{m}^3/\text{s}$ can be exercised at any time, provided that the maximum vertical change has not already been exceeded. But depending on the volume available at a given depth (with available volume being a function of the lake area and the 7 day limit) the average outflow over a given 7 day period is restricted. If a higher flow was to be exercised for a period of the 7 days then a reduced flow would be required for the remainder of the week so as not to exceed the maximum weekly drawdown limit.

Attached is a chart that may have been provided already. It shows the average outflow that would result in a drawdown of 200 and 400 mm/week.

Regards

Tony Jack

Development Engineer

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From: Natasha Pritchard <natasha.pritchard@orc.govt.nz>
Sent: Monday, 13 September 2021 1:11 PM
To: Will Nicolson <will@landpro.co.nz>
Cc: Tony Jack <tony.jack@pioneerenergy.co.nz>

Subject: RE: Pioneer Energy Limited - audit of further information - RM18.004

Hi Will,

Thank you for providing these and the summary below.

Hopefully, one final technical question that I hope you/Tony can provide some clarification on:

Question 8 in the further information clarification email dated 9 August states the following (my question in black and your response in green):

8. There is commentary in previous documentation that the discharge from Lake Onslow is restricted to a maximum of 3 cubic metres in summer. Can you direct me to the consent condition that imposes this restriction. I can only find the maximum restriction of 6 cubic metres in Condition 1 of 2001.476. **There is no such consent condition. We believe this was made in reference to operational capacity of the dam in relation to the consent limits – as can be seen in the 5th attachment, when the lake level drops below approx. 1 m below the dam crest, the existing drawdown limit of 200 mm/week limits the discharge rate to the river to around 3 m³/s – effectively half the consented discharge rate.**

The scenarios presented in the clarification email dated 9 September (Question 2) are based on a 6 m³/s discharge including a scenario at 2 m below and confirms there is absolutely no change in the maximum instantaneous drawdown rate as a result of the proposal and that the only difference between the current and proposed scenario is that the maximum discharge rate can be theoretically sustained for longer. My understanding from the above is that 6 m³/s could not practically be discharged at the current drawdown rate at lake levels below 1 m from the dam crest but that a change to the drawdown rate would enable more water to be discharged at lower lake levels than can occur currently.

I am looking to reconcile the two. I appreciate that I might be missing something here.

Are you able to confirm whether the change in drawdown rate proposed (from 0.2-0.4 m/week) has any effect on what is able to be practically discharged at different lake levels and how this occurs if there is no change to the instantaneous drawdown rate?

Thanks,
Natasha

From: Will Nicolson <will@landpro.co.nz>

Sent: Monday, 13 September 2021 11:44 a.m.

To: Natasha Pritchard <natasha.pritchard@orc.govt.nz>

Cc: Tony Jack <tony.jack@pioneerenergy.co.nz>

Subject: RE: Pioneer Energy Limited - audit of further information - RM18.004

Hi Natasha,

Please find the CIA attached. You'll see that it provides a good amount of context for mahika kai values in the lake and downstream river, and an assessment of the 2006 consents replacement proposal on these values.

In summary, there appear to have been no concerns raised by the CIA with regards to effects of that proposal (subsequent consents of which are still in effect and remain unchanged other than the drawdown amendment), with a focus more on the effects of introduction/movement of certain species (e.g. koaro and longfin eel) on roundhead galaxias and koura as mahika kai species, which is beyond the scope of day-to-day operation of the hydro scheme.

As a result of the CIA and subsequent consultation with iwi, proposed mitigation with regards to mahika kai and waahi tapu included (see attachment 2 – Letter P Mulvihill to KTKO & Attachment 3 – Iwi Meeting 5-8-05):

- Commission study of roundhead galaxias in the catchment (see attachment 4)
- Commission a study of the kōura population (not yet located but can probably be provided if necessary, however Ross has indicated previously no anticipated effects on this species due to the present proposal. Also likely to be somewhere in Council archives)
- Develop an accidental discovery protocol with regards to waahi taoka (not attached but believe it was implemented, and beyond the scope of the present application)

Regards,
Will

Will Nicolson

Scientist/Resource Management Planner



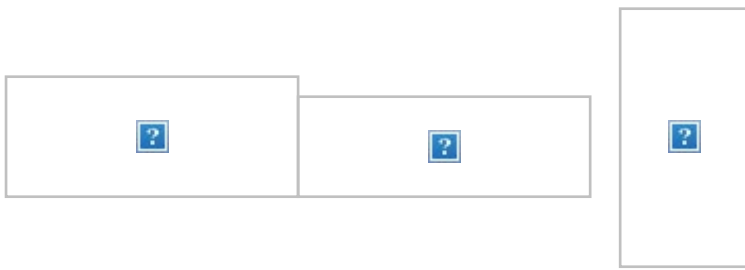
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From: Natasha Pritchard <natasha.pritchard@orc.govt.nz>
Sent: Monday, 13 September 2021 9:37 AM
To: Will Nicolson <will@landpro.co.nz>
Cc: Tony Jack <tony.jack@pioneerenergy.co.nz>
Subject: RE: Pioneer Energy Limited - audit of further information - RM18.004

Hi Will,

Thank you for attaching the s42A for the original application that reference the CIA.

Tony, if you have any luck tracking the CIA down that would be appreciated. I have also approached Aukaha and our records team to see if they can find a hard copy to scan in. Kay would like to sight this before completing her report.

Much appreciated,
Natasha

From: Will Nicolson <will@landpro.co.nz>
Sent: Friday, 10 September 2021 10:57 a.m.
To: Natasha Pritchard <natasha.pritchard@orc.govt.nz>
Cc: Tony Jack <tony.jack@pioneerenergy.co.nz>; Ross Dungey <ross.d.consult@gmail.com>
Subject: RE: Pioneer Energy Limited - audit of further information - RM18.004

Hi Natasha,

Thanks for the update. I don't have a copy of the CIA either, I was just referencing Section 6.6 of the s42A report (attached, in case you don't have that either). Tony – maybe you can help?

Cheers,
Will

From: Natasha Pritchard <natasha.pritchard@orc.govt.nz>
Sent: Friday, 10 September 2021 9:54 AM
To: Will Nicolson <will@landpro.co.nz>
Cc: Tony Jack <tony.jack@pioneerenergy.co.nz>; Ross Dungey <ross.d.consult@gmail.com>
Subject: FW: Pioneer Energy Limited - audit of further information - RM18.004

Kia ora Will,

Thank you for providing this further clarification on the proposal. We will take this into consideration when drafting the s95. I am planning to have the draft finalised early next week and then peer reviewed and legally reviewed. I am hopeful that a draft can be with you by the beginning of the following week.

Can you please provide a copy of the CIA prepared for the original consent application referenced in your responses below? I have not been able to find a copy on our document management system.

Much appreciated,
Natasha

From: Will Nicolson <will@landpro.co.nz>
Sent: Thursday, 9 September 2021 10:01 a.m.
To: Natasha Pritchard <natasha.pritchard@orc.govt.nz>
Subject: RE: Pioneer Energy Limited - audit of further information - RM18.004

Sorry, attachment referred to in our responses now provided!

Cheers,
Will

From: Will Nicolson
Sent: Thursday, 9 September 2021 9:59 AM
To: Natasha Pritchard <natasha.pritchard@orc.govt.nz>
Cc: Tony Jack <tony.jack@pioneerenergy.co.nz>; Ross Dungey <ross.d.consult@gmail.com>
Subject: RE: Pioneer Energy Limited - audit of further information - RM18.004

Hi Natasha,

We have provided responses to your further queries below in **green**.

Based on the information that has been provided for the application to date, there should be enough to move forward with what I assume will be a s95B limited notification decision. If possible, I would appreciate if you could proceed with the draft s95 recommendation for our review so that we can keep this application progressing.

Regards,
Will

Will Nicolson

Scientist/Resource Management Planner

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From: Natasha Pritchard <natasha.pritchard@orc.govt.nz>

Sent: Tuesday, 7 September 2021 11:53 AM

To: Will Nicolson <will@landpro.co.nz>

Cc: Tony Jack <tony.jack@pioneerenergy.co.nz>; Ross Dungey <ross.d.consult@gmail.com>

Subject: Pioneer Energy Limited - audit of further information - RM18.004

Kia ora Will,

Thank you for providing further information on recreational values and effects associated with the Pioneer variation application for Lake Onslow (RM18.004). As outlined in my last email, Council has had this audited by Dr Kay Booth. I have attached her updated audit report that includes consideration of the further information provided on 2 September. The report does identify a few outstanding gaps. The focus is on the key risk areas/adverse effects. Can you please provide further detail and/or clarify the below. The reasons and further detail for these additional requests are outlined in the audit report. Please let me know if you require further explanation.

Firstly, it would be helpful to clarify and confirm the change/s sought for this proposal; noting that the covering comments to the further information indicate that the maximum drawdown rate is not likely to exceed 0.3 mm/week. A worst case scenario is presented. Is this one that is sought to be consented so that the effects assessment is limited to this scenario? Council is required to assess the activity on the basis of the proposal in front of us; being the maximum rate of drawdown sought (0.4 m/week) and including the maximum rate this could be drawn down. Please advise if any changes/further amendments are sought to the proposal e.g. if the applicant is seeking to reduce the maximum drawdown rate from that currently proposed and/or

whether the proposal includes specific criteria that limits how the drawdown will occur (i.e. on an even basis over the period of a week). While it is unlikely that the full 0.4 m/week drawdown would be reached during normal operation of the dam/lake, when the lake is very low there is a possibility that the proposed 0.4 m/week limit *would* be reached. The applicant has already reduced the proposed drawdown rate from 0.5 m/week to 0.4 m/week, and does not propose to further reduce the rate sought.

In addition to the above:

1. Finalise the Recreation Assessment Report prepared by Ross Dungey. The audit report (Q5) provides suggestions on updated technical sources that can be considered, qualitative data collection and assessments to be undertaken. It is recommended that the report identify the recreational values associated with the Teviot River. We appreciate that there were limitations in preparing this report during L4 and L3 lockdown. Hopefully the alert level changes in the South Island from midnight tonight will enable this to be completed in a timely manner. We also note that parts of the above can be completed by desktop assessment/phone calls. The applicant will not be conducting any more work on the recreation assessment report at this stage. It's unlikely that the addition of some interviews and additional literature reviews will change the notification decision or inhibit council's ability to sufficiently assess the existing environment and potential effects of the proposal.
2. Clarify how the proposed change to the drawdown relates to the speed of a lake level drop based on the maximum drawdown rate sought and the other consented limitations (maximum discharge rate and lake levels).
 - a. How quickly could the lake level drop by 0.4 m within a week? This will depend on the lake level at any given time, with increasing drawdown rates as the lake level lowers. As the maximum rate of take remains unchanged the maximum rate of change of water level also remains unchanged. The max outflow is set to $6\text{m}^3/\text{s}$ for both the existing and proposed scenarios, and the maximum rate of vertical water level change is also the same. The only difference being that it could be sustained for twice as long under the proposed amendment. For example:
 - When the lake is full and the outflow is $6\text{m}^3/\text{s}$ the current 200mm limit will be reached in 4.4 days at a maximum rate of 45.5mm/day. At the same flow rate the time taken to lower the lake 400mm will in fact be 8.8d days at a maximum rate of 45.5mm/day.
 - When the lake is down 1m and the outflow is $6\text{m}^3/\text{s}$ the current 200mm limit will be reached in 3.6 days at a maximum rate of 55.63 mm/day. At the same flow rate the time taken to lower the lake 400mm will be 7.2 days at a maximum rate of 55.63 mm/day
 - When the lake is down 2m and the outflow is $6\text{m}^3/\text{s}$ the current 200mm limit will be reached in 2.87 days at a maximum rate of 69.6 mm/day. At the same flow rate the time taken to lower the lake 400mm will be 5.75 days at a maximum rate of 69.6 mm/day

The above scenarios are calculated on the assumption that there is no natural inflow above the dam. This is extremely conservative but given the variable nature of natural inflows it is not feasible to establish a defined inflow for calculations. Ultimately, the above scenarios of the theoretical maximum instantaneous drawdown rate are provided to reinforce that there is absolutely no

change in the maximum instantaneous drawdown rate as a result of the proposal.

- b. It would be helpful to have any differences that are a factor of the lake level/discharge rate explained. The consented baseline of $6 \text{ m}^3/\text{s}$ remains unchanged. As explained above, the only difference is that the maximum discharge rate can theoretically be sustained for longer, however in practice the applicant is unlikely to ever fully utilise the discharge rate – particularly given the fact that downstream generation infrastructure in the Teviot River have a maximum take of $6 \text{ m}^3/\text{s}$, and there is significant natural inflow (approx. $1/3$ of the total Teviot River catchment) between the Onslow dam and the first generation unit at Horseshoe Bend. Therefore, it is unlikely that the full $6 \text{ m}^3/\text{s}$ discharge from Lake Onslow will actually be fully exercised as this would result in spill at Horseshoe Bend and wasted generation potential. Attached is a record of discharge rates at the Onslow dam for the past ~ 6 years, showing that the maximum discharge rate tends to be around $4 \text{ m}^3/\text{s}$ but is typically less than $3 \text{ m}^3/\text{s}$. This pattern of discharge is unlikely to significantly change due to the proposal, and it is considered that this is largely outside the scope of the proposal as the applicant is not amending the discharge maximum.
 - c. What is the time lag between Pioneer managing the discharge/lake level to facilitate a higher drawdown and the drop in lake levels occurring. i.e. is this minutes/hours/days? The maximum discharge rate from Lake Onslow dictates the short term drawdown rate and as the discharge rate is remaining unchanged, one would expect to see the same drawdown trend as with the 0.2 m/week scenario, only for a longer duration – as explained in 2a above. It is not possible to rapidly lower the lake irrespective of the weekly drawdown limitation. Change in lake level is gradual and uniform.
 - d. What opportunity is there for providing a warning to any recreational users/user groups before the increased drawdown occurs? This would be unnecessary, as there is no expected “danger” to lake users due to the increase drawdown rate. As explained above, the increased rate is spread across a long time period – for example $\sim 70 \text{ mm/day}$ when the lake is $\sim 2 \text{ m}$ below dam crest. It is highly unlikely that a reduction of 70 mm over a full day would endanger anyone or significantly increase risk of boat stranding. Bearing in mind that if a user of the lake was to spend 6 hours on the water fishing the change in lake level over the that time would be less than 20mm , which is arguably imperceptible in the context of a large water body. Once again, the instantaneous drawdown rate will not change, only the weekly rate.
 - e. It would be helpful for the speed of drawdown and time lag able to be compared with a 0.2 m drop (current consented maximum). This is discussed sufficiently in our response to 2a above. No other consented maxima are proposed to be changed. There is no time lag in the response of the lake to changes in discharge as variation in lake level is immediate but uniformly gradual, if not imperceptible over the short term.
2. Taking into consideration the answer to question 2, is the risk of boat stranding increased by the proposed change? Is there any mitigation proposed to address this potential increased effect? Based on our prior responses, the proposal is not expected to increase risk of boat stranding. As such, no mitigation for this is proposed or considered necessary.

3. Taking into consideration the answer to question 2, is foot access affected by the proposed change such that the opportunity to fish is impaired? This has been sufficiently addressed in our previous s92 response, dated 2 September 2021. Foot access is not expected to be changed due to the proposal to the point where the opportunity to fish will be significantly impaired.
4. There is still no clarity on use of the area or potential use of the area for mahika kai gathering. Without holding expertise, this will need to come from consultation with rūnaka/Aukaha. If this results in them being unable to confirm at this point the answers to the below that is useful to know. We consider that there has been sufficient information provided as part of the application with regards to mahika kai and potential effects on this cultural value, at least to the extent that a s95 decision can be made. We note that Kai Tahu ki Otago Ltd undertook a Cultural Impact Assessment (VIA) as part of the replacement application for PEL's Onslow and Teviot consents (including 2001.475 & 476) in 2006. The proposal is not changing any aspects of these consents other than the drawdown rate, and upon initial review of the corresponding s42A report it does not appear that drawdown rate of the lake was a topic of concern for Kai Tahu at the time.
 - a. Is the area used for mahika kai gathering? This is largely beyond the scope of the change proposal, as the ability to gather mahika kai is unchanged in terms of the minimum, maximum and discharge operating limits of Lake Onslow.
 - b. Does the area hold any value for mahika kai gathering even if the opportunity is not currently taken up? Again, there is nothing to suggest that the proposal will alter the ability to gather mahika kai as the operating limits of Lake Onslow or the Teviot River will not change.

Please let me know if you have any questions regarding the above.

Kind regards,
Natasha



Natasha Pritchard
PRINCIPAL CONSENTS PLANNER

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Effective Maximum Average Outflow (over 7 days) based on Lake Level (assumed no inflow)

