

From: [Tony Jack](#)
To: [Natasha Pritchard](#); [Will Nicolson](#)
Subject: RE: Pioneer Energy Limited -18.004 - Revised (revised) audit report on amenity values
Date: Tuesday, 21 September 2021 12:08:13 p.m.
Attachments: [Lake Onslow Pioneer Energy amenity assessment revised 20.9.21 TJ comments.docx](#)

Hi Natasha

I have made comments on the word document.

I am concerned that there appears that have been a significant amount of time in reviews, correspondence and corrections due to an inability to grasp basic concepts

Tony Jack
Development Engineer

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-----Original Message-----

From: Natasha Pritchard <natasha.pritchard@orc.govt.nz>
Sent: Tuesday, 21 September 2021 10:36 AM
To: Will Nicolson <will@landpro.co.nz>
Cc: Tony Jack <tony.jack@pioneerenergy.co.nz>
Subject: Pioneer Energy Limited -18.004 - Revised (revised) audit report on amenity values

Hi Will/Tony,

Dr Booth has reviewed your comments on her technical audit. We reiterate that the intent of your review was to confirm our technical understanding of the effects on the operating regime as a result of the proposed change. There were a number of comments that were a little difficult to understand (due to the challenges with marking up a pdf). There were also triangle inserts but no obvious comments in the [Effects of the lake from the proposed change/rate of drop of lake level] section. Are you able to confirm whether there are any comments associated with those inserts? Dr Booth has updated her review based on her further understanding of the proposal and implications that the proposed change will have on the operating regime. She has marked her changes up in red in the attached Word document and added questions in yellow highlights. Are you able to track change any responses so we can have clarity about the applicant's technical understanding of the effects of the proposed change. As noted above and to ensure future clarity for all, your comments are not determinative will be taken into consideration by Dr Booth (along with consideration of all the information we have been provided to date about the proposal). Dr Booth will formalise and finalise her technical opinion on effects based on her audit of the application. This will then be evaluated and considered by myself in my assessment of environmental effects for the s95 report.

In terms of the recreational review document and the ability for it to be publicly excluded if were lodged as part of the application, I have been advised that LGOIMA is subject to any other enactment that authorises or requires official information to be made available. Under s35(5)(g) of the RMA, Council is required to make available "records of all applications for resource consents received by it". However, s42 of the RMA can provide protection of sensitive information. For Council to consider the issue under s42, can you please provide a supporting document that outlines the relevant parts of s42 that apply and provide reasons that support the recreation document being considered sensitive information and publicly excluded in accordance with the provisions in s42 of the RMA.

Let me know if you have any questions regarding the above.

Ka mihi,
Natasha

-----Original Message-----

From: Will Nicolson <will@landpro.co.nz>
Sent: Monday, 20 September 2021 2:57 p.m.
To: Natasha Pritchard <natasha.pritchard@orc.govt.nz>
Subject: RE: Pioneer Energy Limited -18.004 - Revised (revised) audit report on amenity values

Sounds good, thanks for the update Natasha.

-----Original Message-----

From: Natasha Pritchard <natasha.pritchard@orc.govt.nz>
Sent: Monday, 20 September 2021 2:30 PM
To: Will Nicolson <will@landpro.co.nz>
Subject: RE: Pioneer Energy Limited -18.004 - Revised (revised) audit report on amenity values

Hi Will,

A quick note to let you know we are exploring this to see if there is an ability for this report to be lodged and considered in the consent process on a publicly excluded basis. I agree that it would be helpful supporting documentation for the application.

In terms of a more general update, Dr Booth is reviewing your comments on her audit report today and is planning on preparing an updated version that recognises the comments. We have a few clarification questions about some of the comments (which may be a result of the challenges of making track changes on the pdf). I will send it through when I receive it.

I'll hopefully get back to you on the above two points shortly.

Thanks,
Natasha

-----Original Message-----

From: Will Nicolson <will@landpro.co.nz>
Sent: Thursday, 16 September 2021 3:49 p.m.
To: Natasha Pritchard <natasha.pritchard@orc.govt.nz>
Subject: RE: Pioneer Energy Limited -18.004 - Revised (revised) audit report on amenity values

Hi Natasha,

Realise you're away till Monday so no worries if you don't get to this till then. To keep things brief, we may have access to a recently completed recreational assessment at Lake Onslow as part of the battery project. I think that this could supplement what we've already provided on this topic very nicely, however it would only be provided under the condition that it wasn't made public.

Is there a way for us to provide it to you for application assessment purposes without it being accessible via public information request? Section 7(2)(c) of LGOIMA seems relevant in this instance: "protect information which is subject to an obligation of confidence". There would possibly be some complications on how you could comment on/reference parts of that assessment if it wasn't officially public, however I suspect it would still be beneficial to your assessment.

Thoughts?

Thanks,
Will

-----Original Message-----

From: Will Nicolson

Sent: Wednesday, 15 September 2021 8:49 PM
To: Natasha Pritchard <natasha.pritchard@orc.govt.nz>
Subject: RE: Pioneer Energy Limited -18.004 - Revised (revised) audit report on amenity values

Sounds good, thanks Natasha

-----Original Message-----

From: Natasha Pritchard <natasha.pritchard@orc.govt.nz>
Sent: Wednesday, 15 September 2021 5:41 PM
To: Will Nicolson <will@landpro.co.nz>
Cc: Tony Jack <tony.jack@pioneerenergy.co.nz>
Subject: RE: Pioneer Energy Limited -18.004 - Revised (revised) audit report on amenity values

Hi Will/Tony,

Thank you for the clarification. I have forwarded onto Dr Booth for her consideration.

I have sought advice from my Manager on a timeframe for the legal review and will update you once I hear from her.

Kind regards,
Natasha

-----Original Message-----

From: Will Nicolson <will@landpro.co.nz>
Sent: Wednesday, 15 September 2021 4:59 p.m.
To: Natasha Pritchard <natasha.pritchard@orc.govt.nz>
Cc: Tony Jack <tony.jack@pioneerenergy.co.nz>
Subject: RE: Pioneer Energy Limited -18.004 - Revised (revised) audit report on amenity values

Hi Natasha,

Tony and I have provided some feedback on Section 1.5 and Q5 of the audit report, and a response to one of the auditor's comment on mahika kai gathering assessment in the same report.

Regards,
Will

Will Nicolson
Scientist/Resource Management Planner

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-----Original Message-----

From: Natasha Pritchard <natasha.pritchard@orc.govt.nz>
Sent: Wednesday, 15 September 2021 12:50 PM
To: Tony Jack <tony.jack@pioneerenergy.co.nz>; Will Nicolson <will@landpro.co.nz>
Subject: Pioneer Energy Limited -18.004 - Revised (revised) audit report on amenity values

Hi Will and Tony,

Please find attached the revised recreation audit report from Dr Booth that I have received this morning. Before I finalise my recommendation and send it off for peer review/legal review, I would like to give you the opportunity to review this report and provide any additional information.

I am particularly interested in the applicant confirming the statements at the beginning of the report (section 1.5) as these are the basis for considering the effects. They generally align with my understanding. If these are incorrect or do not accurately reflect the activity and effects, can you please advise. If you can explain the reasons for any corrections that would be helpful.

I note from previous correspondence that you are not proposing to provide any further information relating to the Recreation Report and the effects on the activity of mahika kai gathering prior to a notification decision being made. However, please advise whether you would like to comment/provide more data in relation to the last two points of Q.5.

Kā mihi,
Natasha

Natasha Pritchard
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**Pioneer Energy Limited consent amendment for Lake Onslow:
Audit of the application with respect to amenity values**

Prepared for Otago Regional Council

By Dr Kay Booth

Revised report: 20 September 2021

kay@lindis.co.nz

1. INTRODUCTION

1.1 PURPOSE

Otago Regional Council (ORC) has requested an audit of the application from Pioneer Energy Limited (PEL) to vary their water permits for damming, taking and using water from Lake Onslow with respect to effects on amenity values.

1.2 SCOPE AND DEFINITIONS

Amenity value has been defined by ORC as recreation, angling amenity, collecting mahika kai, and aesthetics. I have defined 'aesthetics' to be the experiential perspective of landscape amenity or visual amenity value. This report does not otherwise assess landscape amenity which is a specialist area of expertise.

ORC requested that this audit address seven questions, as set out in section 2 of this report.

1.3 AUDIT MATERIALS

An initial audit (dated 18 August 2021) was conducted on the consent application (PEL 2018 and Dungey 2017) and additional information provided by the Applicant (Dungey 2018a, 2018b, 2021a, 2021b and LandPro Limited 2021a). Relevant materials supplied by ORC were also reviewed, including assessments of the consent application (Aquatic Environmental Sciences (AES) (2018) and Augspurger (2017)) and correspondence that provided views from the Teviot Angling Club and Fish & Game Otago.

ORC requested further information from the Applicant, following receipt of the initial audit report. Additional material (LandPro Limited 2021b and Dungey 2021c) was provided on 2 September and a revised audit report then prepared (dated 6 September 2021). Following its receipt, ORC again requested additional information from the Applicant which was provided on 9 September 2021 (LandPro Limited 2021c) and 14 September 2021 (Kai Tahu ki Otago c2005). This audit report takes all of this information into account.

1.4 CONSENT AMENDMENT

PEL has sought an amendment to its existing consents to operate the Teviot River hydro-electric scheme, specifically to increase the drawdown rate for Lake Onslow from the currently consented 0.2 m/week to 0.4 m/week. The relevant condition states that the rate at which the lake shall be drawn down shall not exceed 0.2 (proposed to change to 0.4) metres over any period of seven days ("the proposed change"). No other changes are proposed to existing consent conditions including the rate of take, the minimum operating level of the lake or the existing residual flows.

The company initially proposed to increase the drawdown rate to 0.5 m/week but revised this down to 0.4 m/week in response to concerns raised by Fish & Game Otago. These concerns were about effects on ecological and amenity values.

The Applicant has proposed an adaptive management approach. Ecological effects of the change in drawdown rate would be monitored in order to verify that effects are as anticipated. If they are not, then the drawdown regime would revert back to 0.2 m/week.

1.5 RESULTING CHANGES TO THE SCHEME'S OPERATING REGIME

A suite of consent conditions influences the scheme's operating regime. The interplay of the proposed change with the other consent conditions (none of which change) may modify the existing pattern of water storage in Lake Onslow and flows in the Teviot River. Understanding these likely changes is a prerequisite for understanding how the proposed change will affect amenity values. For this reason, I now set out my understanding of the implications of the proposed change to the scheme's operating regime and operational environment.

Details about the proposed change

- The proposed change is to increase the drawdown rate of Lake Onslow from 0.2 m per 7-days to 0.4 m per 7-days (from 1.2 mm/hr to 2.4 mm/hr on average).
- This change is sought by the Applicant to provide more flexibility to react to relatively short periods of high electricity demand.
- The current restriction of lake level drawdown means that at lake levels lower than about 1m below the dam crest the Applicant is unable to take the consented maximum flow at a sustained rate and at lower levels is effectively restricted to much lower sustained rates of take.
- The proposed change will allow more water to be released from the dam as the lake level lowers. The current consent currently the volume of water that can be taken over a 7 day period in late summer.
- ~~[DELETE - The current consent effectively restricts the amount of water that can be released in late summer.]~~
- More specifically, the consented maximum discharge from Lake Onslow is 6 cumecs. The Applicant states that the consented drawdown rate of 0.2 m/week does not allow the maximum take of 6 cumecs to be exercised for a sustained period but, rather, that a take of approx 3.5 cumecs is sustainable.
- Q: With the proposed increase in drawdown, can the sustained rate of take be higher than 3.5 cumecs? Or is the key that this sustainable rate of approx. 3.5 cumecs can be continued for longer?
- [Describe here once have the answer to these Qs]
- **Furthermore**, the Applicant states it is unlikely to ever fully utilise the 6 cumecs maximum discharge rate. This is because of other parameters of the operational regime.
- First, that downstream generation infrastructure in the Teviot River has a maximum take of 6 cumecs 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 cumecs discharge from Lake Onslow will be fully exercised as this would result in spill at Horseshoe Bend and wasted generation potential.
- Second, that if the higher outflow (6 cumecs) was to be exercised for part of a 7-day period, then a reduced flow may be required for the remainder of that period so as not to exceed the maximum weekly drawdown limit. How this plays out depends upon the volume available at a given depth, with available volume being a function of the lake area and the 7-day limit.
- For this reason, when discussing lake level reduction scenarios associated with outflows from Lake Onslow at various depths (see later), the Applicant refers to maximum average outflows over the 7-day period.
- In summary, the Applicant has stated that:
 - While 0.4 m/week is being sought, it is unlikely that this drawdown rate would ever be fully achieved. It is more likely that an increased drawdown rate of around 0.25 m/week (0.05 m above what is currently consented) would be utilised, in order to respond to electricity market demand.

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Commented [TJ1]: The sustained rate is how much outflow can be maintained over a long period of time. This is in effect the average take over the 7 day period. The average rate of take is directly related to the volume of water that can be taken over the 7 day period. The volume of water that can be taken over the 7 day period is directly related to the allowable change in lake level over the 7 day period. So therefore if the 7 day rate of change increases the average outflow over 7 days will must increase. So in short if the rate of change if lake level increases so does the sustained rate of take

- The proposed change will allow the Applicant to draw down the lake at the same sustained rate as present (approx. 3.5 cumecs) over a longer period of time. [dependent on answer to Q above – ie. this statement may be incorrect]

Timing and frequency of use of the proposed change

- The Applicant anticipates utilising the larger drawdown rate in late summer/autumn (March to June). This period typically has low lake levels.
- The Applicant expects to use the greater drawdown rate approximately twice in a 5 year period, although no restrictions on the frequency of use are proposed within the consent.
- There is uncertainty on when the greater drawdown rate will be required because it is a function of market demand and low rainfall years.

Effects on the lake from the proposed change

Lake operating range:

- There is no change to the lake’s operating range.
- The Applicant advises that the usual operative range is 2.5 m, with lows (ie. close to 5 m below the crest) experienced about once a decade.
- The lake’s minimum operating level remains unchanged at 5 m below the crest of the dam.

Rate of drop of lake level:

- The Applicant states that at the maximum rate of outflow from the dam (6 cumecs), the rate at which the lake level drops will not change – ie. the maximum instantaneous drawdown rate remains the same as at present. Put simply, the rate of drop of lake level is not altered by the proposed change. [Q: Please confirm this statement is correct].
- The length of time that the lake will continue to drop may be longer.
- [[Note: Dependent on answers to the highlighted Qs, the next 2 bullet points might be deleted]]
- As explained above, the outflows are calculated as a maximum average outflow over the 7-day period.
- Actual change of lake levels are therefore masked within the averaging process across the 7-day period. It is feasible that the lake level could drop quickly during an initial release period and then reduce; this is dependent on the interplay of outflow and lake volume. [Q: Is there a comment here that I cannot read?]
- As the level of the lake lowers, the speed (rate) of drop increases.
- The rate of drop has been quantified by the Applicant through the use of scenarios which assume no inflow (nil rainfall) and the maximum consented outflow (6 cumecs), ie. they are conservative estimates. The scenario relating to the lake at 2 m below full states: the current 0.2 m/week drawdown 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 0.4 m will be 5.75 days at a maximum rate of 69.6 mm/day.
- [Q: Is there another comment here that I cannot read?]
- I note that if the lake level was closer to its consented minimum (5 m below the dam crest), the speed of drop would be faster than the scenario above. The ‘worst case scenario’ plays out when the lake is at its lowest.

Fluctuations in lake level:

- The Applicant states that the proposed increased drawdown rate does not directly equate to more fluctuations in lake level. It is simply that water could be used more quickly on occasion.

Commented [TJ2]: Completely wrong. The allowable drawdown will be increase from a maximum of 200mm/wk to 400mm/wk. As a result the theoretical maximum average outflow will also increase, subject to the maximum outflow of 6m³/s.

Commented [TJ3R2]:

Commented [TJ4]: NO! The average rate of drop over 7 days will increase from of 200mm/wk to 400mm/wk. The short term rate of drop that is possible when the maximum allowable take is used will not increase

Commented [TJ5]: Not necessarily. I don’t know where this concept of the lake being pulled down “rapidly” and then stopping came from. The outflow within a 7 day period can and will vary significantly. There is and will be periods of higher outflow and periods of lower outflow but ultimately it is the average outflow that determines the drawdown over the 7 day period. What happens within the 7day period is somewhat irrelevant as the only restriction is over 7 days.

Commented [TJ6]: The comment that apparently was unable to be seen see was the example that we previously provided and it have been incorrectly repeated.

“When the lake is down 2m and the outflow is 6m³/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”

Commented [TJ7]: I must stress that the above example relates to the rate of drawdown when the maximum consented take is exercised and does not relate to the proposed variation. These rates are unchanged by the proposed variation The example was given as an example to counter the notion that the proposed variation would create navigation hazards.

These theoretical “rapid” rates of change will not be affected by the proposed variation

Commented [TJ8R7]:

- The lake will still need to be recharged (via rainfall) and this will limit how often the faster drawdown can be applied.

Sustained low lake levels:

- The proposed change may mean that lake levels remain lower for longer than at present if rainfall does not eventuate to refill the lake. **This is the key ramification for the lake operating regime as a result of the proposed change.** [Q: Is this a fair/correct statement?]

Effects on the shoreline/mudflats from the proposed change

- Exposure of the lake bed as the lake level lowers is dependent on the contour of the terrain. Shallow areas will expose a greater area of lake bed surface, with water receding more quickly, compared with steeper areas.
- Approximately 80 percent of the Lake Onslow shoreline is very shallow so a small change in depth produces a relatively large change in shoreline.
- Much of the southern shore, and a smaller section of the northern shore, is gently sloping and therefore has significant amounts of lake bed exposed as the lake level drops.
- Because the minimum operating level of the lake does not change, the proposed change is not expected to expose any more lakeshore than at present.
- But the lower level lake shoreline may be dry in late summer for longer than at present. This is dependent on rainfall which refills the lake.
- The Applicant states that it is not expected that erosion or land instability (such as from increased wave action on exposed shoreline) would increase due to the proposed change.

Commented [TJ9]: No. The refilling of the lake is generally rapid and is completely dependant on the timing of inflows, be it rain events or snow melt. Under the proposal it is possible that the lake would be lower when the infill takes place but the duration that the lake is "lower" will not be directly changed as a consequence of the proposed change.

Effects on the boat ramp from the proposed change

- The Applicant states that use of the boat ramp should not be affected by the proposed change as the ramp is formed from concrete and access is assumed possible in any drawdown scenario. That is because the ramp has historically provided angler access at all lake levels since the raising of the lake in 1984.

Effects on the Teviot River from the proposed change

- The proposed change will result in higher flows down the Teviot River during a period of the year that is typically dry. This is advantageous to aquatic biota and therefore angling opportunity.

2. AUDIT FINDINGS

Overview of audit findings:

- The Application does not provide an adequate assessment of amenity values and the effects of the proposed change upon amenity values.
- The Applicant has not assessed human use and appreciation values directly. Instead the assessment of amenity values is based on information about sites and species associated with amenity value, such as trout and waikōura.
- Assessment of effects upon amenity values rests on the Applicant's conclusion that the proposed change in drawdown rate will result in little change to the operating environment and, therefore, will have negligible effect on amenity values.
- The monitoring programme should be expanded to include amenity-related metrics.

Q1	Is the technical information provided in support of the application robust, including being clear about uncertainties and any assumptions? Yes, or no. If not, what are the flaws?
Recreation	<p>No.</p> <p>Dungey (2021c) gives a useful but incomplete description of recreational values and use. The report's primary weakness is the reliance on the knowledge of a single individual which results in a lack of comprehensiveness.</p> <p>The effects assessment is predicated on the proposition that the proposed change will result in little modification to the existing operating environment and, therefore, effects upon lake users are not expected to be significant.</p>
Angling	<p>No with respect to recreation technical information, as noted above.</p> <p>Yes with respect to relevant ecological technical information, in that I rely on the audit by AES (2018).</p>
Gathering mahika kai	<p>No. The Applicant has not determined whether mahika kai gathering occurs in the area. No technical information is provided about the presence, extent or importance of the activity of mahika kai gathering. The focus of the assessment is on biological assessment of resource availability (notably waikōura).</p> <p>I note that a Cultural Impact Assessment by Kai Tahu ki Otago Limited (c2005), in connection with earlier consents, discusses mahika kai species, noting that the most important mahika kai species in the catchment are waikōura and brown trout. This report also refrains from discussing the activity of mahika kai gathering.</p> <p>The Applicant relies on their assessment that changes in the operating environment are minor and therefore any use will not be affected.</p> <p>The Applicant is upfront that the assessment of cultural effects has been undertaken from a non-expert perspective and without input from iwi. This is likely to be the reason for this information gap.</p>
Visual amenity	<p>No. There is no technical information provided on visual amenity.</p> <p>The Applicant relies on their assessment that the proposed change will not alter the surrounding landscape or the aesthetics of the lake or the Teviot River; therefore, no experiential or visual effects associated with the proposed change are expected.</p>

Q2	Are there any other matters that appear relevant to you that have not been included? Or is additional information needed? Please specify what additional info you require and why [please explain]
Recreation	<p>Yes. A more comprehensive assessment of recreational values and likely effects upon them from the proposed change. In particular, to address the gaps in the interim assessment (Dungey 2021c):</p>

	<ul style="list-style-type: none"> • Utilise the most up-to-date data (ie. data from the 2007/08 National Angling Survey is used rather than the most recent survey from 2014/15 (Unwin 2016)). • Review available information sources (eg. guidebooks) to help assess activity significance. • Given the likely dearth of quantitative data, the usual approach would be to collect qualitative data from knowledgeable people (eg. Fish & Game Otago, Teviot Angling Club, lake hut owners). The existing assessment is based on one individual's knowledge. This is inadequate. • Alternatively, undertake a user survey. But given use levels appear to be low for activities other than fishing, quantitative data collection may not be practical. • Pay particular attention to effects upon access to/on the water (particularly by boat). • Assess the recreational values of the Teviot River. No mention is made of river related effects beyond highlighting that additional flow into the Teviot in the autumn would be beneficial to the fishery (and therefore angling).
Angling	Yes. The technical recreation assessment is preliminary and incomplete. See above.
Gathering mahika kai	<p>No. While the Applicant does not clarify whether the activity of gathering mahika kai currently takes place within the operating area, I conclude that it is unlikely to be a significant existing amenity value. The basis for my conclusion follows: if the activity of gathering mahika kai is undertaken to some extent, then I would have expected this to be identified by:</p> <ol style="list-style-type: none"> 1. The Cultural Impact Assessment (c2005) and the subsequent consent conditions and mitigation package – with the caveats that (a) this work was undertaken approx. 15 years ago and there may have been change in the interim period, and (b) that the report's focus was species/sites and not the activity of mahika kai gathering; or 2. Aukaha in discussions about the proposed change. <p>Furthermore, I assume that the proposed change is likely to affect any mahika kai gathering activity in a similar way to recreational activity. This point also applies to any future amenity value, ie. the future opportunity to gather mahika kai.</p>
Visual amenity	No. I consider effects upon visual amenity to be less material than effects upon recreation and (potentially) mahika kai gathering, especially access-related matters.

Q3	If granted, are there any specific additional conditions that you recommend should be included in the consent or recommended changes to the conditions
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	to be varied and the proposed conditions including in the amendment document?
<p>It is difficult to make recommendations in the absence of an adequate amenity assessment, however two areas appear to warrant examination:</p> <ol style="list-style-type: none"> 1. Provide warnings to users about the risk of lake level drop. I note that signage “to warn the public of safety and navigation risks associated with the lake” is an existing requirement (consent no. 2001.475), which may be considered adequate. 2. Expand the monitoring regime to include key amenity values (I note that the Applicant and AES both identify this opportunity). 	

Q4	Have the aesthetic values associated with Lake Onslow and the Teviot River been appropriately identified and appropriately assessed?
<p>While there has been no technical assessment of visual amenity value, I do not believe this warrants further investigation; this aspect of amenity is likely to be less affected than other amenity values.</p>	

Q5	Have the recreational values and effects on them associated with Lake Onslow and the Teviot River been appropriately identified and appropriately assessed, including effects on public access?
<p>No.</p> <p>Identification of recreation values:</p> <ul style="list-style-type: none"> • Angling on Lake Onslow is of regional significance and, as such, warrants attention. Anglers fish from the whole lake shoreline and all of the lake trolling. All of the lake is considered ‘high use’. • Other recreational activities have limited assessment, albeit their significance appears to be lower. <p>Assessment of effects:</p> <ul style="list-style-type: none"> • From the (incomplete) material provided, I conclude that the most material potential effects upon recreation are related to water-based activities and associated with access, without which recreational activity cannot take place. • I am particularly interested in the April-June period as this is when the proposed change is likely to be utilised and when lake levels are typically at their lowest. Therefore, this is the period of highest potential impact for recreationists, especially boaties. • The Applicant addresses this point. Given that late summer/early autumn is when lake water temperatures tend to be warmest, anglers target the deeper zones of the lake as that is where trout tend to congregate. Therefore, most of the fishing at this time of the year would be away from the shallower areas of the lake, meaning that the areas with the potential for the greatest adverse effect tend to be low-use from a recreational perspective. • I am particularly concerned about boaties being stranded. Given the nature of the terrain, boat stranding could be life threatening and I note it already occurs on the lake. Most anglers use boats. • [Q: With reference to the Applicant’s comment here, is “short term” rate of change the same as the “instantaneous” rate? If not, how do they differ?] 	

Commented [TJ10]: They are the same. Instantaneous refers to change at a specific time, which has little meaning in the concept of a slowly changing lake level. Short term infers a short period of time, minutes to hours. The important distinction is that they are periods of time that are significantly less than the 7 day period that the drawdown limit relates to

- The point is made that Lake Onslow already has known shallow spots where care has to be taken at any lake level to avoid running aground on a mud flat. Local knowledge is required to safely navigate the lake at all lake levels at present.
- Also that the boat ramp (the only lake launching site) will remain usable at all lake levels under the proposed change.
- ~~[More specifically,]~~ The Applicant has calculated a maximum short term drawdown rate of 2.87mm/hour (when the lake is 2 m below the crest and with an outflow of 6 cumecs). Over the course of a fishing day (say 14 hours) the drop would be 40.18 mm.
- [The 2 bullet points below to be confirmed by Applicant – dependent on answers to earlier Qs].
- The Applicant states there is no increase in the risk of boat stranding because the proposed change will not alter the rate at which the lake level drops; this remains unchanged from that experienced at present.
- The material change for lake users is the potential that the lake may remain at lower levels for longer than at present.
- [[Note: Dependent on answers to Qs, the next bullet point may be deleted]]
- Given the greatest potential for impact is when the lake is lowest (ie. lower than 2 m below the crest), the hourly maximum drawdown rate will be larger. Whether that increase is material is not clear: data have not been supplied and local knowledge of the lake may be required to interpret whether it would be significant for boating.
- I conclude that the potential for higher stranding risk appears slight for mid-range lake levels on the basis of the Applicant’s figures of lake level drop when the lake is 2 m below the crest of the dam. I remain concerned that at the lowest lake levels, the drop may adversely impact boats. [[Note: Will rewrite this final para dependent on answers to Qs]]

Commented [TJ11]: The change in hourly rate as a result of the proposed variation will be undetectable to users over a given days activities , irrespective of lake depth, 1.2mm/hr vs 2.4mm/hr ie over 14 hours the current change is approx. 16mm and under the proposed limit the change could be 32mm, therefore the increased drawdown over 14 hour can be no more than 16mm.

The average hour rate of change that is controlled by the 7 day change in lake level and ,must not be confused with the rate of change that is current possible due to the allowable maximum take. This rate is significantly greater and will not change as a result of the proposed variation

Q6	Have the overall amenity effects of the activity been appropriately assessed? Do you concur with the assessment?
<p>In summary, I find that:</p> <ol style="list-style-type: none"> 1. The Applicant has not adequately assessed amenity values and potential effects from the proposed change upon those values. 2. The interim recreation assessment (Dungey 2021c) is helpful but incomplete. 3. The amenity values with greatest potential for impact from the proposed change appear to be: <ol style="list-style-type: none"> a. Angling, because it is the main activity undertaken in the area, is of regional significance, and potential impacts will be most felt by water-based activities. b. Angling access in particular, especially whether there is any increase in the risk of boat stranding. This potential health and safety issue is critical given the risk to life that may result. 4. At the stated rates of lake level drop provided by the Applicant, I concur with the Applicant that the increase in the risk of boat stranding from the proposed change is minimal for mid-range lake levels (2 m below the crest). However, I cannot assess the risk for the lowest lake levels (which occur in autumn when the proposed increase in drawdown is anticipated to be used). [[Note: Will rewrite this para dependent on answers to Qs]] 5. I concur with the Applicant that land-based recreational activities are unlikely to be materially affected by the proposed change. 6. The assessment for mahika kai gathering is weak as it does not address the activity of mahika kai gathering. However, I conclude that: (1) existing gathering activity appears likely to be low (and may be non-existent), and (2) potential effects from the proposed 	

change on any existing or future mahika kai gathering activity are likely to be similar to potential effects upon recreational activity.

7. There is no assessment for visual amenity value; however, I consider effects upon visual amenity to be less material than effects upon recreation and (potentially) mahika kai gathering.
8. Lake Onslow is the focus of the amenity assessment. It would be helpful to clarify amenity values of the Teviot River, even if that is simply to indicate there are few.

Q7	Is there a need to consider the effects on amenity from the potential creation of more mud flats and potential dust generation?
Covered in Q1 (recreation).	

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